

# **ESCUELA POLITÉCNICA NACIONAL**

**FACULTAD DE INGENIERÍA MECÁNICA**

**MODELACIÓN DEL TRAMO PÁRAMO - PUERTO QUITO DEL  
OCP S.A. (OLEODUCTO DE CRUDOS PESADOS), MEDIANTE  
EL PROGRAMA PIPELINESTUDIO**

**TESIS PREVIA A LA OBTENCIÓN DEL GRADO DE MASTER MSc, EN  
SISTEMAS DE TRANSPORTE DE PETRÓLEO Y DERIVADOS**

**AUTOR: Ing. Augusto Oswaldo Vivanco Torres**

[ovivanco1969@hotmail.com](mailto:ovivanco1969@hotmail.com)

**DIRECTOR: Ing. Patricio Estupiñán**

[patricio.estupinan@epn.edu.ec](mailto:patricio.estupinan@epn.edu.ec)

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Ing. Augusto Oswaldo Vivanco Torres

**AUTOR DEL PROYECTO**

## **CERTIFICACIÓN**

Certifico que el presente trabajo fue desarrollado por Augusto Oswaldo Vivanco Torres bajo mi supervisión.

Ing. Patricio Estupiñán  
DIRECTOR DEL PROYECTO

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## **1. GENERALIDADES.**

### **1.1. ANTECEDENTES.**

El 9 de febrero y el 17 de noviembre del 2008 en la estación reductora de presión Puerto Quito del oleoducto de crudos pesados OCP, en la válvula de drenaje de la válvula de seguridad PSV-07003 de la línea de entrada a los filtros F-0701 A/B se produce una fuga de crudo pesado.

Los costos remediales de cada una de las fugas esta alrededor de los 100.000 Dólares.

Para evitar se produzca otra fuga, las condiciones de operación del tramo comprendido desde la estación de bombeo Páramo hasta la estación reductora de presión Puerto Quito fueron modificadas, quedando pendiente analizar los siguientes aspectos de la línea de transporte:

- Las condiciones de operación actual del tramo en análisis.
- Las causas que provocaron las dos fugas antes mencionadas.

### **1.2. JUSTIFICACIÓN E IMPORTANCIA**

Las dos fugas de crudo que se dieron a la entrada de la Estación reductora de presión Puerto Quito, fueron rápidamente identificadas y controladas, por lo tanto no hubo daños de consideración hacia las instalaciones, las personas y el medio ambiente.

Sin embargo esto no garantiza a futuro, que si se da nuevamente otra fuga la misma sea rápidamente controlado, pudiéndose ocasionar daños más grandes como:

- Incendio de las instalaciones, daño de los equipos.
- Emergencias médicas y muerte de personas.
- Contaminación de suelos, ríos y muerte de animales y plantas

La fuga de crudo que se puede dar a futuro en la estación reductora de Puerto Quito, si no se toma acciones preventivas para que esto no vuelva a suceder y dependiendo de los daños causados por la fuga de crudo, podría ocasionar:

- El retiro de la licencia de operación al OCP.
- Muerte de personas.
- Daños a las instalaciones y al medio ambiente, cuyo costo de remediación puede sobrepasar los veinte y cinco millones de dólares (25,000,000 USD) que costo aproximadamente la remediación de una fuga de crudo que se dio en el Oleoducto.

Las consecuencias de una fuga de crudo pueden llegar a ser catastróficas siendo este el motivo y la justificación del porque se debería terminar de analizar y determinar cuales son:

- Las condiciones optimas de operación del tramo en análisis.
- La causa que provocaron las dos fugas a la entrada de la estación reductora Puerto Quito.

### **1.3. OBJETIVOS**

#### **1.3.1 OBJETIVO GENERAL**

Modelar el tramo Páramo – Puerto Quito del OCP S.A. mediante el uso del programa PIPELINESSTUDIO para determinar las condiciones optimas de operación del tramo en análisis y las causas que provocaron las dos fugas de crudo a la entrada de la estación reductora de presión Puerto Quito.

#### **1.3.2 OBJETIVOS ESPECÍFICOS**

- Crear el Modelo del tramo en estudio dentro del sistema PIPELINESSTUDIO.
- Afinar el modelamiento del tramo en estudio.
- Establecer los diferentes escenarios de operación del tramo en estudio que pueden generar la fuga de crudo pesado en la válvula de drenaje

de la válvula de seguridad térmica al ingreso de la estación Puerto Quito.

- Determinar cual es el escenario que causo las dos fugas en la válvula de drenaje de la válvula de seguridad térmica al ingreso de la estación Puerto Quito.
- Determinar las condiciones óptimas de operación del tramo en estudio.

## **1.2. INFORMACIÓN DEL OCP S.A. (Internet)**

### **1.2.1. OCP S.A.**

OCP S.A. (OLEODUCTO DE CRUDOS PESADOS). De conformidad con el Contrato de Autorización de Construcción y Operación, es una empresa privada, ecuatoriana que opera desde noviembre del 2003. La misma construyó íntegramente el oleoducto, con inversión privada sin participación económica ni riesgo alguno para el Estado Ecuatoriano.

Luego de 20 años de operación del OCP S.A., contados a partir del inicio de la operación (noviembre del 2003). OCP S.A. será transferido al Estado Ecuatoriano, sin costo alguno “es decir, a título gratuito” .

El costo del OCP S.A. fue auditado por la Unidad de Administración y Fiscalización del OCP (UAF) del Ministerio de Minas y Petróleo y por empresas auditoras internacionales como Price Waterhouse, Moores Rowland y Ernst & Young. El SRI verificó este costo. El OCP fue originalmente proyectado para una capacidad de 49,286 m<sup>3</sup> [310 mil barriles] por día, a petición del Gobierno ecuatoriano se amplió a 71,544 m<sup>3</sup> [450 mil barriles] diarios.

La UAF tiene por objetivo el Administrar, Fiscalizar y Auditar el contrato para la construcción y operación del Oleoducto de Crudos Pesados en las áreas legal, económica, técnica y ambiental durante las etapas de construcción y operación. La UAF supervisa de manera constante las actividades de OCP.

Todas las instituciones gubernamentales que tienen relación con la gestión ambiental y de energía han desarrollado acciones de control y seguimiento al proyecto OCP, lo que ha marcado un hito. No ha existido en la historia del Ecuador un proyecto que haya recibido un control y seguimiento tanto interno como externo tan estricto y riguroso como el OCP.

El OCP es el segundo oleoducto que opera en Ecuador y está destinado solo al transporte de crudo pesado de densidad de 946.48 a 909.96 Kg/m<sup>3</sup> [18 a 24 grados API].

Puede transportar un volumen pico de 82,234 m<sup>3</sup> (517,241 barriles) por día y un volumen sostenible de 71,544 m<sup>3</sup> (450,000 barriles).

Actualmente OCP transporta el crudo pesado producido por las compañías petroleras accionistas de la empresa y tiene otros usuarios potenciales, para lo cual se ha previsto capacidad de transporte de "acceso abierto".

#### **1.2.7. HISTORIA DE OCP S.A.**

El 15 de febrero de 2001 OCP Ecuador S.A. fue autorizada por el Estado ecuatoriano para construir el Oleoducto de Crudos Pesados (OCP).

El 7 de junio de 2001 se aprobó el Estudio de Impacto Ambiental por parte del Ministerio de Ambiente y se otorga la Licencia Ambiental.

El 26 de junio de 2001 se inició la construcción del OCP.

El 20 de agosto de 2003 se dio por terminada la soldadura del OCP.

El 5 de septiembre de 2003 el buque "Cabo Vírgenes" recibió 63,594.9 m<sup>3</sup> [400.000 barriles] de crudo del OCP, este fue el primer embarque de prueba.

El 11 de noviembre de 2003 se obtuvo el permiso de operación por parte del Ministerio de Energía y Minas, dos días después se consigue la

Licencia Ambiental para la Fase de Operación por parte del Ministerio del Ambiente.

El 14 de noviembre de 2003 el oleoducto inició sus operaciones.

El 18 marzo de 2004 se firmó el primer convenio para transportar crudo estatal por el OCP ante una rotura del SOTE.

El sábado 19 de junio de 2004, la empresa embarcó el tanquero de crudo número 100.

El 21 de junio de 2004 la Dirección General de la Marina Mercante y del Litoral (DIGMER) otorgó el certificado de cumplimiento del Código PBIP. Así el Terminal Marítimo del OCP se convirtió en uno de los primeros Puertos Petroleros Seguros de América Latina.

El 18 de marzo de 2005 se firmaron los acuerdos para iniciar el Eco-Fondo, uno de los fondos más grandes destinados a la conservación del ambiente (\$16.930.000).

El 17 de junio de 2005 UNICEF y OCP Ecuador S.A. firmaron un convenio con el fin de apoyar proyectos de educación, comunicación y vigilancia ciudadana a favor de la niñez ecuatoriana.

En febrero de 2006 la empresa obtuvo la certificación Ambiental ISO 14001:2004. Esta comprende las actividades de Transporte, Almacenamiento y Despacho en todas sus instalaciones.

El 26 de septiembre del 2006 OCP Ecuador S.A., el CONATEL y SENATEL, suscribieron un convenio para el traspaso de cuatro hilos de fibra óptica al Estado.

Del 2 al 4 de septiembre del 2008, OCP fue anfitrión de las IV Jornadas Latinoamericanas de operadores de Mono-boyas.

El 14 de noviembre del 2008 la empresa cumplió sus primeros 5 años de operaciones siendo una referencia Latinoamérica en la operación de oleoductos.







### **1.2.10. CARACTERÍSTICAS DEL OLEODUCTO (3)**

El OCP tiene una extensión total de 485 Km. y se encuentra enterrado en un 99%.

Cuenta con todas las instalaciones necesarias para una operación eficiente y segura. Tanques de almacenamiento, sistemas y equipos de la más alta tecnología para la medición, calentamiento, bombeo, reducción de presión y operaciones de carga en buques petroleros, con un Terminal Marítimo propio.

La prioridad fundamental de la empresa es la seguridad en la operación del oleoducto para salvaguardar la integridad de las personas y el entorno. Se cuenta con toda la tecnología necesaria para mantener una operación segura como: válvulas de bloqueo (cierre automático y remoto) y de retención de fluido (válvulas automáticas).

OCP Ecuador S.A. tiene desde el 2004 el certificado de cumplimiento del Código PBIP, que está dentro del Convenio Internacional para la Seguridad de la Vida Humana en el Mar. Esto convirtió al Terminal Marítimo en un puerto seguro.

OCP Ecuador S.A. tiene una extensión de 485 kilómetros de tubería de acero API 5L-X70. Cuyos diámetros son de 60.96 cm [24"], 81.28 cm [32"], 86.36 cm [34"] y 91.44 cm [36"]. El 99% de la tubería del oleoducto está enterrada y pasa por 4 estaciones de bombeo, 2 estaciones de reducción de presión y un Terminal Marítimo.

OCP Ecuador S.A. cuenta con un sistema de adquisición de datos (SCADA) y para su funcionamiento dispone de fibra óptica a lo largo de todo el tubo y como seguridad redundante cuenta con comunicación Satelital.

### **1.2.11. COMO FUNCIONA EL OLEODUCTO (3)**

La operación de transporte de crudo pesado del OCP se inicia con el arribo del hidrocarburo de los usuarios "Por medio de oleoductos

secundarios” a la estación Amazonas, a 5 kilómetros de la ciudad de Nueva Loja.

Al llegar a la estación Amazonas pasa por un sistema de ingreso y medición del crudo, así se cuantifica el ingreso del producto que entrega cada empresa. Luego de este proceso el crudo es enviado a uno de los cuatro tanques de almacenamiento, la capacidad total neta de la estación Amazonas es de 190,784.75 m<sup>3</sup> [1.200.000 barriles].

Para iniciar su transporte el crudo es calentado indirectamente por un sistema de recirculación de aceite térmico e intercambio de calor. Las bombas principales dan el impulso necesario para que el crudo tenga la presión suficiente para iniciar el recorrido.

El crudo enviado desde la estación Amazonas llega a Cayagama, ubicada también en Sucumbíos, en el cantón Gonzalo Pizarro. Aquí puede continuar su recorrido hacia la Costa.

El crudo continúa su ascenso hasta llegar a la tercera estación: Sardinias que está ubicada en la provincia de Napo. En esa estación también recibe crudo de la estación colindante de AGIP.

La estación Páramo tiene como objetivo dar el último impulso al crudo pesado para poder superar el punto más alto: 4.200 metros sobre el nivel del mar, en el sector de La virgen. Esta es la última infraestructura de bombeo del sistema OCP.

El crudo inicia su descenso por lo que es necesario iniciar un proceso de reducción de presión, que se logra mediante dos estaciones instaladas para ello: Chiquilpe y Puerto Quito.

Al llegar el crudo a Esmeraldas el crudo finaliza su viaje. El Terminal Marítimo de OCP, ubicado en Punta Gorda, a 15 kilómetros de la ciudad de Esmeraldas tiene la capacidad de recibir el crudo y almacenar 596,202.35 m<sup>3</sup> [3'750.000 barriles] en sus instalaciones.

El Terminal Marítimo cuenta con un área mar afuera en donde dos mono-boyas son las encargadas de cargar buques de hasta 325000 kg [325 toneladas] de capacidad.

#### **1.2.12. CARACTERÍSTICAS DE LA ESTACIÓN AMAZONAS (3)**

La estación Amazonas se encuentra ubicada en el cantón Lago Agrio de la provincia de Sucumbíos en el Km. 0; Esta área se encuentra a una altura de 330 metros sobre el nivel del mar.

La estación Amazonas es la estación donde se inicia el bombeo por lo tanto dispone de 4 tanques de almacenamiento de crudo, cada tanque tiene una capacidad de almacenamiento de 47,696.18 m<sup>3</sup> [300.000 barriles] de crudo. Los tanques son utilizados para almacenar el crudo que se recibe de los diferentes clientes o dueños del crudo. Para medir cuanto crudo y de que características entrega cada dueño del crudo, la estación dispone de 6 unidades de medición.

La estación de bombeo Amazonas tiene una capacidad de bombeo de 65,184.79 m<sup>3</sup> [410.000 barriles] diarios. Para ello cuenta con 5 unidades de bombeo y sus respectivos sistemas auxiliares como: sistema de generación eléctrica, sistema de calentamiento de crudo, sistema de medición de salida de crudo y del sistema contra incendio de agua y espuma

#### **1.2.13. CARACTERÍSTICAS DE LA ESTACIÓN CAYAGAMA (3)**

La estación Cayagama se encuentra ubicada en el cantón Gonzalo Pizarro de la provincia de Sucumbíos en el Km. 66.8; Esta área se encuentra a una altura de 1033 metros sobre el nivel del mar

La estación Cayagama es la segunda estación de bombeo, la misma que tiene una capacidad de bombeo de 65,184.79 m<sup>3</sup> [410.000 barriles] diarios. Para ello cuenta con 5 unidades de bombeo y sus respectivos sistemas auxiliares como: sistema de generación eléctrica, sistema de calentamiento de crudo y del sistema contra incendio de agua y espuma

### **1.2.14. CARACTERÍSTICAS DE LA ESTACIÓN SARDINAS (3)**

La estación Sardinas se encuentra ubicada en el Valle de Quijos de la provincia del Napo en el Km. 146; Esta área se encuentra a una altura de 1802 metros sobre el nivel del mar

La estación Sardinas es la tercera estación de bombeo, la misma que tiene una capacidad de bombeo de 71,544.28 m<sup>3</sup> [450.000 barriles] diarios. Para ello cuenta con 6 unidades de bombeo y sus respectivos sistemas auxiliares como: sistema de generación eléctrica, sistema de calentamiento de crudo y del sistema contra incendio de agua y espuma

### **1.2.15. CARACTERÍSTICAS DE LA ESTACIÓN PÁRAMO (3)**

La estación Paramo se encuentra ubicada en Papallacta de la provincia del Napo en el Km. 188; Esta área se encuentra a una altura de 2862 metros sobre el nivel del mar

La estación Paramo es la cuarta estación de bombeo, la misma que tiene una capacidad de bombeo de 71,544.28 m<sup>3</sup> [450.000 barriles] diarios. Para ello cuenta con 6 unidades de bombeo y sus respectivos sistemas auxiliares como: sistema de generación eléctrica, sistema de calentamiento de crudo y del sistema contra incendio de agua y espuma

### **1.2.15. CARACTERÍSTICAS DE LA ESTACIÓN CHIQUILPE (3)**

La estación Chiquilpe se encuentra ubicada en el nor-occidente de Pichincha.

La estación Chiquilpe es la primera estación reductora de presión, la misma que tiene una capacidad de transporte de 71,544.28 m<sup>3</sup> [450.000 barriles] diarios. Para ello cuenta con 5 válvulas reductoras de presión y sus respectivos sistemas auxiliares como: sistema de generación eléctrica, sistema de tanques de alivio y del sistema contra incendio de agua y espuma

### **1.2.16. CARACTERÍSTICAS DE LA ESTACIÓN PUERTO QUITO (3)**

La estación Puerto Quito se encuentra ubicada en el nor-occidente de Pichincha.

La estación Puerto Quito es la segunda estación reductora de presión, la misma que tiene una capacidad de transporte de 71,544.28 m<sup>3</sup> [450.000 barriles] diarios. Para ello cuenta con 5 válvulas reductoras de presión y sus respectivos sistemas auxiliares como: sistema de generación eléctrica, sistema de tanques de alivio y del sistema contra incendio de agua y espuma

### **1.2.17. CARACTERÍSTICAS DE LA ESTACIÓN TERMINAL MARÍTIMO (3)**

La estación Terminal Marítimo se encuentra ubicada en Punta Gorda de la provincia de Esmeraldas. Esta área se encuentra a una altura de 205 metros sobre el nivel del mar.

La estación Terminal Marítimo es la tercera estación reductora de presión, la misma que tiene una capacidad de transporte de 71,544.28 m<sup>3</sup> [450.000 barriles] diarios. Para ello cuenta con 5 válvulas reductoras de presión y sus respectivos sistemas auxiliares como: sistema de generación eléctrica y del sistema contra incendio de agua y espuma

La estación Terminal Marino es la estación donde termina el bombeo por lo tanto dispone de 5 tanques de almacenamiento de crudo, cada tanque tiene una capacidad de almacenamiento de 119240.47 m<sup>3</sup> [750.000 barriles] de crudo. Los tanques son utilizados para almacenar el crudo que se recibe de los diferentes clientes o dueños del crudo. Para medir cuanto crudo y de que características llega a la estación, la estación dispone de 1 unidad de medición.

La entrega de crudo se realiza a buques, para ellos la estación Terminal Marítimo cuenta con 2 Mono-boyas, la primer mono-boya llamada Charlie tiene una capacidad de carga de 150,000,000 Kg. [150,000 Toneladas]. y la segunda mono-boya llamada Papa tiene una capacidad de carga de 325,000,000 Kg. [325,000 Toneladas].

### **1.2.18. SISTEMA SCADA DEL OCP S.A. (Internet)**

Desde que inició sus operaciones en el 2003 OCP Ecuador S.A. utiliza tecnología de punta, un ejemplo de ello es el Sistema de Adquisición de Datos (SCADA). El mismo recibe toda la información proporcionada por los sensores de presión, temperatura y otros instalados en los 485 Km. del oleoducto.

El software utilizado está diseñado exclusivamente para el transporte de fluidos por tuberías y es complementado por otros programas que proporcionan más datos. Todas estas cifras son transmitidas por la fibra óptica que está instalada paralelamente al OCP, garantizando una velocidad de transmisión en tiempo real, adicionalmente, esta información también puede llegar al Centro de Control en Quito por medio de comunicación satelital.

Con estas cifras el operador puede conocer en segundos si existe una baja o anomalía en el transporte de crudo, lo que le permite tomar decisiones inmediatas de presentarse una emergencia. El operador puede controlar las válvulas automáticas del sistema y ordenar una paralización del transporte, de ser necesario el operador cuenta con la autoridad de detener el bombeo.

### **1.2.19. SEGURIDAD ELECTRÓNICA DEL OCP S.A. (Internet)**

El Sistema Integral de Seguridad Electrónica (SISE) permite a la empresa optimizar la protección de sus instalaciones. Es así que las instalaciones del OCP cuentan con un sistema de detección de intrusos, un sistema de circuito cerrado de televisión, un sistema de control de accesos, un Centro de Operaciones de Seguridad con un centro alterno y sub-centros de operaciones locales.

Desde el Centro de Operaciones de Quito, y cualquiera de las estaciones, se puede supervisar el estado físico del oleoducto desde las afueras de Nueva Loja hasta Esmeraldas, en tiempo real, gracias a la transmisión de imágenes a través de la red de fibra óptica del oleoducto.



El operador puede controlar las cámaras instaladas en puntos estratégicos a control remoto, esto le permite advertir cualquier intromisión y - en el caso de emergencia- dar una respuesta adecuada a la amenaza existente.

De esta forma la empresa consiguió dotar de una mayor seguridad la operación del oleoducto para salvaguardar la integridad del sistema y de la comunidad.

### **1.3. EXPLICACIÓN DEL FUNCIONAMIENTO DEL PROGRAMA PIPELINESTUDIO. (1)**

#### **1.3.1. PIPELINESTUDIO.**

PIPELINESTUDIO es un software para simulación y análisis hidráulico de estados estacionarios y transitorios de redes de tuberías de gas y líquidos.

PIPELINESTUDIO integra múltiples herramientas de simulación bajo un ambiente gráfico para configurar, ejecutar y analizar escenarios de tuberías de gas y de líquidos dentro de una sola aplicación Windows, utilizando la modelación de estado estacionario y de estado transiente o transitorio.

Las simulaciones involucran el cálculo y reporte de valores de respuesta para importantes variables del sistema tales como presión, flujo, densidad y temperatura en puntos especificados a lo largo de la tubería, durante intervalos de tiempo específicos, durante la simulación. PIPELINESTUDIO provee la capacidad de configuración gráfica sofisticada que incluye la salida visual y personalizada de los resultados de simulación.

Las redes de tuberías a modelar pueden ser simples o complejas, se puede tener variados perfiles de elevación, e incluir varios tipos de equipos. Se puede construir redes utilizando símbolos que representan tubos y equipos reales utilizando las técnicas ya familiares de arrastrar y soltar, mientras que múltiples métodos de ingreso de datos y la validación de red de tuberías con reporte de error sensitivo de contexto, agilizan el proceso de ingreso de la datos.

Las Aplicaciones típicas incluyen:

Diseño de tuberías

Capacidad de procesamiento y dimensión de las tuberías.

Determinación de bombas y requerimientos de compresor.

Análisis Hidráulico

Determinación de tiempo de Supervivencia del sistema.

Cálculos de Consumo de combustible.

Planes Operacionales

Análisis de Fuga

### **1.3.2. CONVENCIONES Y RESTRICCIONES DE MODELACIÓN.**

TGNET y TLNET son los simuladores utilizados en PIPELINESTUDIO, fueron diseñados con un propósito general, simulaciones de estado estacionario y transitorio. Tal y como están implementados, ellos cubren los requerimientos de modelación para un amplio rango de problemas.

Sin embargo, ellos sí tienen limitaciones específicas que deben tomarse en cuenta en su uso en aplicaciones específicas. Estas limitaciones caen dentro de dos áreas: seguimiento de temperatura y predicción de las propiedades de los fluidos.

Los simuladores permiten el contacto de tuberías e inclusive permiten tuberías sin salida, tuberías con un nodo inicial o final que no se haya conectado a ningún otro elemento de la red o tubería.

Sin embargo, los simuladores no permiten tuberías y redes configuradas en paralelo unas con otras, en otras palabras, un tubo y un elemento de red en paralelo no tiene soporte, mientras que dos tuberías en paralelo o dos elementos de red en paralelo sí lo tienen.

### **1.3.3. ACERCA DE LAS PRESIONES NEGATIVAS EN LOS FLUIDOS**

TLNET puede exhibir valores de presión negativos bajo ciertas condiciones hidráulicas. TLNET ha sido diseñado e implementado para simular apropiada y fielmente la hidráulica asociada con el flujo de líquidos en tuberías de transmisión. Las expresiones de ingeniería empleadas para describir estos fenómenos físicos fueron extraídas tanto como fue posible, de ecuaciones estándar y bien establecidas utilizadas en la disciplina de ingeniería de tuberías.

Dos aspectos muy básicos del simulador TLNET se derivan de esto:

La Ecuación Empírica de Estado empleada que asume LÍQUIDOS SOLAMENTE.

Las expresiones de Pérdida de Cabezal (altura manométrica) son aplicables a todas las condiciones operativas.

Si alguna vez las condiciones de operación o diseño son supeditadas al modelo bajo el cual el transporte del fluido experimentará comportamiento de cambio de fase, esto es, intermitente, flujo con burbujas, emulsión y cavitación, las suposiciones fundamentales establecidas anteriormente no serían estrictamente aplicables.

La más fundamental suposición del simulador TLNET es, por ende, que el fluido en la línea siempre existe en una fase líquida sencilla. Cualquier transición del transporte del líquido fuera de una estricta fase sencilla de líquidos invalida hasta cierto grado las ecuaciones que sirven de soporte y en las que se basa la simulación.

### **1.3.4. ECUACIÓN DE ESTADO**

Típicamente, los líquidos que son transportados en una tubería de líquidos son de una composición bastante compleja y de alguna manera, químicamente indeterminada. Adicionalmente, las ecuaciones de estado de base empírica tal y como se usan en la simulación de tuberías de gas

(incluyendo TGNET), son a menudo indefinidas y pobremente ajustadas para componentes más complejos y pesados.

Por eso, TLNET expresa la relación de densidad en términos más generales que los que se describen más adelante. Este método ha sido tomado de ensayos del American Petroleum Institute y otras organizaciones, e involucra datos que se extrae fácilmente de análisis de laboratorio.

$$\rho = \rho_0 e^{\left[ \frac{1}{BMOD} (P - P_0) - TEXP (T - T_0) \right]} \quad (1)$$

Dónde:

$\rho_0$  = Densidad en las Condiciones de Referencia.

$P_0$  = Presión en las Condiciones de Referencia.

$T_0$  = Temperatura en las Condiciones de Referencia.

BMOD = Coeficiente de compresibilidad en condiciones de Línea.

TEXP = Expansión Térmica en condiciones de Línea.

Para presiones y temperaturas por encima de las condiciones de referencia, esta ecuación de estado responde muy bien para casi todos los fluidos. Sin embargo, si uno considera la función exponente cuando se hace de exponente negativo, se observará que la flexibilidad predictiva de esta ecuación de estado para condiciones por debajo del punto de referencia es muy restrictiva.

Al compararse con los muy dramáticos cambios en densidad experimentados por un fluido en el mundo real en condiciones de baja presión, los defectos de este método para condiciones de sub-referencia se hacen evidentes.

### 1.3.4.1. Ecuación de Conservación del Momento.

El corazón de la solución del segmento de tubo es la ecuación del Momento. Ignorando los términos basados en tiempo y los términos térmicos, la ecuación de estado puede expresarse como se muestra debajo.

$$\frac{1}{\rho} \frac{\partial}{\partial x} (P) + \frac{fv^2}{2D} + g_c \frac{\partial}{\partial x} (z) = 0 \quad (2)$$

Dónde:

$\rho$  = Densidad en las condiciones de la línea

$v$  = Velocidad del fluido

$x$  = Distancia a lo largo del segmento

$P$  = Presión

$f$  = Factor de Fricción

$D$  = Diámetro interno de la línea

$z$  = Cambio de elevación

$g_c$  = Constante gravitacional

Dada la respuesta algo artificial de la densidad a los cambios de presión en los rangos de sub-referencia, surgirán inexactitudes en condiciones de alta velocidad o baja presión. En la mayoría de los casos, las presiones negativas en una simulación TLNET son señales de que los términos de pérdida de presión están siendo exagerados para compensar las variaciones de densidad por debajo de la predicción.

#### **1.3.4.2. Significado para la Simulación**

Los efectos que tienen los resultados de la simulación dependen ampliamente de la naturaleza de la tubería modelada. Dos tipos de ocurrencia pueden suceder durante la operación de tuberías de líquidos en las que deben ser consideradas cuidadosamente. Estas son Flujo con cambio de fase y cavitación.

#### **1.3.4.3. Definición de Líquidos.**

Cuando ocurren presiones negativas, el grado de inexactitud en los resultados del modelo está gobernado en gran parte por la exactitud de las propiedades del líquido definidas para el fluido en las condiciones de referencia. Las definiciones de líquidos deben abarcar el rango de operación que se espera. Las definiciones de las propiedades no pueden ser cero o negativas.

#### **1.3.4.4. Condiciones de Referencia Extremadamente Significativas.**

Las condiciones base por estándar son 15.55 °C [60 °F] y 101.35 KPa. [14.7 PSIA]. La especificación de las condiciones de referencia muy por encima de estos, puede comprometer la exactitud de la ecuación de estado.

#### **1.3.4.5. Flujo con cambio de fase.**

Flujo con cambio de fase ocurre cuando en una porción de la tubería se produce suficiente pérdida de presión como para obtener condiciones de cambio de fase del fluido. Bajo condiciones de flujo con cambio de fase, una cavidad de vapor esencialmente estático se forma sobre la fase del líquido en movimiento en la tubería.

La separación estricta o la falta de interacción directa entre las fases de líquido y vapor permiten que se hagan ciertas simples suposiciones que permitan la consideración de esta condición en lo que de otra manera es un modelo estrictamente de líquidos.

#### **1.3.4.6. Columna de Separación.**

La Columna de Separación se refiere a los eventos observados al comienzo de las condiciones de Flujo con cambio de fase. Una vez que las condiciones se han dado, la presión de la corriente permanece a la presión de vapor del fluido, formando el vapor una gran burbuja o columna en la línea.

El tamaño de la bolsa de vapor está determinado por el equilibrio entre la presión de vapor, la velocidad del líquido, la tasa de flujo, y el área transversal disponible en el tubo.

Puesto que la formación de la columna es un proceso más o menos gradual, el efecto hidráulico primario en la aparición del Flujo con cambio de fase es una reducción de la tasa de flujo en el segmento de tubo y la estabilización de la presión de la línea.

#### **1.3.4.7. Colapso de Columna.**

Colapso de columna se refiere a la terminación de las condiciones de Flujo con cambio de fase. Una vez que las condiciones de la línea han cambiado suficientemente para traer la presión de flujo de la corriente de fluido por encima de su presión de vapor, la columna de vapor que descansa encima de la corriente de líquido en movimiento se disolverá (colapsará) en la corriente de líquido de la cual evolucionó originalmente.

Dependiendo de la velocidad del cambio de presión, y de las propiedades físicas del fluido, este colapso podrá ser gradual o muy dramático. El colapso súbito de la cavidad de vapor puede producir ondas hidráulicas significativas. En general, los fluidos químicamente puros tienden a producir eventos de colapso más dramáticos.

En particular, y debido a su relativa incompresibilidad, el colapso del vapor de agua en una línea puede producir picos de presión extrema. Corrientes mixtas producen típicamente eventos menos dramáticos puesto que un colapso parcial de la columna de vapor puede ocurrir debido a las diferencias de las presiones de vapor de los gases que lo componen.

#### **1.3.4.8. Cavitación en Válvulas o Bombas.**

Un tiempo común en las operaciones de tuberías de líquidos cuando ocurren condiciones multifásicas es durante las transiciones rápidas de velocidad o altas tasas de flujo, típicamente durante operaciones de bombas o válvulas. Esto resulta en la producción de burbujas o cavidades llenas de vapor en el sitio de la ocurrencia.

La predicción del tiempo de aparición y la duración del evento de cavitación es muy difícil y a menudo requiere de datos considerablemente mayores que los que un ingeniero, modelando una tubería puede proporcionar.

#### **1.3.4.9. Configuraciones grandes**

Los que siguen son algunos consejos para la creación de grandes configuraciones:

Divida el sistema en un número de pequeños sub-sistemas, ingresando y simulando la datos para un sub-sistema a la vez. Esto hará más sencilla la detección de cualquier problema, puesto que puede aislar errores en el grupo que se está utilizando o trabajando. Ingrese la datos para el primer sub-sistema, realice una simulación de estado estacionario, repare o corrija cualquier error, y luego ejecute la simulación de nuevo. Luego, añada el siguiente sub- sistema y repita el proceso.

Haga un respaldo de los grupos intermedios de los archivos de configuración.

#### **1.3.4.10. Cree librerías de archivos de configuración.**

Se puede definir una amplia variedad de tipos de fluidos para ser usados luego con diferentes configuraciones.

#### **1.3.4.11. Acerca de redes de tuberías**



Una red de tuberías es una representación topológica de un sistema de tuberías y elementos acoplados. El sistema de tuberías puede ser un sistema instalado en operación. Puede ser también un sistema diseñado para análisis.

Usando PIPELINESTUDIO, se construye redes de tuberías. Utilizando una área de dibujo sobre la que se añade varios símbolos que representan el equipo real como tubos, válvulas, etc.

Se puede añadir símbolos para elementos de la red y tubos para crear una representación topológica de la red de tuberías.

Una variedad de herramientas, tales como malla y acercamiento, están disponibles para su uso al construir una red de tuberías.

#### **1.3.4.12. Selección de paso de distancia nominal (Discretización).**

El simulador requiere el ingreso de un paso de distancia nominal para disponer una malla de puntos internos, llamados nudos (puntos de Discretización), en los que se resuelven las ecuaciones hidráulicas no lineales.

El posicionamiento de los nudos se ejecuta como sigue. Para tubos largos, el programa calcula el número de nudos por tubo de acuerdo a la fórmula:

Número de nudos =  $1.5 + \text{longitud del tubo} / \text{longitud del paso de distancia nominal}$ .

El número de nudos calculado por esta fórmula es redondeado y rebajado para alcanzar un valor entero. Para segmentos de tubo más cortos, el simulador se asegura de que usted tenga por lo menos cuatro nudos en cada tubo; uno a cada extremo del tubo y dos en el intermedio.

Esto significa que en tubos que son menos de tres veces el intervalo por nudos, el intervalo de nudo realmente utilizado por el simulador es menor que

el valor que usted especificó para el intervalo de nudo preestablecido como estándar.

Típicamente, dependiendo del nivel de exactitud deseado, un paso de distancia nominal de una a cinco millas debería ser suficiente. Sin embargo, para sistemas con tubos relativamente cortos, se debería escoger un paso de distancia tal, que la mayoría de los tubos tengan de cinco a diez nudos internos.

Nótese que esto no es siempre práctico para grandes sistemas, porque, el máximo número de nudos puede ser excedido utilizando estas directrices. En tales casos el sistema debe dividirse en varios subsistemas, o se deberá aceptar una solución menos exacta.

Cuando se selecciona el seguimiento de temperatura, generalmente se requieren que el espaciamiento de nudos sea más pequeño. Esto es porque el seguimiento de temperatura requiere un grado mayor de precisión.

#### **1.3.4.13. Temperaturas de referencia, del sistema, de fluidos y del ambiente**

Para las simulaciones isotérmicas y no-isotérmicas el simulador usa varias temperaturas diferentes dependiendo de las opciones seleccionadas.

#### **1.3.4.14. Temperatura de referencia.**

La temperatura de referencia es la temperatura en las condiciones estándar. Esta es la temperatura a la cual, junto con la presión de referencia, se ingresa y reportan los volúmenes de fluido y las tasas de flujo volumétrico. La temperatura de referencia es un valor que ingresa el usuario y debería estar típicamente entre 15-20 °C [60-68 °F].

#### **1.3.4.15. Temperatura global.**

Con la opción de seguimiento de temperatura no seleccionada la temperatura del fluido es establecida como la de la temperatura global a lo largo de toda la red. Todos los fluidos que ingresen al sistema serán

ajustados a esa temperatura e igualmente se calcularán para ella, todas las propiedades de los fluidos

#### **1.3.4.16. Temperatura de Fluido de suministro.**

Con la opción de seguimiento de temperatura seleccionada, la temperatura de un fluido ingresando al sistema se ajusta a la temperatura de fluido de suministro.

#### **1.3.4.17. Temperatura ambiente de la tubería**

Con la opción de seguimiento de temperatura seleccionada, la temperatura de los alrededores externos a la tubería se ajusta a la temperatura ambiente de la tubería.

#### **1.3.4.18. Seguimiento de Temperatura**

Con la opción de seguimiento de temperatura sin seleccionar el simulador correrá isotérmicamente, es decir, el fluido es ajustado a la temperatura global de fluidos del sistema y no hay pérdida de calor a través de la pared de la tubería. Con la opción de seguimiento de temperatura seleccionada, las temperaturas de los fluidos del suministro se utilizan para calcular la temperatura del fluido dentro de la tubería y el efecto de la pérdida de calor a través de las paredes de la tubería.

#### **1.3.4.19. Seguimiento de temperatura de pared.**

El cálculo de seguimiento de temperatura de pared toma en cuenta el coeficiente de transferencia de calor de la pared del tubo y realiza un cálculo de la distribución de la temperatura radial dentro de la pared en cada nudo.

Dentro de la pared del tubo, que puede estar hecha de varias capas de materiales diferentes, el flujo de calor se modela por conducción radial. La conducción longitudinal dentro de la pared del tubo se ignora.

Se puede habilitar el seguimiento de temperatura de pared si está seleccionada la opción de seguimiento de temperatura. Los datos para la

pared del tubo se ingresan para cada tubo. Sin embargo, los cálculos de temperatura de pared del tubo pueden activarse de uno en uno. La transferencia de calor será entonces modelada utilizando el coeficiente de transferencia de calor calculado a partir de los coeficientes de transferencia de calor y las resistencias térmicas de las paredes del tubo.

El cálculo debe desagregarse aún más, especificando que el tubo tenga cero capas de pared. En este caso, el balance de calor del fluido se realiza usando el coeficiente especificado por el usuario o el coeficiente de transferencia de calor general preestablecido como estándar.

### 1.3.5. FORMULAS DE HIDRÁULICA.

#### 1.3.5.1. Factor de Fricción.

Hay muchas correlaciones de factor de fricción ampliamente usadas. PIPELINESTUDIO tiene las más comúnmente utilizadas.

TLNET soporta el factor de fricción Colebrook-White.

Para flujo laminar:

Si  $Re \leq 2100$

$$f = \frac{64}{Re} \quad (3)$$

Si  $f > 1, f = 1$

Para flujo crítico:

$2100 < Re < R_{max}$

$$f = 0.03e^{3.05396(\log(Re/2313))^2} \quad (4)$$

Dónde:

$R_{max} = 3250$  Si:

$$\varepsilon / D_i < 0.0025$$

$$R_{\max} = 3350 \text{ Si:}$$

$$0.0025 < \varepsilon / D_i < 0.04$$

$$R_{\max} = 3900 \text{ Si:}$$

$$\varepsilon / D_i > 0.04$$

Para flujo completamente turbulento:

$$Re > R_{\max}$$

$$\frac{1}{\sqrt{f}} = -2.1 \log \left( \frac{\varepsilon / D}{3.7} + \frac{2.51}{Re \sqrt{f}} \right) \quad (5)$$

### 1.3.5.2. Calculo de las propiedades termodinámicas del Fluido.

Densidad

$$\rho = \rho_o \text{Exp} \left[ \int_{P_o}^P \frac{1}{BM} dp - \int_{T_o}^T \alpha dT \right] \quad (6)$$

Dónde:

$\rho$  = Densidad del Fluido.

$\rho_o$  = Densidad del Liquido a referencias de Presión y Temperatura.

BM = Coeficiente de compresibilidad.

$\alpha$  = Coeficiente de Expansión Térmica.

Asumiendo que BM y  $\alpha$  son insensitivas a la presión y temperatura respectivamente, la ecuación anterior puede simplificarse así:

$$\rho = \rho_o \text{Exp} \left[ \frac{1}{BM} (P - P_o) - \alpha (T - T_o) \right] \quad (7)$$

### 1.3.5.3. Coeficiente de compresibilidad.

El Coeficiente de compresibilidad de un fluido está definido como el cambio en presión requerido para el cambio de volumen en una unidad, como en

$$BM = -V \left( \frac{dP}{dV} \right)_T \quad (8)$$

La Correlación API Estándar es utilizada si el tipo de fluido es correlación.

$$BM = \text{Exp} (1.99470 - 0.00013427 * T - 0.79392/\rho^2 - 0.0023260 * T/\rho^2) * 100000 \quad (9)$$

Dónde:

BM = Coeficiente de compresibilidad masa-volumen modulus  
psia

T = Temperatura oF

$\rho$  = densidad g/cm<sup>3</sup> a 15.55°C [60°F]

Esta ecuación es válida para hidrocarburos dentro de los siguientes rangos:

Densidad: 1076 a 638.82 Kg/m<sup>3</sup> [0 a 90 °API]

Temperatura: -28.88 a 93.33 °C [-20 a 200 °F]

Presión: 0 a 10,342.17 KPa. [0 a 1500 psia]

Para tipos de fluido suministrados por el Usuario se debe introducir los datos del Coeficiente de compresibilidad en función de la presión y la

temperatura. Para tipos de fluido Auto-generado el programa utiliza la correlación API entre los rangos definidos por el usuario para generar los datos del Coeficiente de compresibilidad los cuales ajustan la correlación definida más adelante. Para líquidos más compresibles, tales como NGL y LPG, se debe especificar como fluidos suministrados por el Usuario.

$$BM = a_0 + a_1 * P + a_2 * \sqrt{T_R} + a_3 * T_R + a_4 * \sqrt{SG} + a_5 * T_R / SG \quad (10)$$

Dónde:

TR	= Temperatura Absoluta	°R	
P	= Presión	KPa	[psia]
SG	= Gravedad Especifica	a 15.55 °C	[60 °F]
$\alpha_i$	= Coeficiente de Ajuste de Curva.		
BM	= Coeficiente de compresibilidad		psi

#### 1.3.5.4. Coeficiente de Expansión Térmica

El coeficiente de expansión térmica de un fluido se define como:

$$\alpha = \frac{1}{V} \left( \frac{dV}{dT} \right)_p \quad (11)$$

$$\alpha = \alpha_0 + 1.6 \alpha_0^2 (T - T_0) \quad (12)$$

$$\alpha_0 = \frac{K_0 + K_1 \rho_0}{\rho_0^2} \quad (13)$$

Dónde:

$\alpha$	= Coeficiente de Expansión Térmica	1/ °C [1/ °F]
T	= Temperatura	°C [°F]

$\rho$  = Densidad de Referencia kg/m<sup>3</sup>

$T_o$  = Temperatura de Referencia °C [°F]

$K_o, K_1$  = Constantes de Correlaciones

Tipo de Líquido	Rango API	$K_o$	$K_1$
Crudo	0 a 100	341.0957	0
Diesel	0 a 37	103.872	0.2701
Jet fuel y kerosén	37 a 48	330.301	0
Jet fuel y gasolina	48 a 52	1489.067	-0.0018684
Gasolina y naphthenes	52 a 85	192.4571	0.2438

$$\alpha_o = \frac{K_o}{\rho_o^2} + K_1$$

Para zona de transición

Esta ecuación es válida para crudos y productos dentro de los siguientes rangos:

Densidad: 1076 a 611.23 Kg/m<sup>3</sup> [0° a 100 °API]

Temperatura: -17.77 a 121.11 °C [0° a 250 °F]

Para tipos de fluido suministrados por el Usuario se debe introducir los datos del Coeficiente de compresibilidad en función de la presión y la temperatura. Para tipos de fluido Auto-generado el programa utiliza la correlación API entre los rangos definidos por el usuario para generar los datos del Coeficiente de compresibilidad. Para líquidos más compresibles, tales como NGL y LPG, se debe especificar como fluidos suministrados por el Usuario.

$$\alpha = a_0 + a_1 * P + a_2 * T_F^2 * \sqrt{P} + a_3 * \sqrt{T_R} + a_4 * T_R + a_5 * \sqrt{SG} \quad (14)$$

Dónde:

$\alpha$  = Coeficiente de Expansión Térmica 1/°C [1/°F]



P	= Presión	KPa [psia]
TF	= Temperatura	°C [°F]
TR	= Temperatura Absoluta	°R
$a_i$	= $i^{\text{th}}$ Coeficiente de Ajuste de Curva	

### 1.3.5.5. Calor específico.

$$C_p = 0.33 + 0.0022 * API + 0.00055 * T \quad (15)$$

Dónde:

$C_p$	= Calor Especifico	BTU/lb/°F
API	= Gravedad Especifica	a 15.55 °C [60 °F]
T	= Temperatura	°C [°F]

Alternativamente, cuando se utiliza datos del fluido suministrados por el usuario, se tiene la opción de introducir datos del calor específico en función de la temperatura y presión. PIPELINESTUDIO ajusta los datos dentro de la siguiente ecuación:

$$C_p = a_0 + a_1 * API + a_2 * \sqrt{T_R} + a_3 * T^{1.5} + a_4 * \sqrt{P} + a_5 * p^{1.5} \quad (16)$$

Dónde:

API	= Gravedad Especifica	a 15.55 °C [60 °F]
TR	= Temperatura Absoluta	°R
P	= Presión	KPa [psia]
$a_i$	= $i^{\text{th}}$ Coeficiente de Ajuste de Curva	

### 1.3.5.6. Viscosidad Líquida

Para fluidos no-compuestos, el programa ajusta los datos de viscosidad a una de las siguientes ecuaciones dependiendo de la clase de fluido:

Para crudos y productos:

$$\ln(\ln(\nu + 0.7)) = a_0 + a_1 \ln(T_R) \quad (17)$$

Para LPGs y NGLs:

$$\ln(\nu) = a_0 + a_1 \ln(T_R) \quad (18)$$

Dónde:

$\nu$  = viscosidad kinematica cSt

$T_R$  = temperatura absoluta °R

$a_i$  =  $i^{\text{th}}$  coeficiente de ajuste de curva

Para fluidos compuestos se usa la correlación de viscosidad líquida de LBC (Lohrenz, Bray y Clark).

$$\mu = \frac{(\phi^4 - 1.0 \times 10^{-4})}{\eta_m} + \mu^* \quad (19)$$

Dónde:

$\mu$  = viscosidad dinámica cP

$$\eta_m = \frac{T_c^{1/6}}{P_c^{2/3} \sqrt{M_w}} \quad (20)$$

$P_c$  = Presión crítica en psia

$T_c$  = Temperatura crítica en °R

$M_w$  = Masa en moles

$$\phi = 0.1023 + 0.023364 \rho_R + 0.058533 \rho_R^2 - 0.040758 \rho_R^3 + 0.0093324 \rho_R^4 \quad (21)$$

$\rho_R$  = Densidad reducida de la mezcla del fluido g/cc

$$\mu^* = \frac{\sum_i \left( \frac{\zeta_i}{\left( \frac{T_{ci}^{1/6}}{P_{ci}^{2/3} \sqrt{M_{wi}}} \right)} X_i \sqrt{M_{wi}} \right)}{\sum_i X_i \sqrt{M_{wi}}} \quad (22)$$

$P_{ci}$  = Presión crítica del componente en KPa [psia]

$T_{ci}$  = Temperatura crítica del componente en °R

$M_{wi}$  = Masa en moles del componente ith

$X_i$  = fracción molar del componente ith

Si la temperatura reducida es menor que 1.5 entonces

$$\zeta_i = 34.0 \times 10^{-5} T_{Ri}^{0.94} \quad (23)$$

De otra manera

$$\zeta_i = 17.78 \times 10^{-5} (4.58 T_{Ri} - 1.67)^{0.625} \quad (24)$$

Cuando dos fluidos o baches se mezclan, la viscosidad de la mezcla se calcula aplicando una ley de potencias de mezcla:

$$v^{\frac{1}{N}} = \sum_i f_i v_i^{\frac{1}{N}} \quad (25)$$

$$f_i = \frac{Q_i}{\sum_i Q_i}$$

Dónde es la fracción de volumen de ith que constituye la mezcla del fluido

Dónde:

$v_i$  = viscosidad cinemática de ith que constituye la mezcla del fluido [ CS ]

$v$  = viscosidad cinemática de la mezcla [ CS ]

$Q_i$  = tasa de flujo volumétrica en las condiciones de la línea de ith que constituye la mezcla del fluido

$N$  = Constante de la ley de mezcla.

### 1.3.5.7. Ecuaciones del MAOP.

En tubería de Acero

$$MAOP = \left( \frac{2 * S * WT}{OD} \right) * F * E * T \quad (26)$$

Dónde:

MAOP = Máxima Presión de Operación del Ducto

S = Tensión Permitida del material del tubo KPa [psia]

WT = Espesor de Pared del Tubo cm [in]

OD = Diámetro externo del Tubo cm [in]

F = Factor de Seguridad de Diseño.

E = Factor de Seguridad para Juntas Longitudinales.

T = Factor de Reducción de la Temperatura.

### 1.3.5.8. Ecuaciones de Agentes Aditivos Reductores (DRA)

El factor de reducción **drag** es un multiplicador directo del factor de fricción calculado por el modelo.

$$f = f_m * (1 - F) \quad (27)$$

Dónde:

$f$  = factor de fricción efectivo

$F$  = factor de reducción drag

$f_m$  = factor de fricción Moody calculado por el modelo

Correlación Burger

$$F = k_1 * \ln \left( \frac{v * \left( \frac{ppm}{c_s} \right)^{0.5}}{d^{0.2}} \right) + k_2 \quad (28)$$

Dónde:

$F$  = factor de reducción drag

$k_1, k_2$  = constantes de ecuación Burger

$v$  = velocidad de fluido local cm/ sec [ft/sec]

$ppm$  = concentración DRA, partes por millón

$c_s$  = viscosidad del fluido centistokes

$d$  = diámetro del tubo cm [ft]

Correlación Conoco

La Correlación Conoco (CDR) tiene la forma:

$$F = \frac{ppm}{(a * ppm + b)} \quad (29)$$

Dónde:

$a, b$  son constantes específicas del producto

Esta correlación DRA está activa solamente para velocidades en exceso de 2 ft/s y números de Reynolds en exceso de 7500.

Correlación Conoco Simplificada

La Correlación Conoco Simplificada tiene la forma

$$F = \frac{ppm}{(A * ppm + B)} \quad (30)$$

Dónde:

$A, B$  son constantes específicas del producto. La ecuación anterior se utiliza directamente con las constantes específicas del producto ingresadas por el usuario.

Correlación Aesop

La Correlación Aesop está en la forma de

$$F = B \left( \frac{AC_e}{1 + AC_e} \right) (1 + C \cdot 10^{-5} N_{Re})$$

$$C_e = e^{-\lambda d} ppm \quad (31)$$

Dónde:

$F$  = Reducción de fricción %

$C_0$  = Base de concentración Aditiva ppm

$C_e$  = Concentración Efectiva de Aditivo ppm

$N_{Re}$  = Número de Reynolds

$d$  = Distancia recorrida km

$\lambda$  = Coeficiente de Degradación

$A$  = Coeficiente Aesop A

$B$  = Coeficiente Aesop B

$C$  = Coeficiente Aesop C

Elemento de Resistencia.

$$Q = K \sqrt{\frac{\Delta P}{\rho}} \quad (32)$$

Dónde:

$Q$  = Tasa de Flujo Volumétrico a Condiciones de Línea.

$\Delta P$  = Caída de Presión a través del dispositivo.

$\rho$  = Densidad.

$K$  = Coeficiente de Resistencia.

### 1.3.5.9. Regulador Externo de Fuga

**NOTA:** La ecuación no toma en cuenta el diámetro del tubo que contiene el orificio o boquete de la fuga; sin embargo, el coeficiente de fuga puede afinarse para simular el comportamiento apropiado.

$$W = 0.525 d^2 \left[ \frac{(P_{line} - P_{amb}) \rho}{C} \right]^{\frac{1}{2}} \quad (33)$$

Dónde:

W	= Tasa de Flujo másico	Kg/ s [lb/s]
d	= Diámetro del orificio	cm [in]
P line	= Entrada de Presión a la línea	Pa [psi]
P amb	= Presión ambiente de la fuga	Pa [psi]
$\rho$	= Densidad	Kg/ cm3 [lb/ft3]
C	= Coeficiente de fuga especificado por el usuario.	

### 1.3.5.10. Bombas centrifugas

Cabezal (altura manométrica) Adiabático

$$H = \frac{P_d}{\rho_d} - \frac{P_s}{\rho_s} \quad (34)$$

Dónde:

H = altura manométrica cm\*Kgf/ Kgm [ft\*lb/ lbf]

$P_s, P_d$  = presión de succión y descarga Kgf /cm2 [lbf/ft2]

$\rho_s, \rho_d$  = densidad de succión y descarga Kg /cm3 [lbm/ft3]

Curvas de Ejecución

Si se ingresan curvas de ejecución, se realiza un ajuste polinómico de las curvas para que:

$$H / \omega^2 = A_H + B_H * (Q / \omega) + C_H * (Q / \omega)^2 + D_H * (Q / \omega)^3 \quad (35)$$

$$\eta = A_\eta + B_\eta * (Q / \omega) + C_\eta * (Q / \omega)^2 + D_\eta * (Q / \omega)^3 \quad (36)$$

Dónde:



AH, BH, CH, DH = Coeficientes de cabezal (altura manométrica) determinados por ajuste polinómico

AE, BE, CE, DE = Coeficientes de eficiencia determinados por ajuste polinómico

Q = Flujo volumétrico real de entrada cm/sec [ft<sup>3</sup>/sec]

$\omega$  = velocidad rev/sec

$\eta$  = Eficiencia adiabática

H = Cabezal (altura manométrica) adiabático cm. Kgf/kgm  
[ft.lbf/lbm]

Potencia Absorbida

$$BPWR = 32.174W * H / \eta \quad (37)$$

Dónde:

W = Tasa de Flujo Másico Kg/sec

BPWR = Potencia Absorbida cm.Kgf/sec

H = Cabezal (altura manométrica) cm.kgf

Temperatura de Descarga de Bombas Genéricas y Centrífugas

$$T_D = T_U + \frac{V_{avg} * \left( \frac{1}{EFF} - 1 \right) (P_D - P_U)}{c_p} \quad (38)$$

Dónde:

TD = Temperatura aguas abajo °C

TU = Temperatura aguas arriba °C

Vavg = Volumen específico promedio	cm <sup>3</sup> /kgm
EFF = Eficiencia mecánica	fraction
PD = Presión aguas abajo	Pa
PU = Presión aguas arriba	Pa
Cp = Capacidad de Calor	cm.kgf/kgm. °C

### 1.3.5.11. Número de Reynolds

El Número de Reynolds es la razón (adimensional) de fuerzas de inercia y fuerzas de viscosidad y es utilizado para determinar si un flujo será laminar o turbulento. El cálculo viene dado por

$$R_e = \frac{vD\rho}{\mu} \quad (39)$$

Dónde:

$D$	= Diámetro del tubo	m
$\rho$	= Densidad de fluido	Kg/m <sup>3</sup>
$v$	= Velocidad de fluido	m/s
$\mu$	= Viscosidad dinámica de fluido	Kg/m/s

## 2. RECOPIACIÓN DE LA INFORMACIÓN.

### 2.1. RECOPIACIÓN Y VALIDACIÓN DE LA INFORMACIÓN DEL LIBRO DE TUBERÍA. (2)

Para recopilar la información entregada por Techint se procedió a solicitar dicha información al departamento de Ingeniería de OCP, obteniéndose el LIBRO DE TUBERÍA, tal como se muestra en el extracto de los cuadros de abajo.

Tabla 1. LIBRO DE TUBERÍA

LEFT WELD	PIPE							
	NUMBER	CODE	BEND				THICKNESS	DIAMETER
HORZ.			DEGREES	VERT.	DEGREES			
U188/FW 19	MOV-04001					11.91	34	3.66
U188/FW 20	PIG R-0401					16	34	10.2
	PIG L-0402					19	32	10.2
U188/FW 21	MOV-04011					19.05	32	3.408
U188/FW 22	BARRED TEE 07					17.48	32	1.194
U188/FW 23	IJ-20007					17.5	32	1.5
U188/FW 24	02403707812230/3					19.05	32	5.32
U188/FW 25	IB 012/01			OVER	30	22.23	32	2.528
U188/FW 26	02403707812230/4					19.05	32	1.82
U188/FW 27	IB 012/02			SAG	30	22.23	32	2.528
U188/FW 28	02403707812230/2					19.05	32	2.6
U188/FW 29	VM-04014					19.05	32	3.404
U188/FW 30	02403709911870					19.05	32	3.25

RIGHT WELD										
NUMBER	REAL CHAINAGE AS-BUILT	UTM COORDINATES		TOP OF PIPE ELEV.	RESTORED PROFILE ELEV.	COVER (m.)	SCALE FACTOR	ALIGNMENT SHEET NUMBER	GIS K2 (HORIZONTAL CHAINAGE)	DESCRIPTION
		NORTH	EAST							
U188/FW 20	185+904.58	9959272.940	822062.860	2862.800			1.000122	2745-L-AS-20211		PIG R-0401/PIG L-0402
U188/FW 21	185+904.58	9959264.923	822063.006	2862.750			1.000122	2745-L-AS-20211		MOV-04011
U188/FW 22	185+907.98	9959264.925	822066.403	2862.740			1.000122	2745-L-AS-20211		BARRED TEE 07
U188/FW 23	185+909.15	9959264.897	822067.573	2862.740			1.000122	2745-L-AS-20211		IJ-20007
U188/FW 24	185+910.66	9959264.909	822069.090	2862.730			1.000122	2745-L-AS-20211		
U188/FW 25	185+915.98	9959264.906	822074.411	2862.740			1.000122	2745-L-AS-20211		
U188/FW 26	185+918.71	9959264.922	822077.005	2862.030			1.000122	2745-L-AS-20211		
U188/FW 27	185+920.52	9959264.930	822078.583	2861.140	2861.199	0.059	1.000122	2745-L-AS-20211		
U188/FW 28	185+923.06	9959264.918	822081.031	2860.450	2861.025	0.575	1.000122	2745-L-AS-20211		
U188/FW 29	185+925.86	9959264.920	822083.631	2860.440	2860.966	0.526	1.000122	2745-L-AS-20211		VM-04014
U188/FW 30	185+929.07	9959264.925	822087.035	2860.430	2860.977	0.547	1.000122	2745-L-AS-20211		
U188/FW 31	185+932.32	9959264.922	822090.285	2860.440	2860.969	0.529	1.000122	2745-L-AS-20211		

Esta información es restringida por OCP, motivo por el cual se procedió a ordenar la información y seleccionar la información que será útil para el presente proyecto. Para esto se borró todas las columnas con información que no se requerían y también se calculó la longitud de la tubería en función de su elevación.

La información que se utilizara para el presente proyecto es:

**El espesor de la tubería:** Que servirá para determinar si el espesor junto con la tensión máxima de la tubería es suficiente para soportar las

presiones de operación del oleoducto y los transientes de presión que se pueden generar en la tubería.

**El diámetro de la Tubería:** Que servirá para determinar la capacidad del oleoducto, las presiones del sistema y las pérdidas que se generan en la Línea.

**La longitud y elevación de la tubería:** Que servirá para determinar el perfil del oleoducto, el mismo que combinado con el diámetro y el espesor de la tubería permitirá iniciar el análisis del oleoducto.

Tabla 2. LIBRO DE TUBERÍA Validado

PIPE			
ESPESOR ( mm )	DIAMETRO ( pulg )	LONGITUD DE LA TUBERIA ( Km - m )	ELEVACION DE LA TUBERIA ( m )
19	32	185.904,58	2.862,75
19,05	32	185.907,98	2.862,74
17,48	32	185.909,15	2.862,74
17,5	32	185.910,66	2.862,73
19,05	32	185.915,98	2.862,74
22,23	32	185.918,71	2.862,03
19,05	32	185.920,52	2.861,14
22,23	32	185.923,06	2.860,45
19,05	32	185.925,66	2.860,44
19,05	32	185.929,07	2.860,43
19,05	32	185.932,32	2.860,44
15,88	32	185.932,66	2.860,43
19,05	32	185.938,66	2.860,43
22,23	32	185.945,57	2.860,39
22,23	32	185.951,42	2.860,31
19,05	32	185.963,38	2.860,34
22,23	32	185.970,76	2.857,95
15,88	32	185.976,08	2.854,11
15,88	32	185.979,21	2.853,08
15,88	32	185.988,30	2.852,23
15,88	32	186.000,68	2.852,28
15,88	32	186.012,94	2.852,32
15,88	32	186.025,32	2.853,19
15,88	32	186.027,81	2.853,41
15,88	32	186.040,14	2.856,52
15,88	32	186.045,04	2.858,24
19,05	32	186.057,29	2.861,29
19,05	32	186.069,43	2.863,10
19,05	32	186.081,42	2.864,76
19,05	32	186.092,20	2.866,42
19,05	32	186.101,95	2.867,77
19,6	32	186.108,34	2.868,00
15,88	32	186.120,67	2.867,54
19,05	32	186.133,01	2.867,35
19,05	32	186.145,41	2.866,91

Toda la información validada del LIBRO DE TUBERÍA se encuentra en el "Anexo A".

## 2.2. RECOPIACIÓN Y VALIDACIÓN DE LA INFORMACIÓN OBTENIDA DURANTE LA CORRIDA DEL CHANCHO INTELIGENTE.

Para recopilar la información de la corrida del chanco inteligente se procedió a solicitar dicha información al departamento de Ingeniería de OCP, obteniéndose toda la información de la corrida de los chancos inteligentes.

Esta información es restringida por OCP, motivo por el cual procedió a ordenar la información y seleccionar la información que será útil para el presente proyecto tal como se muestra en el extracto de los cuadros de abajo.

Tabla 3. Corrida del chanco inteligente

Descripción/Ubicación					Características del Caño		
Item	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
M - 1	Marcador		00.00.00	0,000	X70	12,700	13755
W - 1	Soldadura	10		0,714	X70	12,700	13755
W - 2	Soldadura	20		1,369	X70	12,700	13755
F - 1	Accesorio		20.00.35	1,722	X70	12,700	13755
W - 3	Soldadura	30		2,159	X70	12,700	13755
W - 4	Soldadura	40		2,687	X70	12,700	13755
F - 2	Accesorio		40.00.16	2,847	X70	12,700	13755
W - 5	Soldadura	50		3,175	X70	12,700	13755
W - 6	Soldadura	60		3,896	X70	9,525	13755
F - 3	Accesorio		60.00.51	4,404	X70	9,525	10315
F - 4	Accesorio		60.01.02	4,915	X70	9,525	10315
F - 5	Accesorio		60.07.94	11,831	X70	9,525	10315
F - 6	Accesorio		60.12.17	16,066	X70	9,525	10315
W - 7	Soldadura	70		16,406	X70	9,525	10315
W - 8	Soldadura	80		17,366	X70	9,525	10315
W - 9	Soldadura	90		29,578	X70	9,525	10315
W - 10	Soldadura	100		29,901	X70	9,525	10315
W - 11	Soldadura	110		36,911	X70	9,525	10315
F - 7	Accesorio		110.04.98	41,895	X70	9,525	10315
W - 12	Soldadura	120		49,152	X70	9,525	10315
W - 13	Soldadura	130		61,107	X70	9,525	10315
M - 2	Marcador		130.12.09	73,200	X70	9,525	10315
W - 14	Soldadura	140		73,497	X70	9,525	10315
W - 15	Soldadura	150		85,217	X70	9,525	10315
W - 16	Soldadura	160		95,738	X70	9,525	10315
A - 4	Anomalia		160.06.89	102,629	X70	9,525	10315
A - 5	Anomalia		160.07.00	102,740	X70	9,525	10315
A - 7	Anomalia		160.07.26	103,000	X70	9,525	10315
A - 8	Anomalia		160.07.38	103,116	X70	9,525	10315
W - 17	Soldadura	170		107,653	X70	9,525	10315
A - 9	Anomalia		170.00.52	108,176	X70	9,525	10315
A - 15	Anomalia		170.10.57	118,224	X70	9,525	10315

La información del lanzamiento del chanco se utilizó para determinar el MAOP de la tubería, la tensión máxima de la tubería, el espesor de la tubería y determinar cuál es el factor de seguridad de diseño de la tubería.

Tomando la información de la tabla del lanzamiento del chanco se determinó el factor de seguridad de diseño

Los siguientes son los datos obtenidos:

MAOP = 10350 Kpa. = 1496 psi.

S = 70000 psia.

WT = 9.53 mm = 0,375 in.

OD = 24 in.

Aplicando la fórmula que utiliza el PIPELINESTUDIO para determinar el MAOP de la tubería se calcula el factor de seguridad que será aplicado para determinar el MAOP de todos los tramos de tubería en estudio.

#### Steel pipe

Source: DOT 192.105

$$MAOP = \left( \frac{2 * S * WT}{OD} \right) * F * E * T$$

where:

<b>MAOP</b>	Maximum Operating Pressure (psig)
<i>S</i>	Yield strength of pipe wall material (psia)
<i>WT</i>	Wall thickness of pipe (in)
<i>OD</i>	Outside diameter of pipe (in)
<i>F</i>	Design safety factor
<i>E</i>	Longitudinal joint safety factor
<i>T</i>	Temperature derating factor

Determinándose que el factor de seguridad de diseño de la tubería es de: 0.68

Toda la información validada del lanzamiento del chanco inteligente se encuentra en el “Anexo B1 y B2”.

## **2.3. RECOPIACIÓN DE LA INFORMACIÓN DE LAS DOS FUGAS DE CRUDO PESADO EN LA ESTACIÓN REDUCTORA DE PRESIÓN PUERTO QUITO.**

Para recopilar la información de las fugas que se suscitaron en la estación reductora de Puerto Quito se procedió a investigar y consultar a los implicados como lo es el departamento de Ingeniería y el departamento de operaciones de OCP, llegándose a obtener la siguiente información.

### **2.3.1. PRIMERA FUGA**

El día 9 de febrero del 2008 a las 7h00 el cuarto de control inicia las maniobras para parada normal del oleoducto debido al bloqueo del software del PLC de la estación reductora de Chiquilpe. Durante estas maniobras sale de línea una bomba de la estación de Bombeo de Páramo, siendo la única en línea, el oleoducto entra en condición de parada de emergencia, cerrándose la estación de Puerto Quito, pero no la de Chiquilpe, como está previsto en el sistema, esto ocasiona una presión aproximada de 3200 PSI. Luego En una siguiente etapa a las 09:59 Horas, en las maniobras de arranque del oleoducto se produce el derrame a través de la válvula de drenaje de la válvula de seguridad PSV-07003 la misma que se encuentra a la entrada de la estación.



Grafico 3. Foto del sistema de válvulas de seguridad

### **2.3.2 SEGUNDA FUGA.**

El 17 de noviembre 2008, a las 13:26:37 Se activa la parada de emergencia al pulsar una de las botoneras de parada en el cuarto de control de la estación reductora de Puerto Quito, posteriormente procediéndose a notificar al cuarto de control en Quito. A las 13:27 Se cierra la válvula de emergencia ESDV-07004 a la entrada de la estación puerto Quito. A las 13:30:11 Se registra la Máxima Presión fuera de la estación de 3180 PSI.

A las 13:32 el cuarto de control Quito activa comando de apertura para reinicio de bombeo. A las 13:33:01 Se abre la válvula de emergencia de la estación Puerto Quito ESDV-07004 alcanzando una presión de entrada de 3100 PSI. A las 13:33:45 se dispara la válvula de seguridad PSV-07003, iniciándose inmediatamente el derrame de crudo. A las 13:34:03 Se desprende parte del cuerpo de la válvula de drenaje. A las 13:34 el Supervisor de la estación pulsa la parada de emergencia local. A las 13:35:47 Se cierra válvula manual de corte de la PSV-07003, la presión a la entrada era de 2928 PSI.

## **2.4. CREACIÓN DE LA BASE DE DATOS DE LA INFORMACIÓN QUE SE UTILIZARA PARA REALIZAR EL MODELAMIENTO DEL TRAMO EN ESTUDIO.**

Para elaborar la base de datos que se utilizara para realizar el modelamiento del tramo en estudio se procedió a:

- Comparar la información entregado por Techint “LIBRO DE TUBERÍA” y la información obtenida durante el lanzamiento del chanco inteligente.
- Determinar la longitud acumulada de la tubería versus la elevación de la tubería
- Clasificar la tubería de acuerdo a su espesor y longitud del tramo.
- Clasificar la tubería por su diámetro y tramo



- Corregir las elevaciones que no coincidían con la longitud de la tubería
- Unir la información del LIBRO DE TUBERÍA y la información de la corrida del chancho inteligente en un solo archivo obteniéndose la siguiente información tal cual se muestra en el extracto de información del cuadro de abajo.

Tabla 4. Base de datos final

NOMBRE DE LA TUBERIA RELACIONADA DE PIPELINE STUDIO	DIAMETRO ( pulg )	LONGITUD DE CADA TUBO ( m )	ESPESOR ( mm )	LONGITUD DE LA TUBERIA ( m )	ELEVACION DE LA TUBERIA ( m )	LONGITUD DEL TRAMO (m)
EQUIPO	32	10.2	19	0.00	2862.75	
EQUIPO	32	3.408	19.05	0.00	2862.74	20.89
EQUIPO	32	1.194	17.48	1.19	2862.74	
EQUIPO	32	1.5	17.5	2.69	2862.73	
L1	32	5.32	19.05	8.01	2862.74	
EQUIPO	32	2.528	22.23	10.54	2862.03	
L1	32	1.82	19.05	12.36	2861.14	
EQUIPO	32	2.528	22.23	14.89	2860.45	
L1	32.00	2.60	19.05	17.49	2860.44	
VALVULA	32.00	3.40	19.05	20.89	2860.43	
L2	32.00	3.25	19.05	24.14	2860.44	42.15
EQUIPO	32.00	0.35	15.88	24.49	2860.43	
L2	32.00	6.00	19.05	30.49	2860.43	
EQUIPO	32.00	7.38	22.23	37.88	2860.39	
EQUIPO	32.00	5.82	22.23	43.70	2860.31	
L2	32.00	11.96	19.05	55.66	2860.34	
EQUIPO	32.00	7.38	22.23	63.05	2857.95	
L3	32.00	5.32	15.88	68.37	2854.11	74.28
EQUIPO	32.00	3.13	15.88	71.49	2853.08	
L3	32.00	9.09	15.88	80.58	2852.23	
L3	32.00	12.39	15.88	92.97	2852.28	
L3	32.00	12.26	15.88	105.23	2852.32	
L3	32.00	12.38	15.88	117.61	2853.19	

Toda la base de datos que se utilizara para realizar el modelamiento del tramo en estudio se encuentra en el “Anexo C”.

### **3. MODELAMIENTO.**

El modelamiento y análisis del tramo Páramo – Puerto Quito se divide en dos tramos “Tramo 1: Páramo-Chiquilpe, Tramo 2: Chiquilpe-Puerto Quito”, debido a que la cantidad de información de las características técnicas de la tubería del tramo Páramo - Puerto Quito sobrepasa la capacidad del sistema PIPELINESTUDIO.

#### **3.1. CREACIÓN DEL MODELO EN EL SISTEMA PIPELINESTUDIO.**

Para crear el modelo en PIPELINESTUDIO se deben seguir los siguientes pasos:

1. Crear la fuente de entrada: Para crear la fuente de entrada se debe escoger del menú de equipos el equipo suministro y luego arrastrarlo hasta la hoja de trabajo.

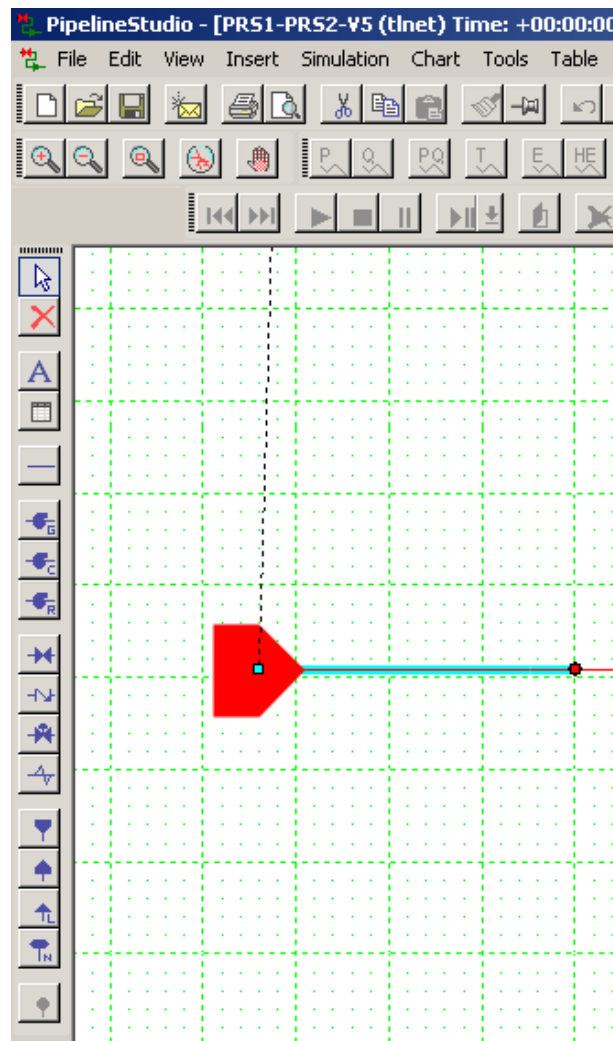


Grafico 4. Entrada del modelo base

Posteriormente se debe dar doble clic en el equipo para desplegar la pantalla de características en la cual procedemos a subir la información de: Temperatura del fluido, Máximo flujo, Máxima presión, Mínima presión y el modo de control a la entrada del oleoducto.

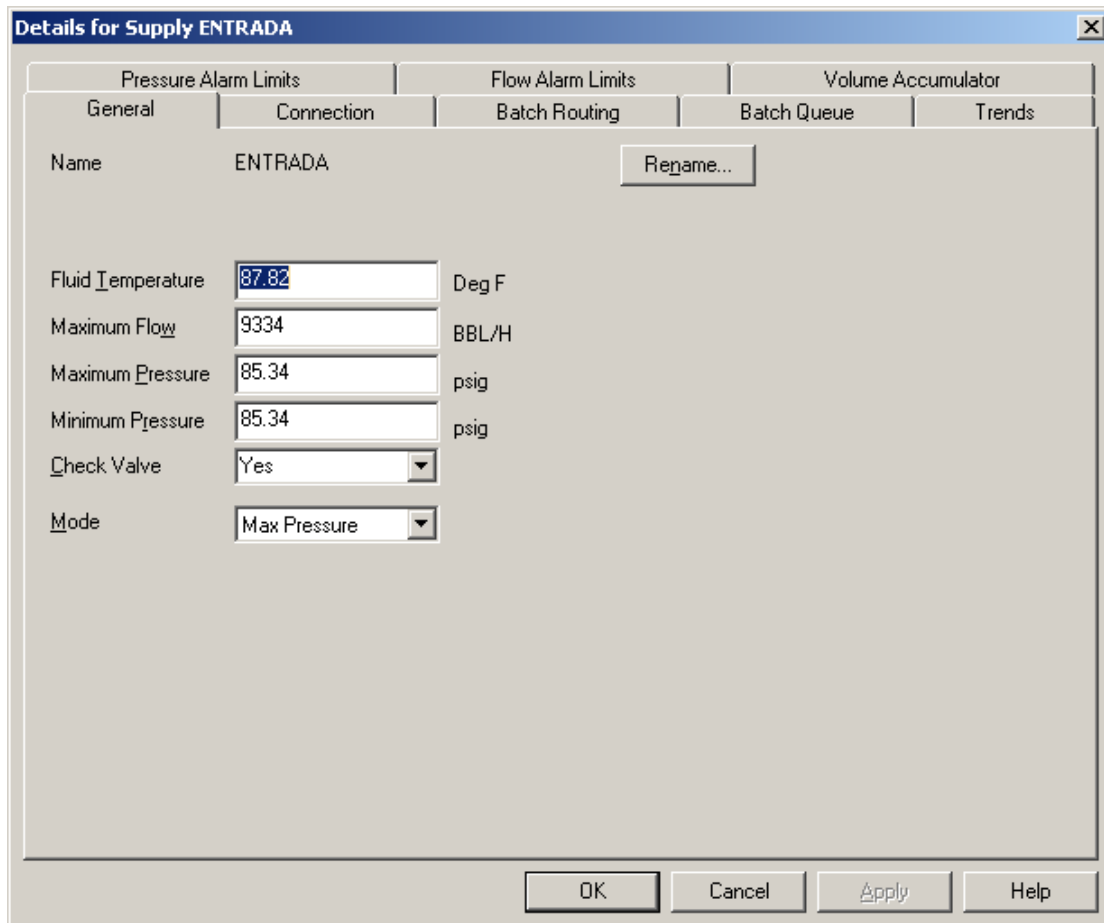


Grafico 5. Características de la entrada del modelo base

2. Crear la tubería y/o tramos de tubería: Para crear la tubería se debe escoger del menú de equipos el equipo tubo y luego arrástralo hasta la hoja de trabajo.

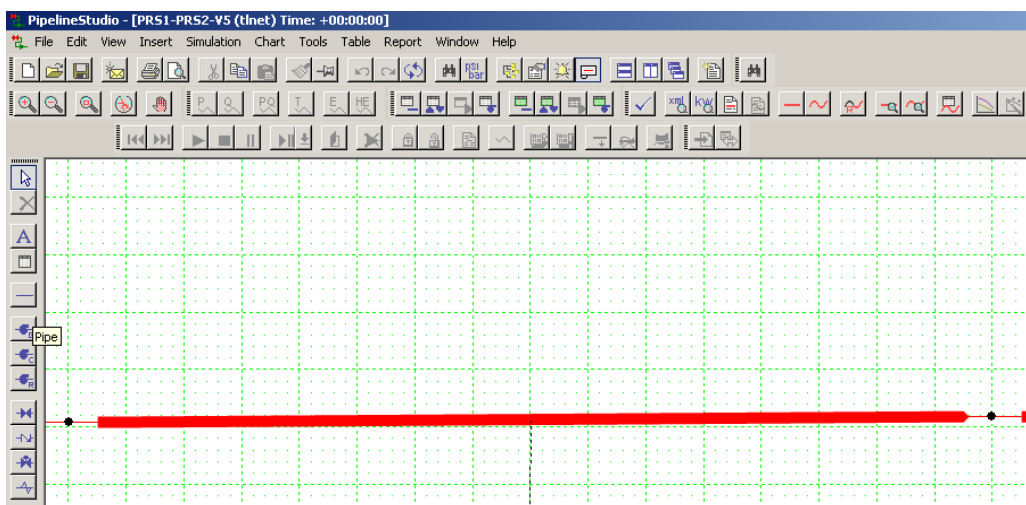


Grafico 6. Tubería del modelo base

Posteriormente se debe dar doble clic en el tubo para desplegar la pantalla de características en la cual procedemos a subir la información de: Diámetro interno de la tubería, longitud, espesor, rugosidad, la distancia del nodo donde se realizaran los cálculos, y también se procede a subir el perfil de la tubería.

Heat Transfer Data		Velocity Alarm Limits		Trends			
General		Survey		Connections		Wall layers	
Name	L1			Rename...			
Diameter (inside)	22.86	in					
Length	2316.77	m					
Wall Thickness	9.53	mm					
Roughness	0.0024	in					
Knot spacing	50	m					
Youngs Modulus	2.90111e+007	psia					
Thermal Expansion	1e-005	1/Deg F		Use as Initial			
MAOP							
Method	Steel	2068.64		psig			
Calculation Parameters							
Steel Yield Stress	70000	psia					
Plastic Yield Stress	76.3889	psia					
Safety Factor	0.68						

Grafico 7. Características de la tubería del modelo base

Details for Survey Survey-L1

General

Name: Survey-L1 Rename...

Number of points: 198

Survey Date: Ago 5, 2010 12:24:22

	Mile Post	Elevation
	m	m
1	0	2962.84
2	1.5	2962.84
3	2.36	2962.84
4	14.77	2960.8
5	15.7	2960.51
6	28	2958.81
7	28.31	2958.81
8	35.48	2958.84
9	47.84	2960.94
10	59.86	2966.33
11	72.21	2971.59
12	84.02	2972.87
13	94.08	2971.93
14	106.01	2971.83
15	118.36	2972.16
16	130.75	2974.08
17	143.09	2977.69
18	155.32	2981.51

Delete Row(s)  
Insert Row  
Import...  
Export...  
Sort  
Offset Milepost  
Offset Elevation  
Profile

OK Cancel Apply Help

Grafico 8. Perfil de la tubería del modelo base

3. Crear todas las válvulas de bloqueo: Para crear las válvulas de bloqueo se debe escoger del menú de equipos la válvula de bloqueo y luego arrástrala hasta la hoja de trabajo.

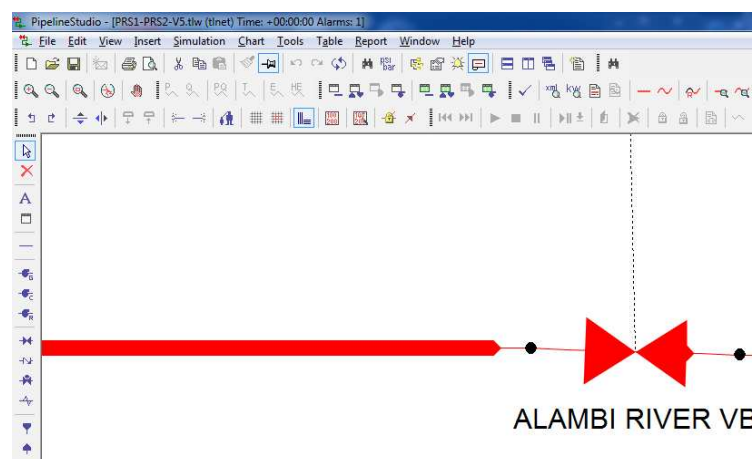


Grafico 9. Válvula de bloqueo del modelo base

Posteriormente se debe dar doble clic en la válvula de bloqueo para desplegar la pantalla de características en la cual procedemos a subir la información de: El diámetro de la válvula, el porcentaje de apertura de la misma, el CV

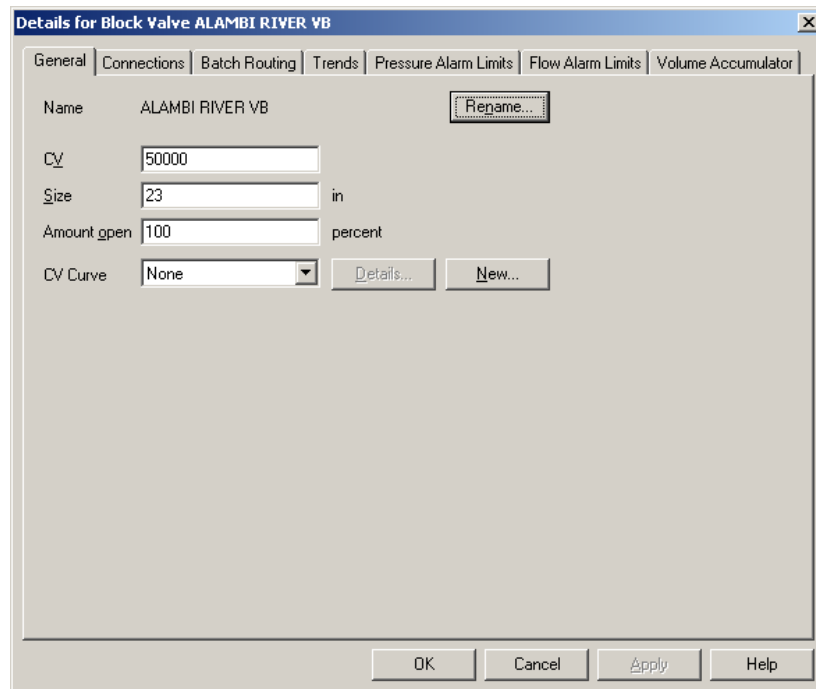


Grafico 10. Características de la válvula de bloqueo del modelo base

4. Crear todas las válvulas check: Para crear las válvulas check se debe escoger del menú de equipos la válvula check y luego arrástrala hasta la hoja de trabajo.

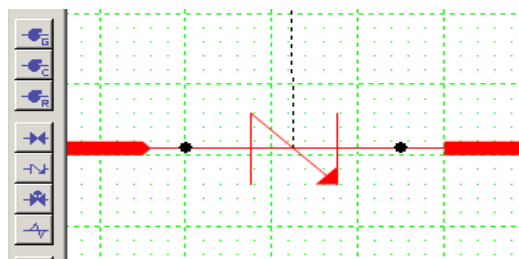


Grafico 11. Válvula check del modelo base

Posteriormente se debe dar doble clic en la válvula check para desplegar la pantalla de características en la cual procedemos a subir la información de: Diámetro de la válvula y el CV.

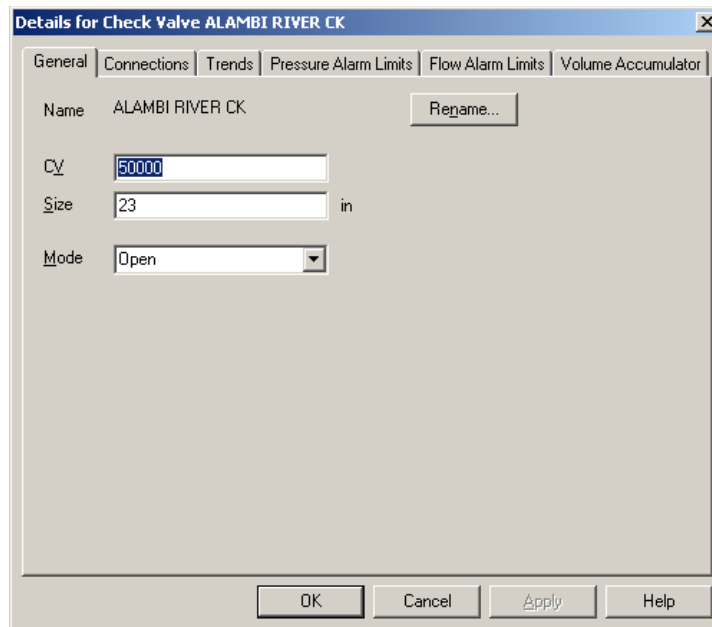


Grafico 12. Características de la válvula check del modelo base

5. Crear las válvulas reguladora de presión: Para crear las válvulas reguladoras de presión se debe escoger del menú de equipos la válvula reguladora y luego arrástrala hasta la hoja de trabajo.

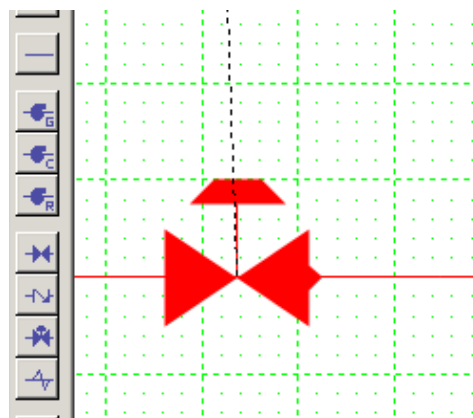


Grafico 13. Válvula reductora de presión del modelo base



Posteriormente se debe dar doble clic en la válvula reguladora para desplegar la pantalla de características en la cual procedemos a subir la información de: Diámetro de la válvula, máxima presión aguas abajo, mínima presión aguas arriba, máximo flujo, el CV y el modo de control.

Grafico 14. Características de la válvula reductora de presión del modelo base

6. Crear la entrega del tramo: Para crear la entrega se debe escoger del menú de equipos la entrega y luego arrástrala hasta la hoja de trabajo.

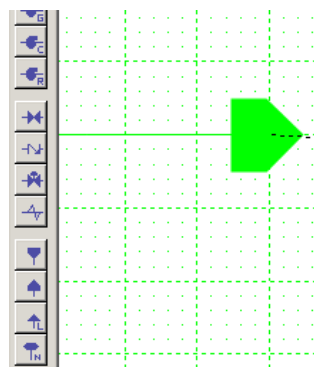


Grafico 15. Entrega del modelo base

Posteriormente se debe dar doble clic en la entrega para desplegar la pantalla de características en la cual procedemos a subir la información de: Máximo flujo, máxima presión, mínima presión y el modo de control.

The image shows a software dialog box titled "Details for Delivery SALIDA". It has several tabs: "General", "Connection", "Batch Routing", "Trends", "Pressure Alarm Limits", "Flow Alarm Limits", and "Volume Accumulator". The "General" tab is selected. Inside the dialog, there are several input fields and dropdown menus:

- Name:** SALIDA, with a "Rename..." button next to it.
- Maximum Flow:** 9334, with units "BBL/H".
- Maximum Pressure:** 168, with units "psig".
- Minimum Pressure:** 168, with units "psig".
- Check Valve:** Yes (dropdown menu).
- Mode:** Max Pressure (dropdown menu).

At the bottom of the dialog, there are four buttons: "OK", "Cancel", "Apply", and "Help".

Grafico 16. Entrega del modelo base

7. Asignar bloque de información de cada elemento: Para crear el bloque de información de cada elemento, se debe señalar cada elemento y se procede a seleccionar Datos block en el menú Insert.

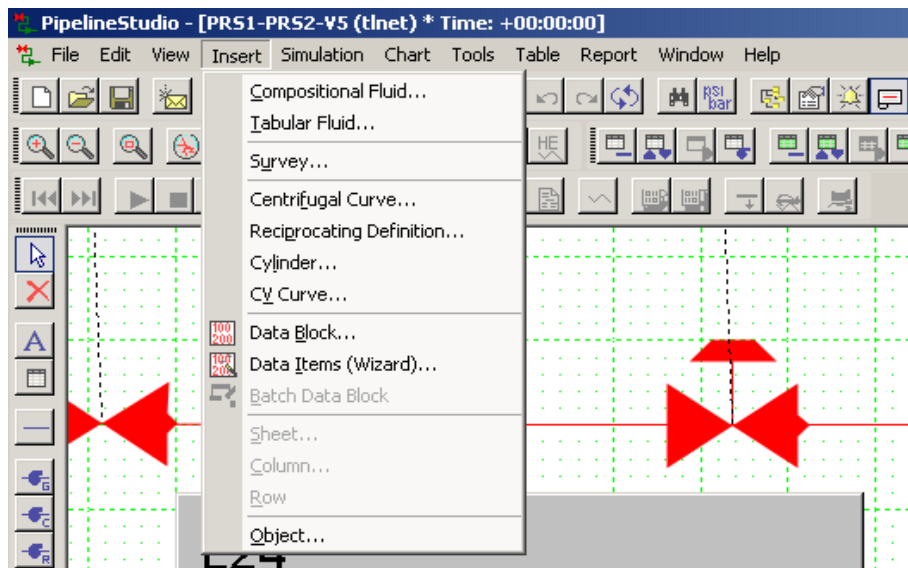


Grafico 17. Selección del bloque de datos del modelo base

Posteriormente se procede a seleccionar todas las características técnicas que queremos visualizar de cada elemento.

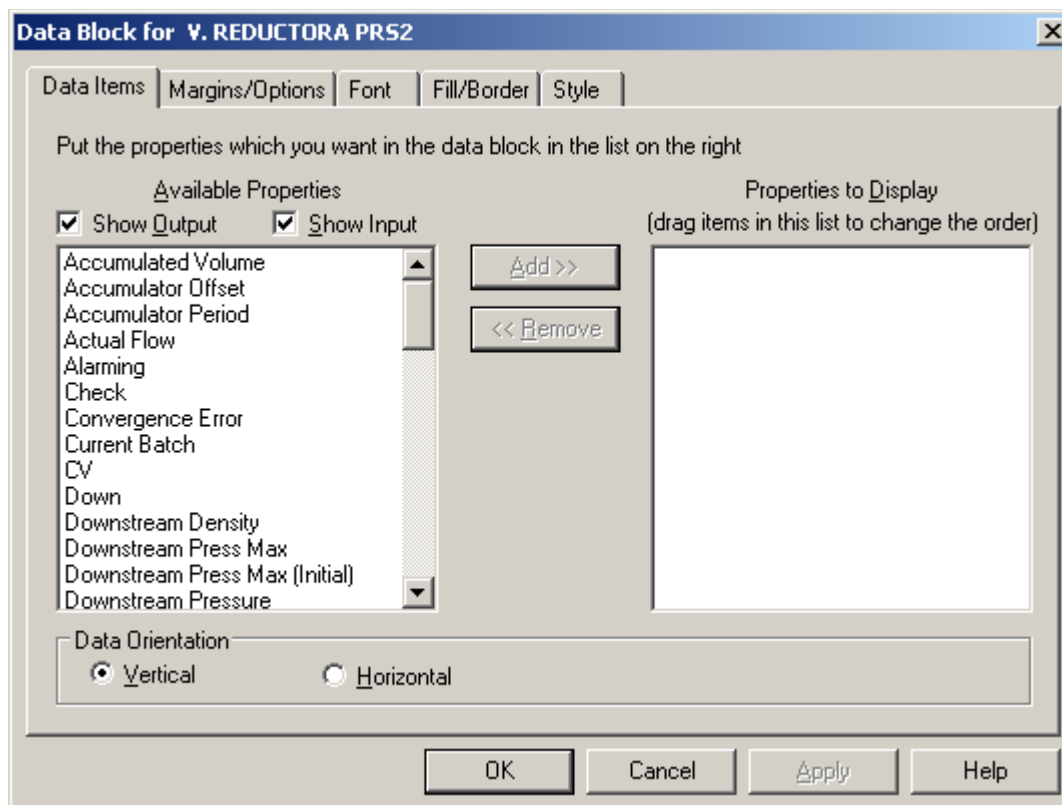


Grafico 18. Bloque de datos del modelo base

### 3.1.1. Modelo Páramo - Chiquilpe

El primer modelo va desde la estación de bombeo Páramo hasta la estación reductora de presión Chiquilpe.

Este modelo requirió de:

- 1 entrada

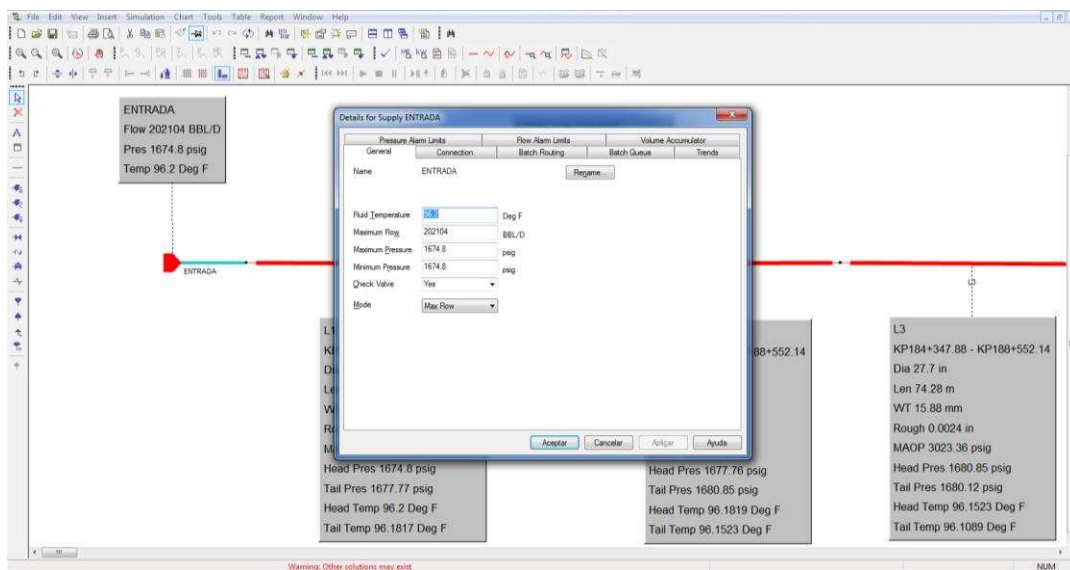


Grafico 19. Entrada del modelo Paramo - Chiquilpe

- 1 salida

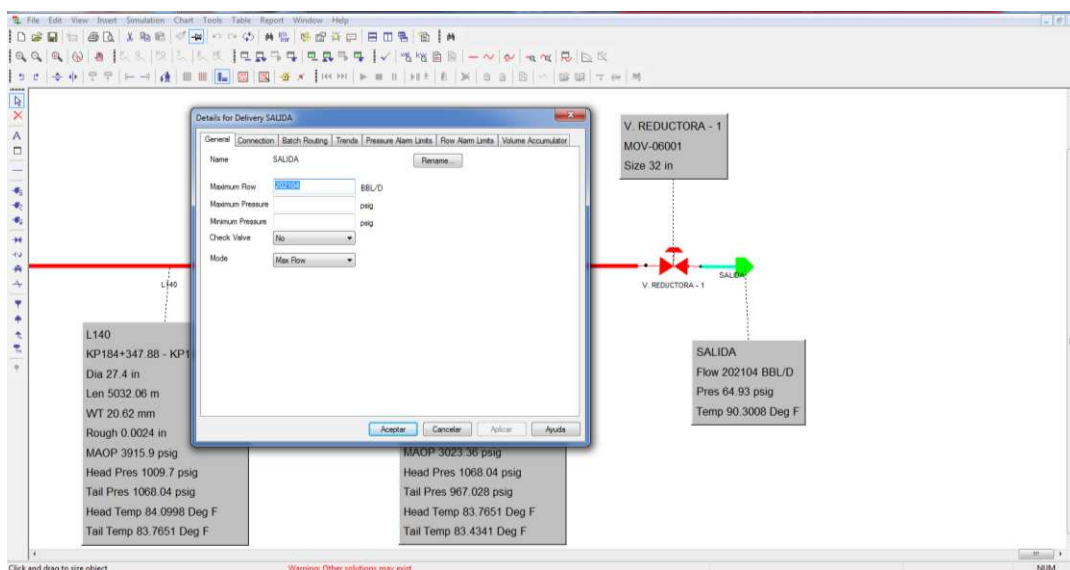


Grafico 20. Salida del modelo Paramo - Chiquilpe

- 6 Válvulas de bloqueo

PipelineStudio - [PS4-PRS1-V16.tlw (tinet):2 - ValvesResis Time: 10:35:53]

	Name	Up	Down	CV	% open (Initial)	Size	CV Curve	Text1
Initial	Blkv			50000	100	24	None	
Units					percent	in		
0001	CUCHAUC...	Node0149-4	Node0007	50000	100	29	None	V. BLOQU...
0002	YARUQUI ...	Node0156...	Node0009	50000	100	29	None	V. BLOQU...
0003	YARUQUI ...	Node0203-2	Node0011	50000	100	29	None	V. BLOQU...
0004	GUAYLLA...	Node0206-4	Node0013	50000	100	29	None	V. BLOQU...
0005	POMASQUI...	Node0214-7	Node0017	50000	100	29	None	V. BLOQU...
0006	ESTACION ...	Node0033	Node0036	50000	100	29	None	VALVULA ...

Grafico 21. Válvulas de bloqueo del modelo Paramo - Chiquilpe

- 4 Válvulas check

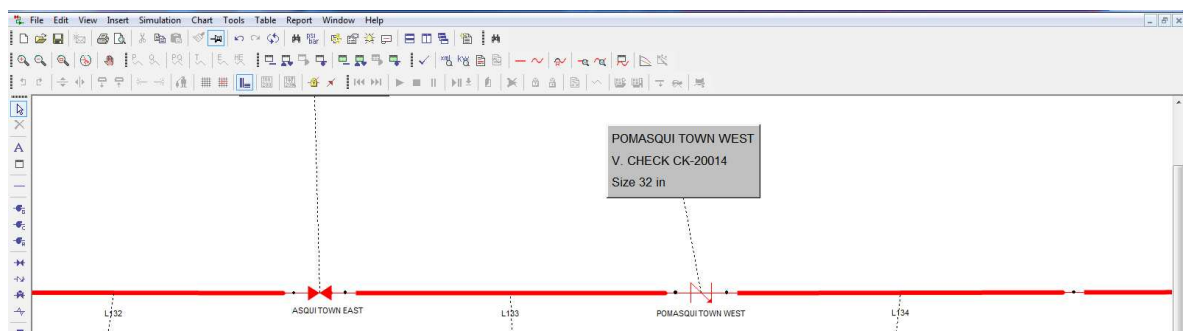


Grafico 22. Válvulas check del modelo Paramo - Chiquilpe

- 1 Válvula reductora

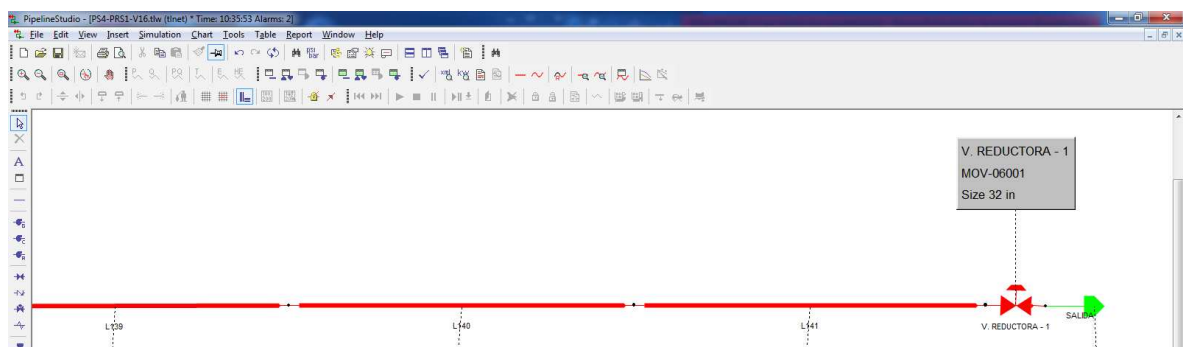


Grafico 23. Válvulas reductora de presión del modelo Paramo - Chiquilpe



○ 103 tramos de tubería con diferente espesor

Initial Pipe	Name	Up	Down	Length	Diameter	Wall Thickness	Roughness	Knot Spacing	Youngs Modulus	Thermal Expansion Coeff.	MAOP	Yield Safety Factor	Steel Yield Stress	Text1
				1609.34	12	12.7	0.001	1609.34	2.90111e+007	1e-005		0.72	166.667	
				m	in	mm	in	m	psia	1/Deg F	psig		psia	
0001	L1	Node0001	Node0033	20.89	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0002	L2	Node0036	Node0034	42.15	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0003	L3	Node0034	Node0038	74.28	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0004	L4	Node0038	Node0039	63.17	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0005	L5	Node0039	Node0040	12.29	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0006	L6	Node0040	Node0041	36.67	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0007	L7	Node0041	Node0042	2958.55	27.7	15.88	0.0024	50	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0008	L8	Node0042	Node0043	1138.32	27.9	14.27	0.0024	50	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0009	L13	Node0003	Node0049	746.86	27.9	14.27	0.0024	50	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0010	L14	Node0049	Node0050	2669.1	28.1	11.91	0.0024	50	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0011	L16	Node0050	Node0052	1049.76	27.7	15.88	0.0024	50	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0012	L18	Node0052	Node0053	321.27	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0013	L20	Node0053	Node0054	419.86	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0014	L21	Node0054	Node0055	89.32	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0015	L24	Node0005	Node0060	1149.33	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0016	L29	Node0060	Node0062	23.76	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0017	L30	Node0062	Node0063	47.38	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0018	L31	Node0063	Node0065	1086.49	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0019	L34	Node0065	Node0066	12.35	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0020	L35	Node0066	Node0067	22.455	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0021	L36	Node0067	Node0072	1398.34	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0022	L37	Node0072	Node0073	37.03	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0023	L38	Node0073	Node0074	24.69	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0024	L39	Node0074	Node0075	12.37	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0025	L40	Node0075	Node0076	37.12	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0026	L41	Node0076	Node0077	12.33	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0027	L42	Node0077	Node0078	73.81	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0028	L43	Node0078	Node0079	29.99	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0029	L44	Node0079	Node0080	12.02	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0030	L45	Node0080	Node0082	12.35	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0031	L46	Node0082	Node0083	12.45	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0032	L47	Node0083	Node0084	190.77	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0033	L48	Node0084	Node0085	24.24	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0034	L49	Node0085	Node0086	15.25	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0035	L50	Node0086	Node0090	24.81	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0036	L51	Node0090	Node0095	483.16	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0037	L52	Node0095	Node0095-2	24.7	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0038	L53	Node0095-2	Node0095-3	231.89	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0039	L54	Node0095-3	Node0095-4	37.55	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...

Initial Pipe	Name	Up	Down	Length	Diameter	Wall Thickness	Roughness	Knot Spacing	Youngs Modulus	Thermal Expansion Coeff.	MAOP	Yield Safety Factor	Steel Yield Stress	Text1
				1609.34	12	12.7	0.001	1609.34	2.90111e+007	1e-005		0.72	166.667	
				m	in	mm	in	m	psia	1/Deg F	psig		psia	
0040	L55	Node0095-4	Node0095-5	594.19	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0041	L56	Node0095-5	Node0090...	24.63	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0042	L57	Node0090...	Node0095-7	863	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0043	L58	Node0095-7	Node0095-8	11.38	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0044	L59	Node0095-8	Node0090...	12.37	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0045	L70	Node0090...	Node0095...	299.22	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0046	L71	Node0095...	Node0095...	147.31	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0047	L72	Node0095...	Node0095...	1078.46	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0048	L73	Node0095...	Node0095...	23.4	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0049	L74	Node0095...	Node0095...	129.29	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0050	L75	Node0095...	Node0122...	35.61	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0051	L76	Node0122...	Node0122-2	84.05	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0052	L77	Node0122-2	Node0122-3	24.88	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0053	L78	Node0122-3	Node0122-4	16.2	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0054	L79	Node0122-4	Node0122-5	11.42	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0055	L80	Node0122-5	Node0122-6	24.57	28.3	8.74	0.0024	5	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0056	L81	Node0122-6	Node0122-8	97.61	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0057	L82	Node0122-8	Node0122...	1705.85	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0058	L83	Node0122...	Node0122...	152.35	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0059	L84	Node0122...	Node0122...	308.33	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0060	L85	Node0122...	Node0122...	2916.08	28.3	8.74	0.0024	50	2.90111e+007	1e-005	1661.82	1	70000	KP184+34...
0061	L92	Node0122...	Node0122...	737.65	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0062	L93	Node0122...	Node0122...	12.43	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0063	L94	Node0122...	Node0122...	24.45	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0064	L95	Node0122...	Node0122-7	12.24	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0065	L96	Node0122-7	Node0149-2	33.67	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0066	L97	Node0149-2	Node0149-3	49.94	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0067	L98	Node0149-3	Node0149-4	993.07	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0068	L99	Node0007	Node0156	903.5	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0069	L100	Node0156	Node0156-2	3876	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0070	L107	Node0156-2	Node0156-3	313.25	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0071	L108	Node0156-3	Node0156-4	73.08	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0072	L109	Node0156-4	Node0156-5	10.13	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0073	L110	Node0156-5	Node0156-7	18.38	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0074	L111	Node0156-7	Node0156-9	12.35	2									

PipelineStudio - [PS4-PRS1-V16.tlw (tinet)-2 \* - Pipes Time: 10:35:53]

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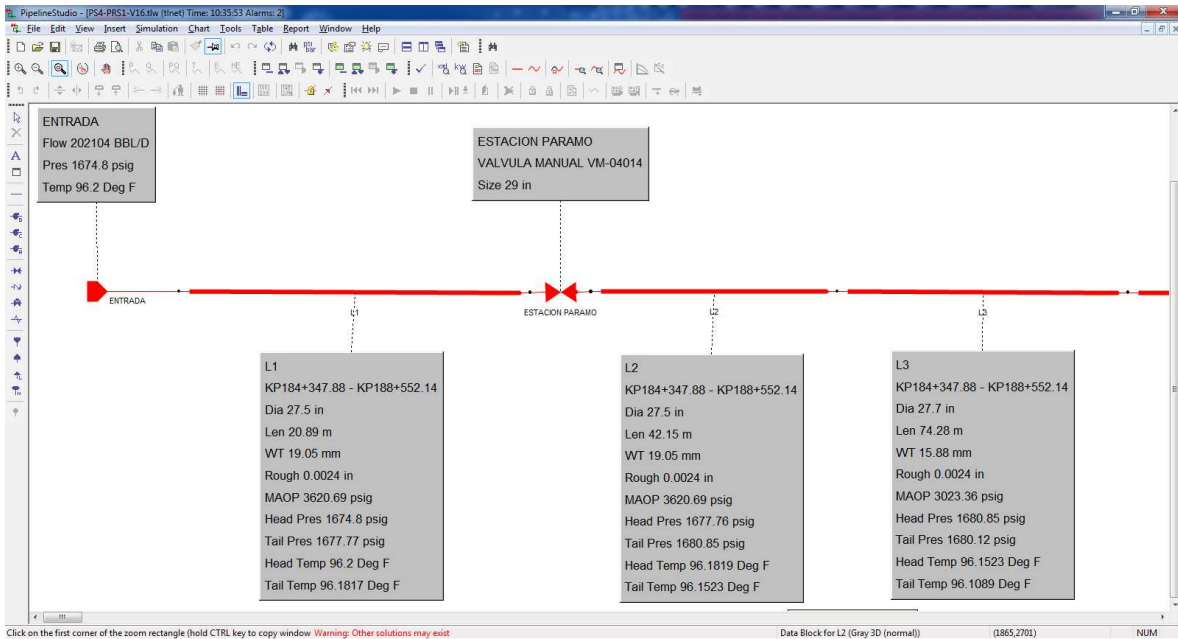
Initial	Pipe	Up	Down	Length	Diameter (inside)	Wall Thickness	Roughness	Knot Spacing	Youngs Modulus	Thermal Expansion Coeff.	MAOP	Yield Safety Factor	Steel Yield Stress	Text1
				1609.34	12	12.7	0.001	1609.34	2.90111e+007	1e-005		0.72	166.667	
Units				m	in	mm	in	m	psia	1/Deg F	psig		psia	
0066	L97	Node0149-2	Node0149-3	49.94	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0067	L98	Node0149-3	Node0149-4	993.07	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0068	L99	Node0007	Node0156	903.5	28.2	9.53	0.0024	5	2.90111e+007	1e-005	1814.4	1	70000	KP184+34...
0069	L100	Node0156	Node0156-2	3876	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0070	L107	Node0156-2	Node0156-3	313.25	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0071	L108	Node0156-3	Node0156-4	73.08	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0072	L109	Node0156-4	Node0156-5	10.13	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0073	L110	Node0156-5	Node0156-7	18.38	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0074	L111	Node0156-7	Node0156-9	12.35	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0075	L112	Node0156-9	Node0156...	115.16	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0076	L114	Node0156...	Node0156...	33.28	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0077	L115	Node0156...	Node0156...	108.67	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0078	L116	Node0156...	Node0156...	49.53	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0079	L117	Node0156...	Node0156...	5163.68	28.1	11.91	0.0024	5	2.90111e+007	1e-005	2260.7	1	70000	KP184+34...
0080	L118	Node0156...	Node0156...	417.9	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0081	L119	Node0156...	Node0156...	1553.35	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0082	L120	Node0156...	Node0156...	1487.79	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0083	L121	Node0009	Node0203	2036.88	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0084	L122	Node0203	Node0202	2647.13	27.4	20.62	0.0024	5	2.90111e+007	1e-005	3915.9	1	70000	KP184+34...
0085	L123	Node0011	Node0011-2	3618.21	27.4	20.62	0.0024	5	2.90111e+007	1e-005	3915.9	1	70000	KP184+34...
0086	L124	Node0011-2	Node0011-3	108.86	27.2	22.23	0.0024	5	2.90111e+007	1e-005	4232.33	1	70000	KP184+34...
0087	L125	Node0011-3	Node0206-3	6911.64	27.1	23.83	0.0024	5	2.90111e+007	1e-005	4532.88	1	70000	KP184+34...
0088	L126	Node0206-3	Node0206-4	174.06	26.9	26.97	0.0024	5	2.90111e+007	1e-005	5121.81	1	70000	KP184+34...
0089	L127	Node0013	Node0213	584.99	26.9	26.97	0.0024	5	2.90111e+007	1e-005	5121.81	1	70000	KP184+34...
0090	L128	Node0015	Node0214	722.96	26.9	26.97	0.0024	5	2.90111e+007	1e-005	5121.81	1	70000	KP184+34...
0091	L129	Node0214	Node0214-2	2335.14	27.1	23.83	0.0024	5	2.90111e+007	1e-005	4532.88	1	70000	KP184+34...
0092	L130	Node0214-2	Node0214-3	24.51	27.2	22.23	0.0024	5	2.90111e+007	1e-005	4232.33	1	70000	KP184+34...
0093	L131	Node0214-3	Node0214-5	5855.51	27.5	19.05	0.0024	5	2.90111e+007	1e-005	3620.69	1	70000	KP184+34...
0094	L132	Node0214-5	Node0214-7	1861.76	27.2	22.23	0.0024	5	2.90111e+007	1e-005	4232.33	1	70000	KP184+34...
0095	L133	Node0017	Node0018	1515.64	27.2	22.23	0.0024	5	2.90111e+007	1e-005	4232.33	1	70000	KP184+34...
0096	L134	Node0019	Node0019-2	1178.46	27.2	22.23	0.0024	5	2.90111e+007	1e-005	4232.33	1	70000	KP184+34...
0097	L135	Node0019-2	Node0019-3	2978.51	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0098	L136	Node0019-3	Node0019-4	1121.3	28.1	11.13	0.0024	5	2.90111e+007	1e-005	2177.12	1	70000	KP184+34...
0099	L137	Node0019-4	Node0019-5	32.46	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...
0100	L138	Node0019-5	Node0019-6	2181.06	28.1	11.13	0.0024	5	2.90111e+007	1e-005	2177.12	1	70000	KP184+34...
0101	L139	Node0019-6	Node0019-7	4190.89	27.9	14.27	0.0024	5	2.90111e+007	1e-005	2709.98	1	70000	KP184+34...
0102	L140	Node0019-7	Node0225-7	5032.06	27.4	20.62	0.0024	5	2.90111e+007	1e-005	3915.9	1	70000	KP184+34...
0103	L141	Node0225-7	Node0225-8	4782.61	27.7	15.88	0.0024	5	2.90111e+007	1e-005	3023.36	1	70000	KP184+34...

Basic Wall Data Heat Transfer Available Wall Layers MAOP

Warning: Other solutions may exist

Gráfico 24. Tubería del modelo Paramo - Chiquilpe

- El modelo gráficamente quedo de la siguiente forma:





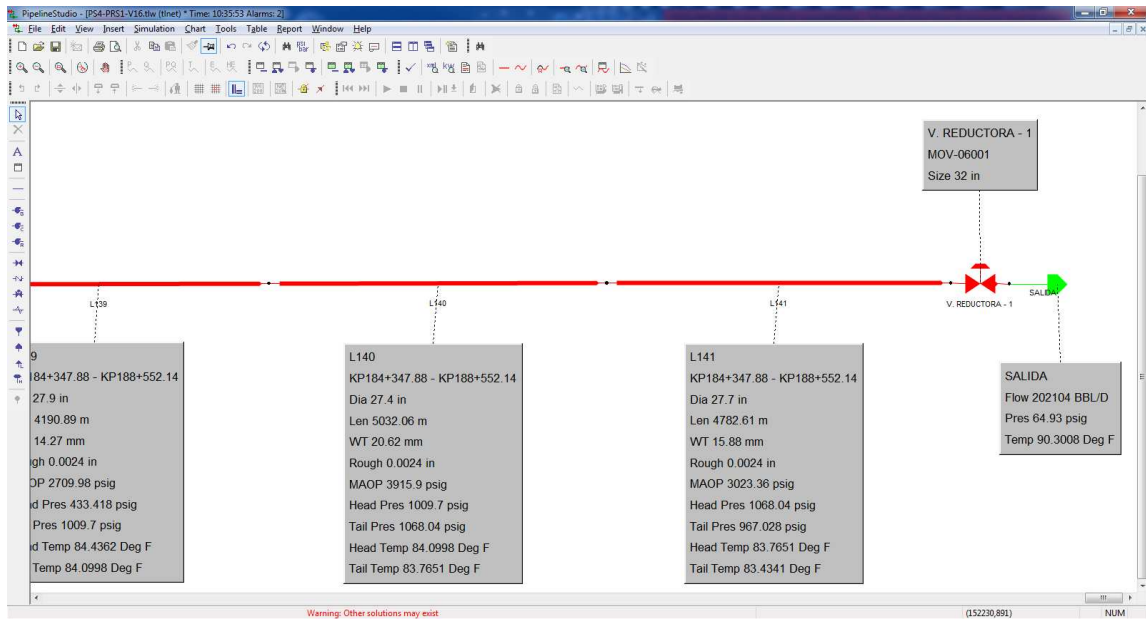


Gráfico 25. Modelo Páramo – Chiquilpe

### 3.1.2. Modelo Chiquilpe-Puerto Quito

El segundo modelo va desde la estación reductora de presión Chiquilpe hasta la estación reductora de presión Puerto Quito.

Este modelo requirió de

- 1 entrada

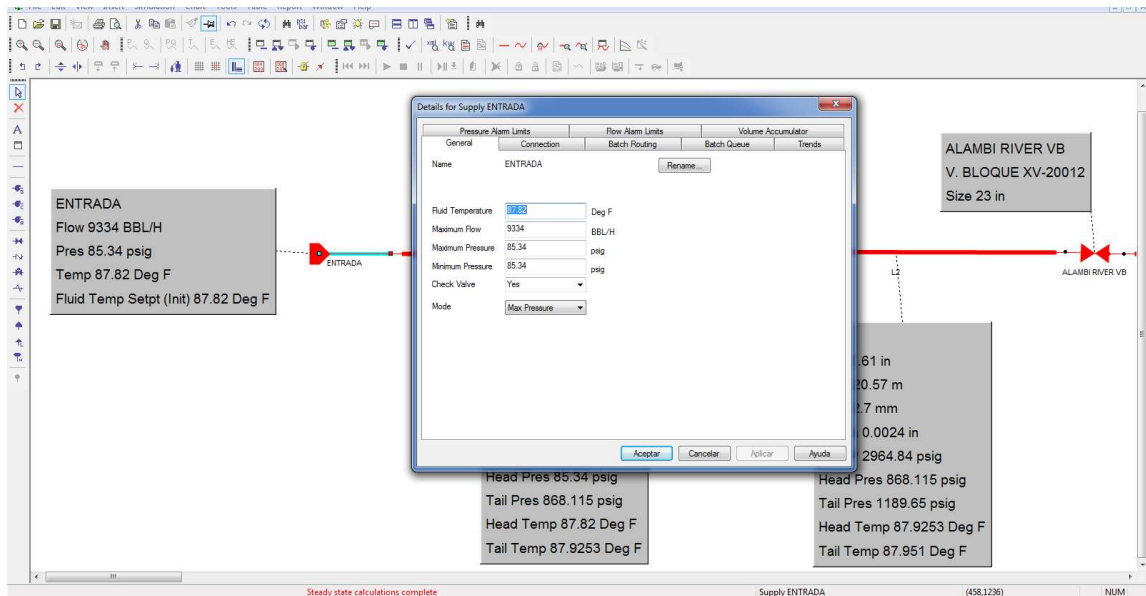


Gráfico 26. Entrada del modelo Chiquilpe – Puerto Quito



- 1 salida

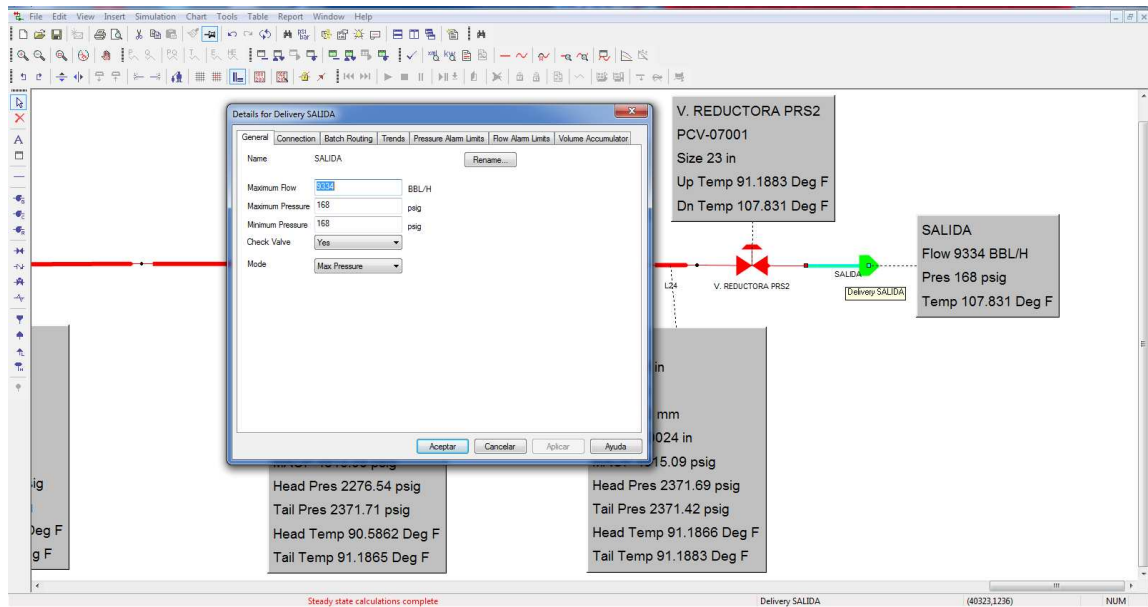


Gráfico 27. Salida del modelo Chiquilpe – Puerto Quito

- 3 Válvulas de bloqueo

PipelineStudio - [PRS1-PRS2-V5.tlw (tlnet):2 \* - ValvesResis Time: +00:00:00]

	Name	Up	Down	CV	% open (Initial)	Size	CV Curve	Text1
Initial	Blkv			50000	100	24	None	
Units					percent	in		
0001	ALAMBI RI...	Node0029-3	Node0017-2	50000	100	23	None	V. BLOQU...
0002	PUEBLO N...	Node0031-6	Node0017-3	50000	100	23	None	V. BLOQU...
0003	VB-PRS2	Node0090	Node0089	50000	100	23	None	

Gráfico 28. Válvulas de Bloqueo del modelo Chiquilpe – Puerto Quito

- 1 Válvula check

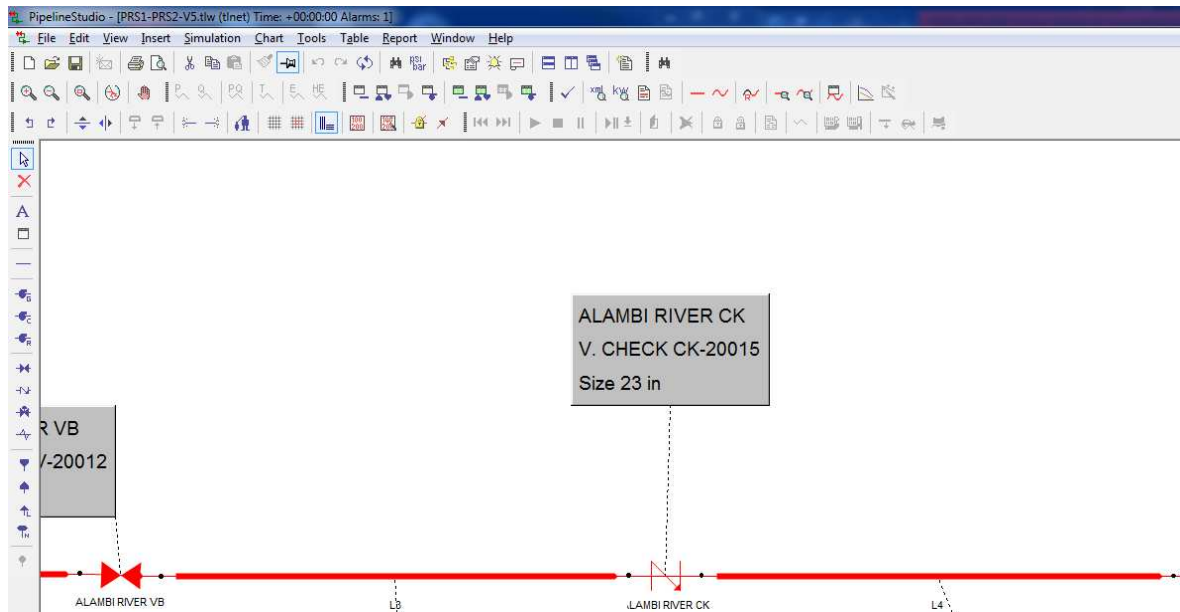


Grafico 29. Válvula check del modelo Chiquilpe – Puerto Quito

- 1 Válvula reductora de presión.

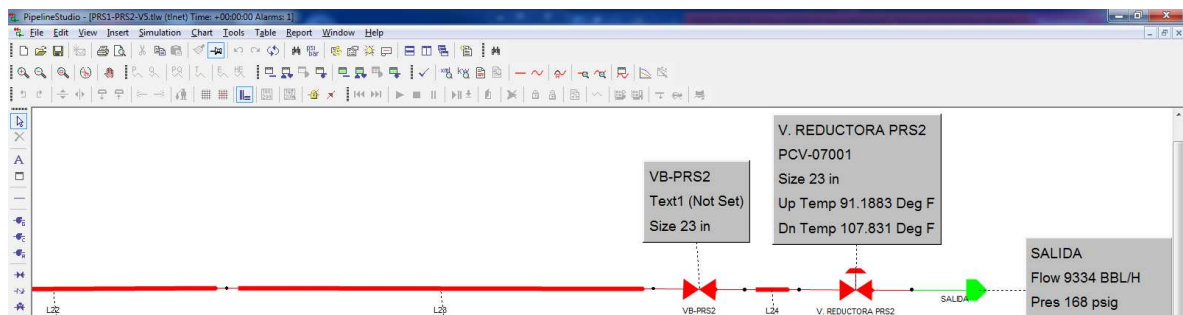


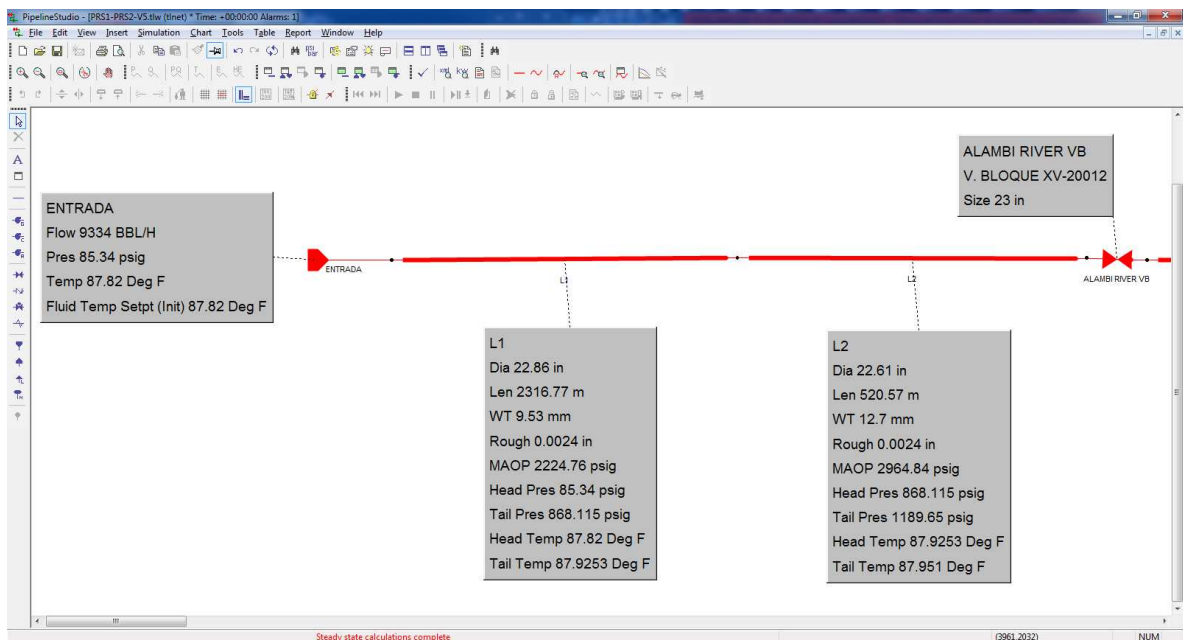
Grafico 30. Válvula reductora de presión del modelo Chiquilpe – Puerto Quito

- 24 tramos de tubería con diferente espesor

Initial Units	Pipe	Up	Down	Length	Diameter (inside)	Wall Thickness	Roughness	Knot Spacing	Youngs Modulus	Thermal Expansion Coeff.	MAOP	Yield Safety Factor	Steel Yield Stress
				1609.34	12	12.7	0.001	1609.34	2.9011e+007	1e-005		0.72	166.667
				m	in	mm	in	m	psia	1/Deg F	psig		psia
0001	L1	Node0029	Node0031	2316.77	22.86	9.53	0.0024	50	2.9011e+007	1e-005	2224.76	0.68	70000
0002	L2	Node0031	Node0029-3	520.57	22.61	12.7	0.0024	50	2.9011e+007	1e-005	2964.84	0.68	70000
0003	L3	Node0017-2	Node0031-5	168.73	22.61	12.7	0.0024	50	2.9011e+007	1e-005	2964.84	0.68	70000
0004	L4	Node0064	Node0031-7	210.23	22.61	12.7	0.0024	50	2.9011e+007	1e-005	2964.84	0.68	70000
0005	L5	Node0031-7	Node0031-9	1308.13	22.86	9.53	0.0024	50	2.9011e+007	1e-005	2224.76	0.68	70000
0006	L6	Node0031-9	Node0031-...	4978.09	22.98	7.92	0.0024	50	2.9011e+007	1e-005	1849.44	0.68	70000
0007	L7	Node0031-...	Node0031-...	2112.59	22.86	9.53	0.0024	50	2.9011e+007	1e-005	2224.76	0.68	70000
0008	L8	Node0031-...	Node0031-...	584.48	22.98	7.92	0.0024	50	2.9011e+007	1e-005	1849.44	0.68	70000
0009	L9	Node0031-...	Node0031-...	1878.23	22.61	12.7	0.024	50	2.9011e+007	1e-005	2964.84	0.68	70000
0010	L10	Node0031-...	Node0031-...	196.53	22.86	9.53	0.0024	50	2.9011e+007	1e-005	2224.76	0.68	70000
0011	L11	Node0031-...	Node0031-...	1161.6	22.61	12.7	0.0024	50	2.9011e+007	1e-005	2964.84	0.68	70000
0012	L12	Node0031-...	Node0031-...	2096.13	22.86	9.53	0.0024	50	2.9011e+007	1e-005	2224.76	0.68	70000
0013	L13	Node0031-...	Node0031-...	2844.33	22.61	12.7	0.0024	50	2.9011e+007	1e-005	2964.84	0.68	70000
0014	L14	Node0031-...	Node0031-...	135.9	22.48	14.27	0.0024	50	2.9011e+007	1e-005	3332.27	0.68	70000
0015	L15	Node0031-3	Node0031-3	111.53	22.36	15.88	0.0024	50	2.9011e+007	1e-005	3707.16	0.68	70000
0016	L16	Node0031-3	Node0031-6	2911.46	22.48	14.27	0.0024	50	2.9011e+007	1e-005	3332.27	0.68	70000
0017	L17	Node0017-3	Node0031-8	2031.36	22.48	14.27	0.0024	50	2.9011e+007	1e-005	3332.27	0.68	70000
0018	L18	Node0031-8	Node0031-...	5298.92	22.36	15.88	0.0024	50	2.9011e+007	1e-005	3707.16	0.68	70000
0019	L19	Node0031-...	Node0031-...	5017.51	22.23	17.48	0.0024	50	2.9011e+007	1e-005	4081.37	0.68	70000
0020	L20	Node0031-...	Node0031-...	3414.12	22.11	19.05	0.0024	50	2.9011e+007	1e-005	4447.27	0.68	70000
0021	L21	Node0031-...	Node0031-...	186.25	21.98	20.62	0.0024	50	2.9011e+007	1e-005	4815.09	0.68	70000
0022	L22	Node0031-...	Node0031-...	5431.66	22.11	19.05	0.0024	50	2.9011e+007	1e-005	4447.27	0.68	70000
0023	L23	Node0031-...	Node0090	7334.48	21.98	20.62	0.0024	50	2.9011e+007	1e-005	4815.09	0.68	70000
0024	L24	Node0089	Node0093	20	21.98	20.62	0.0024	5	2.9011e+007	1e-005	4815.09	0.68	70000

Gráfico 31. Tubería del modelo Chiquilpe – Puerto Quito

- El modelo gráficamente quedo de la siguiente forma:



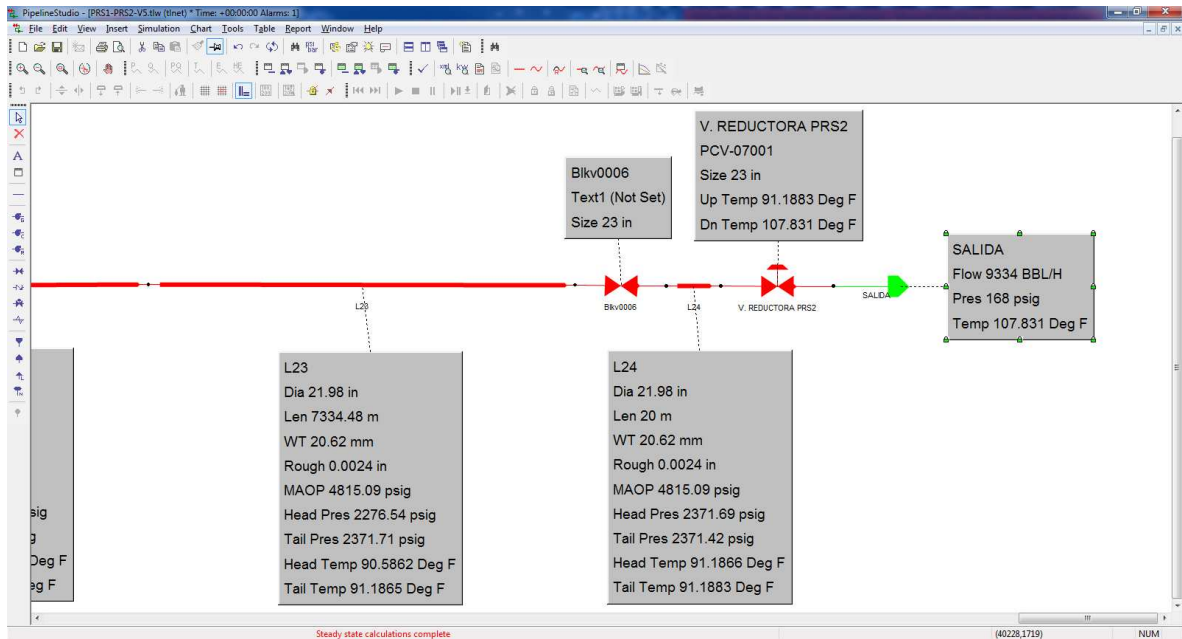


Grafico 32. Modelo Chiquilpe – Puerto quito

### 3.2. INGRESO DE LA INFORMACIÓN AL MODELO EN EL SISTEMA PIPELINESTUDIO.

La información que se subió al modelo en PIPELINESTUDIO es la siguiente:

- Se utilizó la base de datos obtenida en el capítulo 2.4 “Anexo C” del presente proyecto. La misma que se ingresó en cada tubo o tramo modelado.
- A cada tubo se le asigno las características técnicas de la misma.

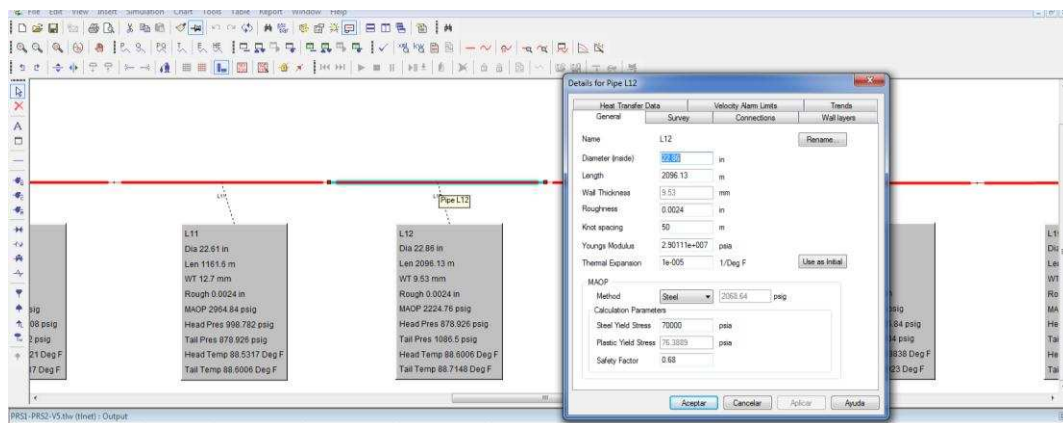


Grafico 33. Ingreso de características de la tubería.

- A cada tubo o tramo se le ingreso su longitud y su elevación, obteniendo de esta forma el perfil.

Details for Survey Survey-L12

General

Name: Survey-L12

Number of points: 176

Survey Date: ago 23, 2010 14:16:01

	Mile Post	Elevation
	m	m
1	15435.9	2251.88
2	15448.3	2251.17
3	15460.8	2251.26
4	15473.3	2251.62
5	15485.3	2251.73
6	15498	2251.78
7	15510.5	2251.58
8	15523	2251.32
9	15535.4	2251
10	15547.8	2251
11	15560.2	2250.82
12	15572.6	2249.44
13	15585.1	2247.61
14	15597.5	2246.38
15	15610	2245.26
16	15622.4	2244.1
17	15635.3	2242.66
18	15647.4	2241.07

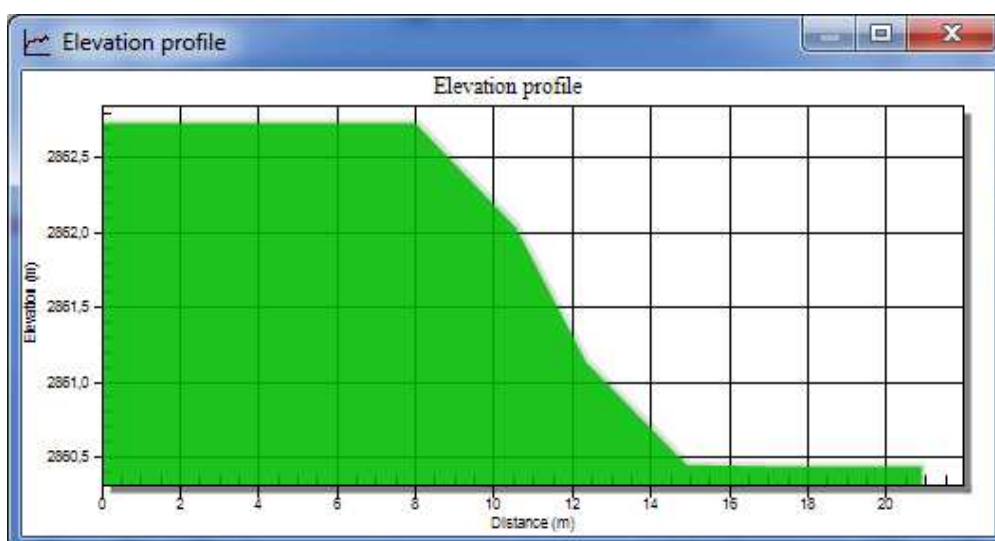


Grafico 34. Ingreso del perfil de la tubería.



- Se estableció las unidades con las cuales se debe trabajar en PIPELINESTUDIO.

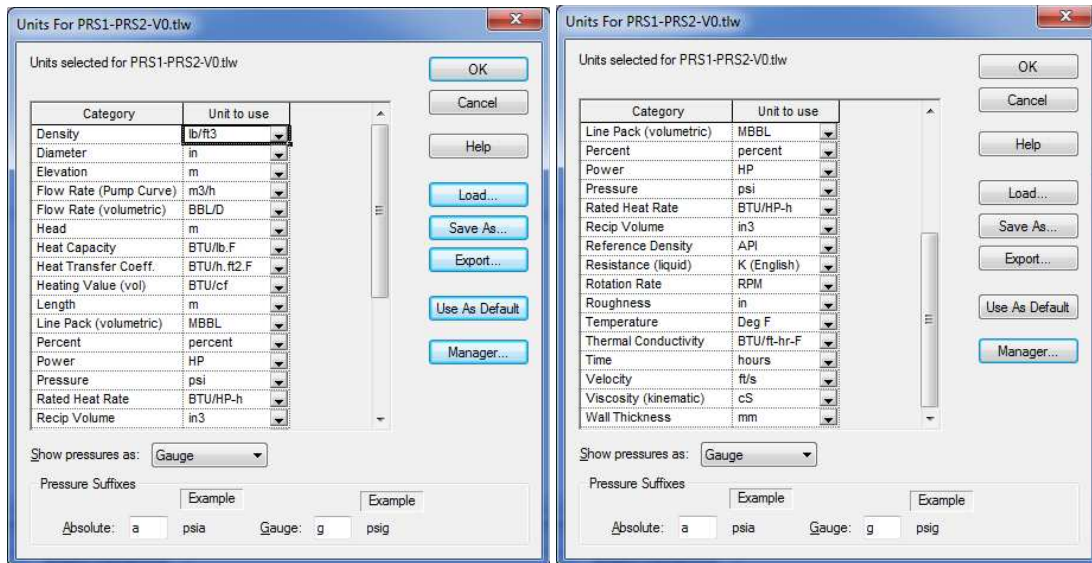


Grafico 35. Ingreso de unidades.

- Se estableció el tipo de fluido con el que se trabajara, los datos del fluido se obtuvieron de la información entregada por el departamento de movimiento de crudo del OCP.

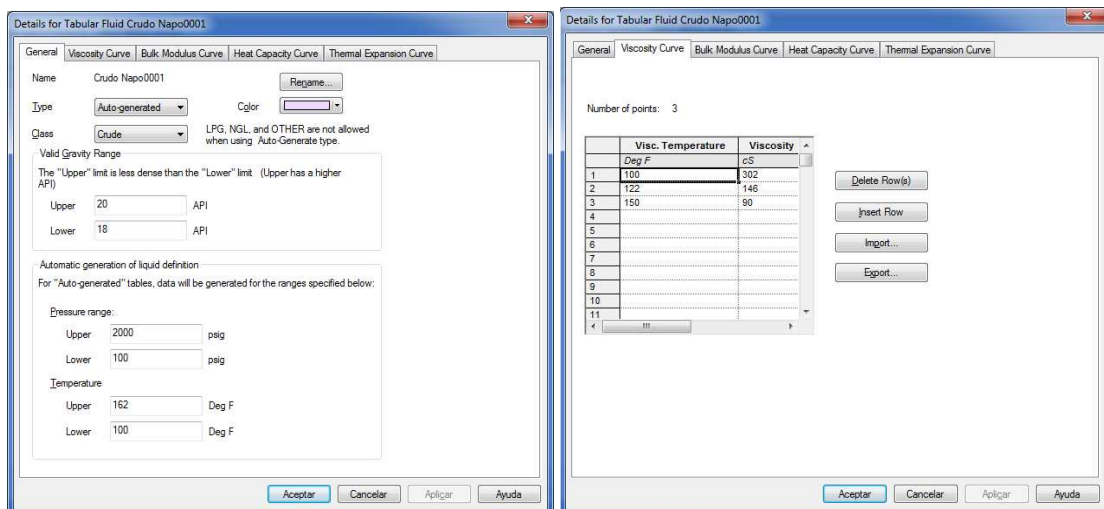


Grafico 36. Ingreso de las características del fluido.

- Tanto para el tramo Paramo – Chiquilpe como para el tramo Chiquilpe – Puerto Quito se procedió a ingresar la información al sistema e ir probando paso a paso y verificando que la información sea la correcta de tal manera que para el tramo Paramo – Chiquilpe se realizó 16 versiones del modelamiento, y para el tramo Chiquilpe – Puerto Quito se realizaron 5 versiones de modelamiento hasta llegar a obtener el modelo afinado y coherente con los datos operativos reales.

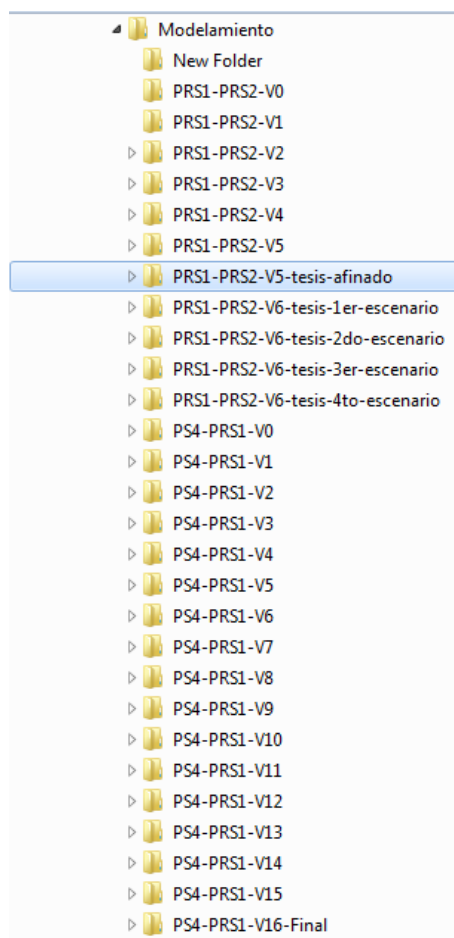


Grafico 37. Versiones creadas de cada modelo.

### 3.2.1. Modelo Páramo-Chiquilpe

Una vez ingresada toda la información y validado el modelo en estado estable se obtuvo la siguiente información.

Tabla 5. Datos del modelo Paramo - Chiquilpe

Longitud	Elevación	Presion	MAOP
m	m	psig	psig
0	2862.74	2462.07	1674.8
4.005	2862.74	2462.07	1674.78
8.01	2862.74	2462.07	1674.76
12.36	2861.14	2462.07	1676.87
14.925	2861.14	2462.07	1676.85
17.49	2860.44	2462.07	1677.77
20.89	2860.43	2462.07	1677.77
20.89	2860.43	2462.07	1677.76
24.14	2860.44	2462.07	1677.73
27.315	2860.43	2462.07	1677.73
30.49	2860.43	2462.07	1677.71
34.185	2860.41	2462.07	1677.72
37.88	2860.39	2462.07	1677.73
40.79	2860.39	2462.07	1677.72
43.7	2860.31	2462.07	1677.81
476.867	2860.32	2462.07	1677.78
516.733	2860.33	2462.07	1677.74
55.66	2860.34	2462.07	1677.71
59.35	2859.15	2462.07	1679.28
63.04	2857.95	2462.07	1680.85
63.04	2857.95	2055.89	1680.85
65.705	2857.95	2055.89	1680.84
68.37	2854.11	2055.89	1685.93
71.49	2853.08	2055.89	1687.28
76.035	2852.66	2055.89	1687.82
80.58	2852.23	2055.89	1688.37
84.71	2852.25	2055.89	1688.33
88.84	2852.26	2055.89	1688.28
92.97	2852.28	2055.89	1688.24
970.567	2852.29	2055.89	1688.21
101.143	2852.31	2055.89	1688.17
105.23	2852.32	2055.89	1688.13
109.357	2852.61	2055.89	1687.73
113.483	2852.9	2055.89	1687.33
117.61	2853.19	2055.89	1686.92
122.55	2853.41	2055.89	1686.61
127.49	2855.27	2055.89	1684.11
132.43	2856.52	2055.89	1682.43

Toda la información obtenida se encuentra en el “Anexo D”.



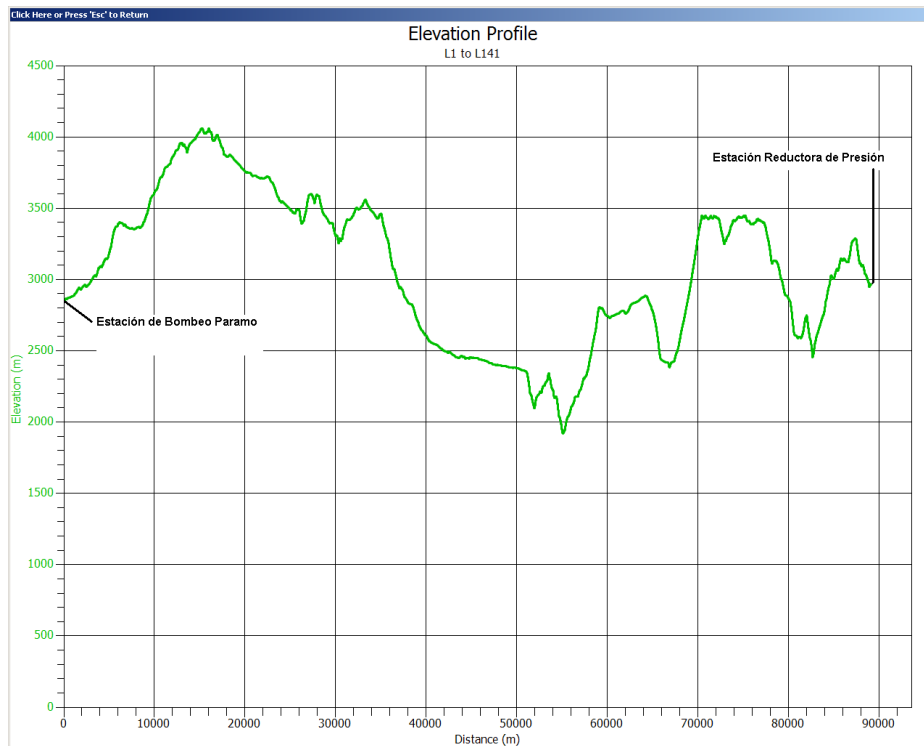


Grafico 38. Perfil del tramo Páramo - Chiquilpe

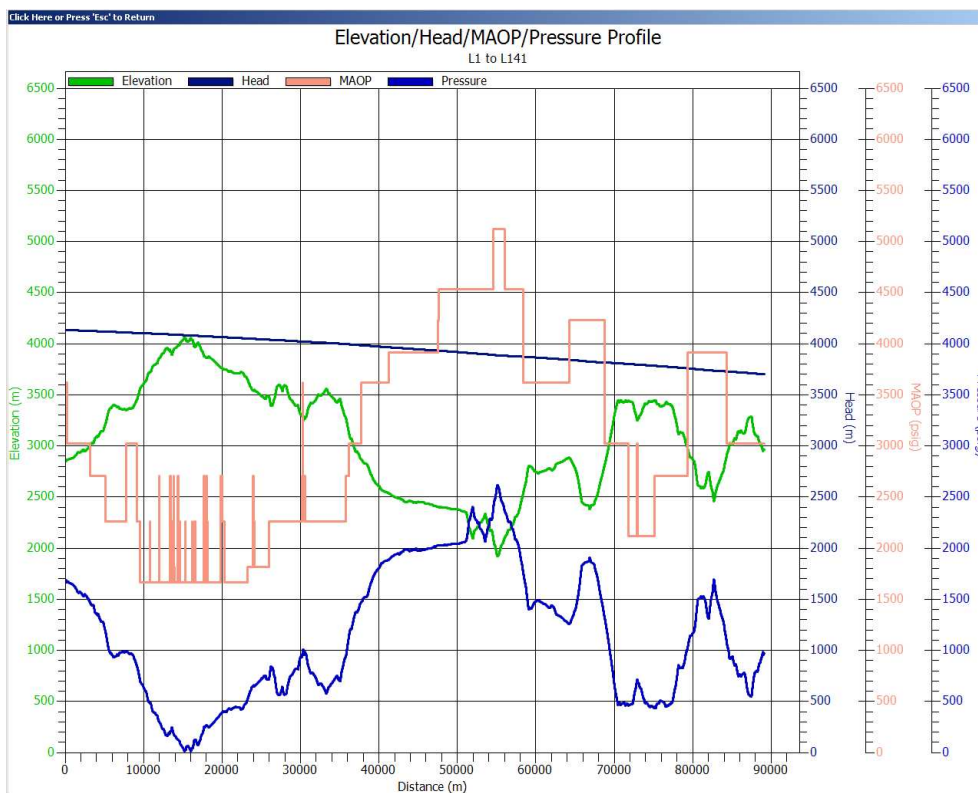


Grafico 39. Perfil, cabeza, MAOP, presión del tramo Páramo - Chiquilpe

### 3.2.2. Modelo Chiquilpe-Puerto Quito

Una vez ingresada toda la información y validado el modelo en estado estable se obtuvo la siguiente información.

Tabla 6. Datos del modelo Chiquilpe – Puerto Quito

Longitud	Elevacion	Presion	MAOP
m	m	psig	psig
0	2962.84	85.34	1512.84
14.77	2960.8	878.876	1512.84
28	2958.81	903.839	1512.84
35.48	2958.84	902.759	1512.84
47.84	2960.94	874.008	1512.84
59.86	2966.33	802.019	1512.84
72.21	2971.59	731.708	1512.84
84.02	2972.87	713.794	1512.84
94.08	2971.93	725.235	1512.84
106.01	2971.83	725.457	1512.84
118.38	2972.16	719.987	1512.84
130.75	2974.08	693.601	1512.84
143.09	2977.69	644.996	1512.84
155.32	2981.51	593.638	1512.84
167.73	2984.81	549.107	1512.84
180.09	2987.64	510.762	1512.84
192.3	2990.61	470.584	1512.84
204.7	2993.54	430.921	1512.84
217.09	2996.79	387.048	1512.84
229.3	2999.03	356.476	1512.84
241.58	3000.36	337.859	1512.84
253.95	2999.55	347.375	1512.84
266.3	2997.26	376.357	1512.84
278.64	2995.2	402.315	1512.84
290.98	2992.51	436.555	1512.84
303.22	2989.11	48.014	1512.84
315.57	2985.45	527.141	1512.84
327.93	2981.74	574.795	1512.84
340.18	2978.07	621.932	1512.84
352.39	2975.8	650.668	1512.84
364.35	2974.45	667.324	1512.84
376.32	2972.53	691.476	1512.84
388.67	2972.23	69.429	1512.84
401.04	2973.65	674.484	1512.84
413.41	2973.39	676.772	1512.84
425.79	2970.95	707.724	1512.84

Toda la información obtenida se encuentra en el “Anexo E”.

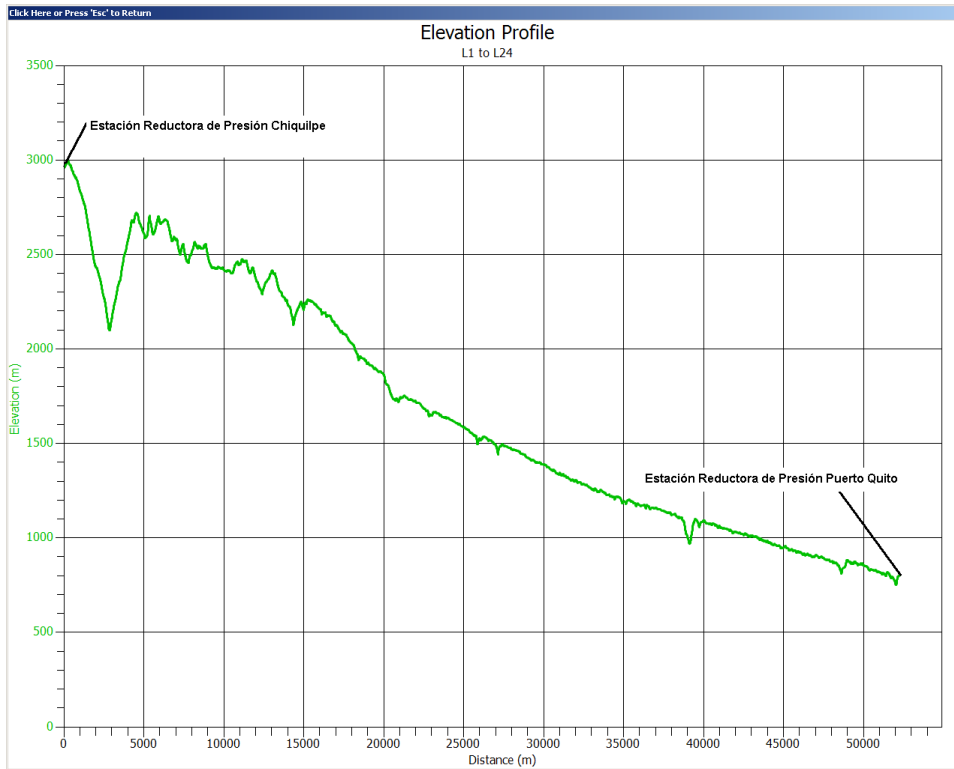


Grafico 40. Perfil del tramo Chiquilpe - Puerto Quito.

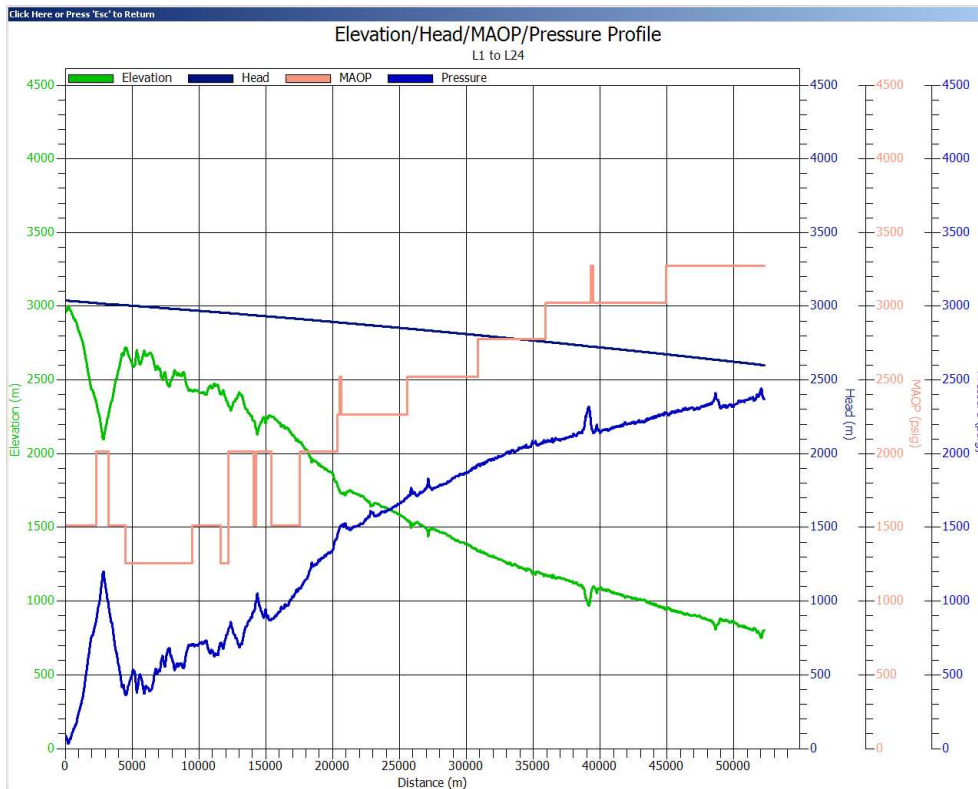


Grafico 41. Perfil, cabeza, MAOP, presión del tramo Chiquilpe – Puerto Quito.

### **3.2. OBTENCIÓN Y EVALUACIÓN DE LOS RESULTADOS INICIALES.**

En los dos tramos en estudio:

- La validación de los modelos corren en el sistema PIPELINESTUDIO sin ningún inconveniente.
- Los datos ingresados de los perfiles son los que se obtuvieron de la recopilación de datos y los mismos se han validado en el sistema sin encontrarse ningún inconveniente.
- En la información obtenida durante la corrida de los dos modelos, no se detecta que la presión interna sea superior al MAOP de la tubería.

Luego de haber valido los modelos con el sistema PIPELINESTUDIO y no haberse encontrado inconvenientes, se establecen estos dos modelos como modelos de arranque los mismos que serán utilizados en el presente proyecto.

### **3.3. DETERMINACIÓN DE LAS VARIABLES QUE AFECTAN EL COMPORTAMIENTO DEL OLEODUCTO (FACTOR DE FRICCIÓN, TRANSFERENCIA DE CALOR, etc.).**

Las variables que afectan el comportamiento del oleoducto de acuerdo a los datos solicitados por PIPELINESTUDIO son:

Presión de entrada.

Caudal de entrada.

Temperatura de entrada del fluido.

Longitud de la tubería.

Elevación de la tubería.

Diámetro de la tubería.

Viscosidad Vs temperatura del fluido.

Factor de fricción de la tubería.

Conductividad de la tierra.

Tubería enterrada o tubería sobre la superficie.

Temperatura ambiente.

## 4. AFINAMIENTO DEL MODELAMIENTO.

### 4.1. ESTABLECIMIENTO DEL VALOR DE LAS VARIABLES QUE AFECTAN EL COMPORTAMIENTO DEL OLEODUCTO.

Para establecer el valor de las variables que afectan el comportamiento del oleoducto:

- Se solicitó al cuarto de control principal de OCP, que se provea de los datos operativos en un determinado momento, los datos que proveyó el cuarto de control del OCP son los siguientes:

Tabla 7. Datos operativos Páramo - Chiquilpe

		UNIDAD	VALOR DE LOS MEDIDORES
PÁRAMO	Caudal	BBLH	4.360,000
	Presión a la salida	PSIG	1.645,000
	Temperatura del crudo a la salida	°F	94,000
CHIQUILPE	Caudal	BBLH	4.360,000
	Presión a la entrada	PSIG	1.340,000
	Presión a la salida	PSIG	45,000
	Temperatura del crudo a la entrada	°F	82,000
CRUDO	API Observado a 60 °F	°F	19,800
	Viscosidad a 80 °F	cST	786,200
	Viscosidad a 100 °F	cST	353,700
	Viscosidad a 120 °F	cST	179,000

Tabla 8. Datos operativos Chiquilpe – Puerto Quito

		UNIDAD	VALOR DE LOS MEDIDORES
CHIQUILPE	Caudal	BBLH	9.334,000
	Presión a la salida	PSIG	85,340
	Temperatura del crudo a la salida	°F	81,500
PUERTO QUITO	Caudal	BBLH	9.334,000
	Presión a la entrada	PSIG	2.371,000
	Presión a la salida	PSIG	186,680
CRUDO	Temperatura del crudo a la entrada	°F	91,200
	API Observado a 60 °F	°F	19,900
	Viscosidad a 80 °F	cST	461,900
	Viscosidad a 100 °F	cST	220,200
	Viscosidad a 120 °F	cST	117,100

- Se investigó cuales variables varían en el tiempo, determinándose que son la presión, el caudal, temperatura del fluido, viscosidad del fluido, diámetro interno de la tubería, temperatura ambiente, coeficiente de temperatura de la tierra.
- Los datos operativos en un determinado momento que se obtuvieron y que ayudaran a sintonizar el modelo son la presión, el caudal, la temperatura del fluido y la viscosidad del fluido. Quedando el diámetro interno de la tubería, la temperatura ambiente y el coeficiente de temperatura de la tierra como variables a las cuales les podemos modificar su valor utilizando criterio técnico.
- Se procedió a investigar cuales seria los valores mínimos y máximos de las variables diámetro interno de la tubería, temperatura ambiente, conductividad de la tierra y tubería enterrada, obteniéndose los siguientes resultados:
  - **Diámetro interno de la tubería:** Se procedió a consultar con el departamento de ingeniería y el departamento de operaciones de OCP de cuál es el espesor de la capa que se genera al interior de la tubería por depósitos del crudo, debido a que son estos los departamentos de OCP los encargados de realizar la limpieza de la tubería y de analizar los datos obtenidos por el lanzamiento del chanco inteligente y por ende son los de mayor experiencia en este ámbito, llegándose a determinar que el espesor por depósitos del crudo no supera los 10 mm, esto de acuerdo a la experiencia del personal de ingeniería.

- **Temperatura Ambiente:** Se procedió a investigar cual es la temperatura ambiente en cada tramo llegándose a establecer como temperaturas ambiente promedio desde 35°F hasta 80°F en función de su lugar geográfico.
- **Conductividad de la tierra y tubería enterrada:** Se procedió a investigar cual es la conductividad de la tierra y la profundidad promedio a la que está enterrada la tubería en cada tramo llegándose a determinar que la conductividad de la tierra puede ir desde 0.1 a 80 w/m °K y la profundidad a la cual se encuentra enterrada la tubería varía desde 1 a 5 mt

#### **4.2. SINTONIZACIÓN DE LOS VALORES OBTENIDOS EN EL SISTEMA PIPELINESTUDIO CON LOS VALORES DE OPERACIÓN DEL OLEODUCTO.**

Para la sintonización de los modelos con respecto a los valores de operación reales se trabajó en las variables establecidas en el capítulo 4.1, encontrando el valor de cada una de las variables involucradas.

- **Diámetro interno de la tubería:** Se procedió a encontrar el valor del diámetro interno de la tubería, llegándose a determinar que el espesor por depósitos del crudo es de “5 mm, tanto para el tramo Paramo – Chiquilpe como para el tramo Chiquilpe – Puerto Quito.



Tabla 9. Diámetro interno Paramo - Chiquilpe

TUBO	LONGITUD	DIAMETRO INTERNO	ESPESOR	DIAMETRO EXTERNO	ESPESOR EN PULGADAS	PARE DE ASFALTOS	DIAMETRO INTERNO CALCULADO
	m	in	mm	in	in	in	in
L1	20,89	27,5	19,05	32	0,75	0,393700787	30,11
L2	42,15	27,5	19,05	32	0,75	0,393700787	30,11
L3	74,28	27,7	15,88	32	0,62519685	0,393700787	30,36
L4	63,17	27,5	19,05	32	0,75	0,393700787	30,11
L5	12,29	27,7	15,88	32	0,62519685	0,393700787	30,36
L6	36,67	27,5	19,05	32	0,75	0,393700787	30,11
L7	2958,55	27,7	15,88	32	0,62519685	0,393700787	30,36
L8	1138,32	27,9	14,27	32	0,561811024	0,393700787	30,48
L13	746,86	27,9	14,27	32	0,561811024	0,393700787	30,48
L14	2669,1	28,1	11,91	32	0,468897638	0,393700787	30,67
L16	1049,76	27,7	15,88	32	0,62519685	0,393700787	30,36
L18	321,27	27,7	15,88	32	0,62519685	0,393700787	30,36
L20	419,86	28,1	11,91	32	0,468897638	0,393700787	30,67
L21	89,32	28,3	8,74	32	0,344094488	0,393700787	30,92
L24	1149,33	28,3	8,74	32	0,344094488	0,393700787	30,92
L29	23,76	28,1	11,91	32	0,468897638	0,393700787	30,67
L30	47,38	28,2	9,53	32	0,37519685	0,393700787	30,86
L31	1086,49	28,3	8,74	32	0,344094488	0,393700787	30,92
L34	12,35	27,9	14,27	32	0,561811024	0,393700787	30,48
L35	22,455	28,2	9,53	32	0,37519685	0,393700787	30,86
L36	1398,34	28,3	8,74	32	0,344094488	0,393700787	30,92
L37	37,03	27,9	14,27	32	0,561811024	0,393700787	30,48
L38	24,69	28,3	8,74	32	0,344094488	0,393700787	30,92
L39	12,37	27,9	14,27	32	0,561811024	0,393700787	30,48
L40	37,12	28,3	8,74	32	0,344094488	0,393700787	30,92
L41	12,33	27,9	14,27	32	0,561811024	0,393700787	30,48
L42	73,81	28,3	8,74	32	0,344094488	0,393700787	30,92
L43	29,99	28,2	9,53	32	0,37519685	0,393700787	30,86
L44	12,02	28,1	11,91	32	0,468897638	0,393700787	30,67
L45	12,35	28,3	8,74	32	0,344094488	0,393700787	30,92
L46	12,45	28,2	9,53	32	0,37519685	0,393700787	30,86
L47	190,77	28,3	8,74	32	0,344094488	0,393700787	30,92
L48	24,24	27,9	14,27	32	0,561811024	0,393700787	30,48
L49	15,25	28,3	8,74	32	0,344094488	0,393700787	30,92
L50	24,81	28,2	9,53	32	0,37519685	0,393700787	30,86
L51	483,16	28,3	8,74	32	0,344094488	0,393700787	30,92
L52	24,7	27,9	14,27	32	0,561811024	0,393700787	30,48
L53	231,89	28,3	8,74	32	0,344094488	0,393700787	30,92
L54	37,55	28,1	11,91	32	0,468897638	0,393700787	30,67
L55	594,19	28,3	8,74	32	0,344094488	0,393700787	30,92
L56	24,63	28,1	11,91	32	0,468897638	0,393700787	30,67
L57	86,3	28,3	8,74	32	0,344094488	0,393700787	30,92
L58	11,38	28,2	9,53	32	0,37519685	0,393700787	30,86
L59	12,37	28,1	11,91	32	0,468897638	0,393700787	30,67
L70	299,22	28,3	8,74	32	0,344094488	0,393700787	30,92
L71	147,31	28,1	11,91	32	0,468897638	0,393700787	30,67
L72	1076,46	28,3	8,74	32	0,344094488	0,393700787	30,92
L73	23,4	27,9	14,27	32	0,561811024	0,393700787	30,48
L74	129,29	28,3	8,74	32	0,344094488	0,393700787	30,92
L75	35,61	28,1	11,91	32	0,468897638	0,393700787	30,67
L76	84,05	28,3	8,74	32	0,344094488	0,393700787	30,92
L77	24,88	27,9	14,27	32	0,561811024	0,393700787	30,48
L78	16,2	28,3	8,74	32	0,344094488	0,393700787	30,92
L79	11,42	27,9	14,27	32	0,561811024	0,393700787	30,48
L80	24,57	28,3	8,74	32	0,344094488	0,393700787	30,92
L81	97,61	28,1	11,91	32	0,468897638	0,393700787	30,67
L82	1705,85	28,3	8,74	32	0,344094488	0,393700787	30,92
L83	152,35	27,9	14,27	32	0,561811024	0,393700787	30,48
L84	308,33	28,1	11,91	32	0,468897638	0,393700787	30,67
L85	2916,08	28,3	8,74	32	0,344094488	0,393700787	30,92
L92	737,65	28,2	9,53	32	0,37519685	0,393700787	30,86
L93	12,43	27,9	14,27	32	0,561811024	0,393700787	30,48
L94	24,45	28,2	9,53	32	0,37519685	0,393700787	30,86
L95	12,24	28,1	11,91	32	0,468897638	0,393700787	30,67
L96	33,67	28,2	9,53	32	0,37519685	0,393700787	30,86
L97	49,94	28,1	11,91	32	0,468897638	0,393700787	30,67
L98	993,07	28,2	9,53	32	0,37519685	0,393700787	30,86
L99	903,5	28,2	9,53	32	0,37519685	0,393700787	30,86
L100	3876	28,1	11,91	32	0,468897638	0,393700787	30,67
L107	313,25	28,1	11,91	32	0,468897638	0,393700787	30,67
L108	73,08	27,9	14,27	32	0,561811024	0,393700787	30,48
L109	10,13	27,7	15,88	32	0,62519685	0,393700787	30,36
L110	18,38	27,9	14,27	32	0,561811024	0,393700787	30,48
L111	12,35	27,5	19,05	32	0,75	0,393700787	30,11
L112	115,16	27,9	14,27	32	0,561811024	0,393700787	30,48
L114	33,28	27,9	14,27	32	0,561811024	0,393700787	30,48
L115	108,67	28,1	11,91	32	0,468897638	0,393700787	30,67
L116	49,53	27,9	14,27	32	0,561811024	0,393700787	30,48
L117	5163,68	28,1	11,91	32	0,468897638	0,393700787	30,67
L118	417,9	27,9	14,27	32	0,561811024	0,393700787	30,48
L119	1553,35	27,7	15,88	32	0,62519685	0,393700787	30,36
L120	1487,79	27,5	19,05	32	0,75	0,393700787	30,11
L121	2036,88	27,5	19,05	32	0,75	0,393700787	30,11
L122	2647,13	27,4	20,62	32	0,811811024	0,393700787	29,98
L123	3618,21	27,4	20,62	32	0,811811024	0,393700787	29,98
L124	108,86	27,2	22,23	32	0,87519685	0,393700787	29,86
L125	6911,64	27,1	23,83	32	0,938188976	0,393700787	29,73
L126	174,06	26,9	26,97	32	1,061811024	0,393700787	29,48
L127	584,99	26,9	26,97	32	1,061811024	0,393700787	29,48
L128	722,96	26,9	26,97	32	1,061811024	0,393700787	29,48
L129	2335,14	27,1	23,83	32	0,938188976	0,393700787	29,73
L130	24,61	27,2	22,23	32	0,87519685	0,393700787	29,86
L131	5855,51	27,5	19,05	32	0,75	0,393700787	30,11
L132	1861,76	27,2	22,23	32	0,87519685	0,393700787	29,86
L133	1515,64	27,2	22,23	32	0,87519685	0,393700787	29,86
L134	1178,46	27,2	22,23	32	0,87519685	0,393700787	29,86
L135	2976,51	27,7	15,88	32	0,62519685	0,393700787	30,36
L136	1121,3	28,1	11,13	32	0,438188976	0,393700787	30,73
L137	32,46	27,7	15,88	32	0,62519685	0,393700787	30,36
L138	2181,06	28,1	11,13	32	0,438188976	0,393700787	30,73
L139	4190,89	27,9	14,27	32	0,561811024	0,393700787	30,48
L140	5032,06	27,4	20,62	32	0,811811024	0,393700787	29,98
L141	4782,61	27,7	15,88	32	0,62519685	0,393700787	30,36

Tabla 10. Diámetro interno Chiquilpe – Puerto Quito

TUBO	LONGITUD	DIAMETRO INTERNO	ESPESOR	DIAMETRO EXTERNO	ESPESOR EN PULGADAS	PARE DE ASFALTOS	DIAMETRO INTERNO CALCULADO
	m	in	mm	in	in	in	in
L1	2316,77	21,5	9,53	24	0,37519685	0,393700787	22,86
L2	520,57	21,5	12,7	24	0,5	0,393700787	22,61
L3	168,73	21,5	12,7	24	0,5	0,393700787	22,61
L4	210,23	21,5	12,7	24	0,5	0,393700787	22,61
L5	1308,13	21,5	9,53	24	0,37519685	0,393700787	22,86
L6	4978,09	21,5	7,92	24	0,311811024	0,393700787	22,98
L7	2112,59	21,5	9,53	24	0,37519685	0,393700787	22,86
L8	584,48	21,5	7,92	24	0,311811024	0,393700787	22,98
L9	1878,23	21,5	12,7	24	0,5	0,393700787	22,61
L10	196,53	21,5	9,53	24	0,37519685	0,393700787	22,86
L11	1161,6	21,5	12,7	24	0,5	0,393700787	22,61
L12	2096,13	21,5	9,53	24	0,37519685	0,393700787	22,86
L13	2844,33	21,5	12,7	24	0,5	0,393700787	22,61
L14	135,9	20,5	14,27	24	0,561811024	0,393700787	22,48
L15	111,53	20,5	15,88	24	0,62519685	0,393700787	22,36
L16	2911,46	20,5	14,27	24	0,561811024	0,393700787	22,48
L17	2031,36	20,5	14,27	24	0,561811024	0,393700787	22,48
L18	5298,92	20,5	15,88	24	0,62519685	0,393700787	22,36
L19	5017,51	20,5	17,48	24	0,688188976	0,393700787	22,23
L20	3414,12	20,5	19,05	24	0,75	0,393700787	22,11
L21	186,25	20,5	20,62	24	0,811811024	0,393700787	21,98
L22	5431,66	20,5	19,05	24	0,75	0,393700787	22,11
L23	7334,48	20,3	20,62	24	0,811811024	0,393700787	21,98
L24	20	20	20,62	24	0,811811024	0,393700787	21,98

- **Temperatura Ambiente:** Se procedió a encontrar cual es la temperatura ambiente en cada tramo llegándose a establecer como temperaturas ambiente promedio las siguientes en función de su lugar geográfico y del tramo.

Tabla 11. Diámetro interno Chiquilpe – Puerto Quito

	Name	Ambient Temp
<b>Initial</b>	<b>Pipe</b>	<b>50</b>
<b>Units</b>		<b>Deg F</b>
0001	L1	60
0002	L2	60
0003	L3	60
0004	L4	65
0005	L5	65
0006	L6	65
0007	L7	65
0008	L8	70
0009	L9	70
0010	L10	70
0011	L11	70
0012	L12	70
0013	L13	70
0014	L14	70
0015	L15	70
0016	L16	70
0017	L17	70
0018	L18	70
0019	L19	70
0020	L20	70
0021	L21	70
0022	L22	70
0023	L23	70
0024	L24	70

○

Tabla 12. Diámetro interno Paramo - Chiquilpe

	Name	Ambient Temp		Name	Ambient Temp		Name	Ambient Temp
Initial	Pipe	50	Initial	Pipe	50	Initial	Pipe	50
Units		Deg F	Units		Deg F	Units		Deg F
0001	L1	40	0040	L55	40	0066	L97	40
0002	L2	40	0041	L56	40	0067	L98	40
0003	L3	40	0042	L57	40	0068	L99	40
0004	L4	40	0043	L58	40	0069	L100	40
0005	L5	40	0044	L59	40	0070	L107	40
0006	L6	40	0045	L70	40	0071	L108	40
0007	L7	40	0046	L71	40	0072	L109	40
0008	L8	40	0047	L72	40	0073	L110	40
0009	L13	40	0048	L73	40	0074	L111	40
0010	L14	40	0049	L74	40	0075	L112	40
0011	L16	40	0050	L75	40	0076	L114	40
0012	L18	40	0051	L76	40	0077	L115	40
0013	L20	40	0052	L77	40	0078	L116	40
0014	L21	40	0053	L78	40	0079	L117	40
0015	L24	40	0054	L79	40	0080	L118	40
0016	L29	40	0055	L80	40	0081	L119	40
0017	L30	40	0056	L81	40	0082	L120	40
0018	L31	40	0057	L82	40	0083	L121	40
0019	L34	40	0058	L83	40	0084	L122	40
0020	L35	40	0059	L84	40	0085	L123	40
0021	L36	40	0060	L85	40	0086	L124	40
0022	L37	40	0061	L92	40	0087	L125	40
0023	L38	40	0062	L93	40	0088	L126	40
0024	L39	40	0063	L94	40	0089	L127	40
0025	L40	40	0064	L95	40	0090	L128	40
0026	L41	40	0065	L96	40	0091	L129	40
0027	L42	40	0066	L97	40	0092	L130	40
0028	L43	40	0067	L98	40	0093	L131	40
0029	L44	40	0068	L99	40	0094	L132	40
0030	L45	40	0069	L100	40	0095	L133	40
0031	L46	40	0070	L107	40	0096	L134	40
0032	L47	40	0071	L108	40	0097	L135	40
0033	L48	40	0072	L109	40	0098	L136	40
0034	L49	40	0073	L110	40	0099	L137	40
0035	L50	40	0074	L111	40	0100	L138	40
0036	L51	40	0075	L112	40	0101	L139	40
0037	L52	40	0076	L114	40	0102	L140	40
0038	L53	40	0077	L115	40	0103	L141	40
0039	L54	40	0078	L116	40			

- **Conductividad de la tierra y tubería enterrada:** Se procedió a encontrar cual es la conductividad de la tierra y la profundidad promedio a la que está enterrada la tubería en cada tramo:
  - Para el tramo Paramo - Chiquilpe la conductividad promedio de la tierra es de 45 w/m °k y la profundidad

promedio a la que se encuentra enterrada la tubería es de 1.5 mt.

Tabla 13. Conductividad de la tierra y profundidad Paramo - Chiquilpe

	Name	Buried Depth	Ground Conductivity
Initial	Pipe	1	0.42
Units		<i>m</i>	<i>W/m-K</i>
0001	L1	1.5	45
0002	L2	1.5	45
0003	L3	1.5	45
0004	L4	1.5	45
0005	L5	1.5	45
0006	L6	1.5	45
0007	L7	1.5	45
0008	L8	1.5	45
0009	L13	1.5	45
0010	L14	1.5	45
0011	L16	1.5	45
0012	L18	1.5	45
0013	L20	1.5	45
0014	L21	1.5	45
0015	L24	1.5	45
0016	L29	1.5	45
0017	L30	1.5	45
0018	L31	1.5	45
0019	L34	1.5	45
0020	L35	1.5	45
0021	L36	1.5	45
0022	L37	1.5	45
0023	L38	1.5	45
0024	L39	1.5	45
0025	L40	1.5	45
0026	L41	1.5	45
0027	L42	1.5	45
0028	L43	1.5	45
0029	L44	1.5	45
0030	L45	1.5	45
0031	L46	1.5	45
0032	L47	1.5	45
0033	L48	1.5	45
0034	L49	1.5	45
0035	L50	1.5	45
0036	L51	1.5	45
0037	L52	1.5	45
0038	L53	1.5	45
0039	L54	1.5	45
0040	L55	1.5	45

- Para el tramo Chiquilpe – Puerto Quito la conductividad promedio de la tierra es de 0.3 w/m °k y la profundidad promedio a la que se encuentra enterrada la tubería es de 3 mt.

Tabla 14. Conductividad de la tierra y profundidad Chiquilpe – Puerto Quito

	Name	Buried Depth	Ground Conductivity
<b>Initial</b>	<b>Pipe</b>	<b>1</b>	<b>0.42</b>
Units		<i>m</i>	<i>W/m-K</i>
0001	L1	3	0.3
0002	L2	3	0.3
0003	L3	3	0.3
0004	L4	3	0.3
0005	L5	3	0.3
0006	L6	3	0.3
0007	L7	3	0.3
0008	L8	3	0.3
0009	L9	3	0.3
0010	L10	3	0.3
0011	L11	3	0.3
0012	L12	3	0.3
0013	L13	3	0.3
0014	L14	3	0.3
0015	L15	3	0.3
0016	L16	3	0.3
0017	L17	3	0.3
0018	L18	3	0.3
0019	L19	3	0.3
0020	L20	3	0.3
0021	L21	3	0.3
0022	L22	3	0.3
0023	L23	3	0.3
0024	L24	3	0.3

Una vez sintonizados los modelos con respecto a los valores operativos reales se obtuvieron los siguientes resultados:

- Para el tramo Paramo – Chiquilpe

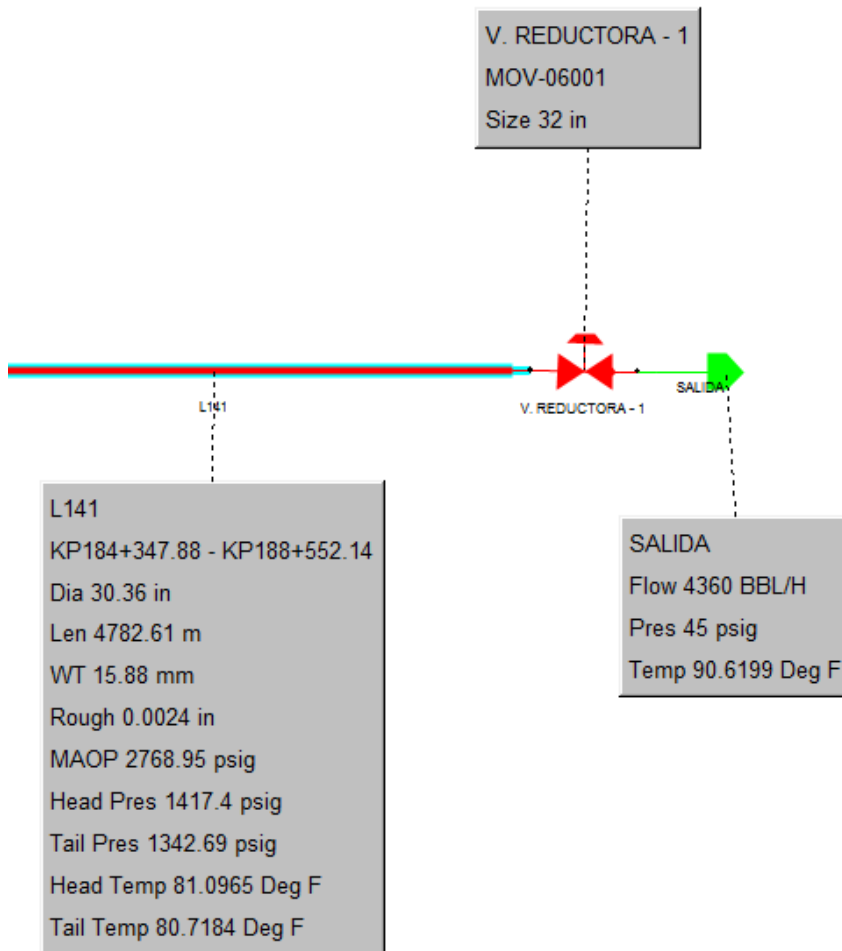


Grafico 42. Modelo sintonizado Paramo - Chiquilpe.

Tabla 15. Datos obtenidos con PIPELINESTUDIO Páramo – Chiquilpe

		UNIDAD	VALOR DE LOS MEDIDORES	VALOR CALCULADO CON PIPELINESTUDIO	DIFERENCIA EN VALOR	DIFERENCIA EN PORCENTAJE
PÁRAMO	Caudal	BBLH	4.360,000	4.360,000	0,000	0,00%
	Presión a la salida	PSIG	1.645,000	1.645,000	0,000	0,00%
	Temperatura del crudo a la salida	°F	94,000	94,000	0,000	0,00%
CHIQUILPE	Caudal	BBLH	4.360,000	4.360,000	0,000	0,00%
	Presión a la entrada	PSIG	1.340,000	1.342,690	-2,690	0,20%
	Presión a la salida	PSIG	45,000	45,000	0,000	0,00%
	Temperatura del crudo a la entrada	°F	82,000	80,718	1,282	1,59%
CRUDO	API Observado a 60 °F	°F	19,800			
	Viscosidad a 80 °F	cST	786,200			
	Viscosidad a 100 °F	cST	353,700			
	Viscosidad a 120 °F	cST	179,000			

- Para el tramo Chiquilpe – Puerto quito

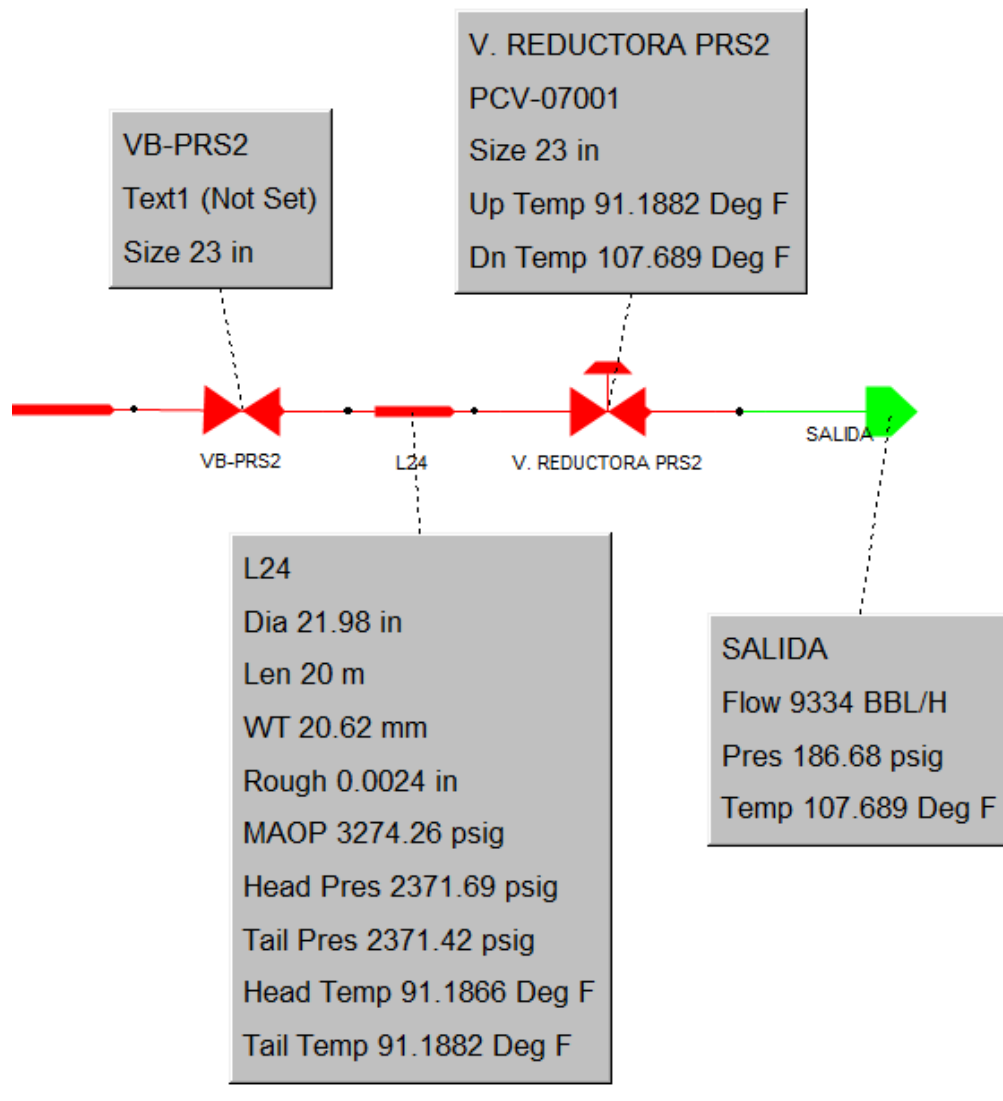


Grafico 43. Modelo sintonizado Chiquilpe – Puerto Quito.

Tabla 16. Datos obtenidos con PIPELINESTUDIO Chiquilpe – Puerto Quito

		UNIDAD	VALOR DE LOS MEDIDORES	VALOR CALCULADO CON PIPELINESTUDIO	DIFERENCIA EN VALOR	DIFERENCIA EN PORCENTAJE
CHIQUILPE	Caudal	BBLH	9.334,000	9.334,000	0,000	0,00%
	Presión a la salida	PSIG	85,340	85,340	0,000	0,00%
	Temperatura del crudo a la salida	°F	81,500	81,500	0,000	0,00%
PUERTO QUITO	Caudal	BBLH	9.334,000	9.334,000	0,000	0,00%
	Presión a la entrada	PSIG	2.371,000	2.371,420	-0,420	0,02%
	Presión a la salida	PSIG	186,680	186,680	0,000	0,00%
	Temperatura del crudo a la entrada	°F	91,200	91,188	0,012	0,01%
CRUDO	API Observado a 60 °F	°F	19,900			
	Viscosidad a 80 °F	cST	461,900			
	Viscosidad a 100 °F	cST	220,200			
	Viscosidad a 120 °F	cST	117,100			

Como se puede apreciar los parámetros operativos obtenidos producto de la sintonización de los modelos tienen un error menor al 2%. Con lo cual se puede concluir que los modelos sintonizados están dentro del porcentaje de error de medición de la instrumentación y por lo tanto los modelos sintonizados pueden ser utilizados para realizar los análisis requeridos en el presente proyecto.



## **5. ESCENARIOS PROBABLES.**

### **5.1. ESTABLECIMIENTO DE LOS DIFERENTES ESCENARIOS DE OPERACIÓN DEL TRAMO EN ESTUDIO QUE PUEDEN GENERAR LA FUGA EN LA VÁLVULA DE DRENAJE DE LA VÁLVULA DE SEGURIDAD TÉRMICA AL INGRESO DE LA ESTACIÓN PUERTO QUITO.**

Los escenarios más probables son:

**PRIMER ESCENARIO:** El cierre de la válvula de emergencia ESDV-07004 y la válvula reductora de presión PCV-07001 a la entrada de Puerto Quito.

**SEGUNDO ESCENARIO:** La apertura de la válvula de emergencia ESDV-07004 y la válvula reductora de presión PCV-07001 a la entrada de Puerto Quito.



Grafico 44. Válvula de emergencia ESDV-07004

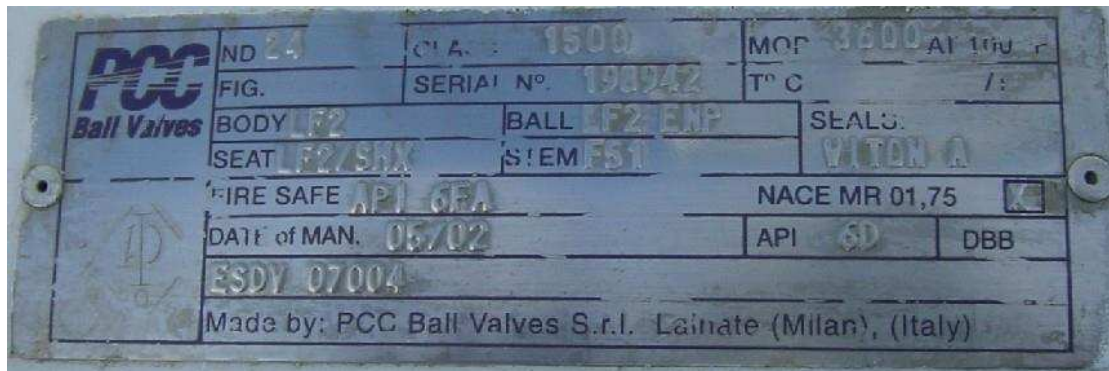


Grafico 45. Placa de la válvula de emergencia ESDV-07004

TERCER ESCENARIO: Incremento de la presión a la salida de la estación Chiquilpe a 345 PSI, combinada con el cierre y apertura de la válvula de emergencia ESDV-07004.

La presión máxima de 345 PSI que puede darse a la salida de la estación Chiquilpe es limitada por las válvulas de alivio a la salida de la estación.



Grafico 46. Válvula de seguridad PSV-06015

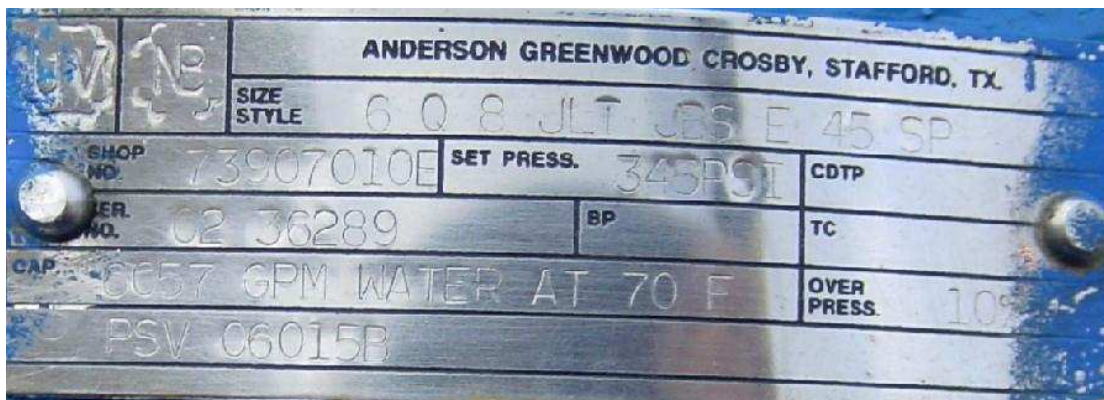


Grafico 47. Placa de la válvula de seguridad PSV-06015

## 5.2. ELABORACIÓN DE LOS DIFERENTES ESCENARIOS DE OPERACIÓN QUE PUEDEN DARSE EN EL TRAMO DE ESTUDIO.

**PRIMER ESCENARIO:** Para determinar el CV (Coeficiente de resistencia al caudal) de la válvula de emergencia y la reductora se procedió a seleccionar el CV recomendado por PIPELINESTUDIO, lo mismo para la curva de apertura de la válvula de emergencia en % Vs el CV de la apertura de la válvula en %.

Tabla 17. Datos del CV de la válvula de emergencia ESDV-07004

### Representative CV values – Valores CV representativos

VSize	Regulator	Check Valve	Plug Block Valve	Butterfly Block Valve	Gate Block Valve	Ball Block Valve
1"	20	25	20	25	30	50
3"	100	150	150	175	200	250
6"	300	400	350	700	1000	1400
12"	1000	1500	1250	3000	5000	7500
18"		6500	6500	10000	12000	15000
24"		12000	12000	20000	23000	27000
30"		20000	20000	40000	40000	45000
36"		30000	30000	60000	62000	65000

Tabla 18. Datos del % de apertura Vs % del CV de la válvula de emergencia ESDV-07004

Details for Valve CV vs Percent Open Curve PLS Ball Valve

% Fully Open CV vs % Open Curve

Name: PLS Ball Valve Rename...

Number of points: 8

	Percent Open	Percent Fully Open CV
	<i>percent</i>	<i>percent</i>
1	0	0
2	30	1.5
3	50	7
4	60	11
5	70	17
6	80	28.5
7	90	50
8	100	100
9		
10		
11		
12		

Delete Row(s)  
Insert Row  
Import...  
Export...

OK Cancel Apply Help

De Acuerdo a la información entregada por OCP (Anexo F) la válvula de emergencia ESDV-07004 se cierra en 50 segundos, y la válvula controladora de presión se cierra al mismo tiempo, para lo cual se procede a crear el escenario en el sistema PIPELINESTUDIO.

Tabla 19. Datos del primer escenario

PipelineStudio - [PRS1-PRS2-V6 (tlnet):2 Time: +00:20:00 Alarms: 4]

File Edit View Insert Simulation Chart Tools Table Report Window Help

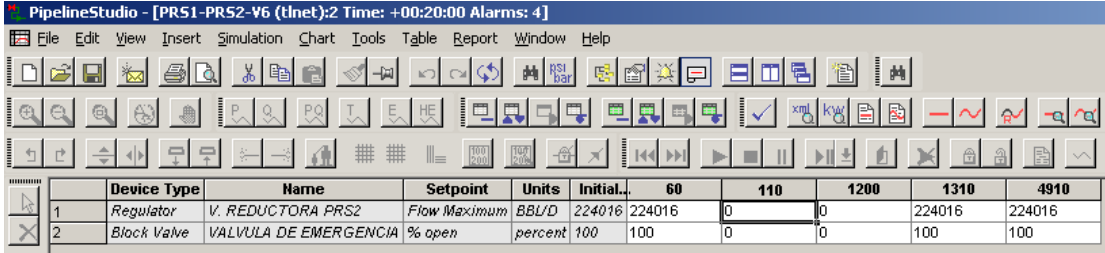
	Device Type	Name	Setpoint	Units	Initial...	60	110	1200
1	Regulator	V. REDUCTORA PRS2	Flow Maximum	BBL/D	224016	224016	0	0
2	Block Valve	VALVULA DE EMERGENCIA	% open	percent	100	100	0	0

**SEGUNDO ESCENARIO:** De Acuerdo a la información entregada por OCP (Anexo H) la válvula de emergencia ESDV-07004 se abre en 1 minuto y 50 segundos, y la válvula controladora de presión se abre al mismo tiempo, para lo cual se procede a crear el escenario en el sistema PIPELINESTUDIO.

Tabla 20. Datos del segundo escenario

PipelineStudio - [PR51-PR52-V6 (tinet):2 Time: +00:20:00 Alarms: 4]

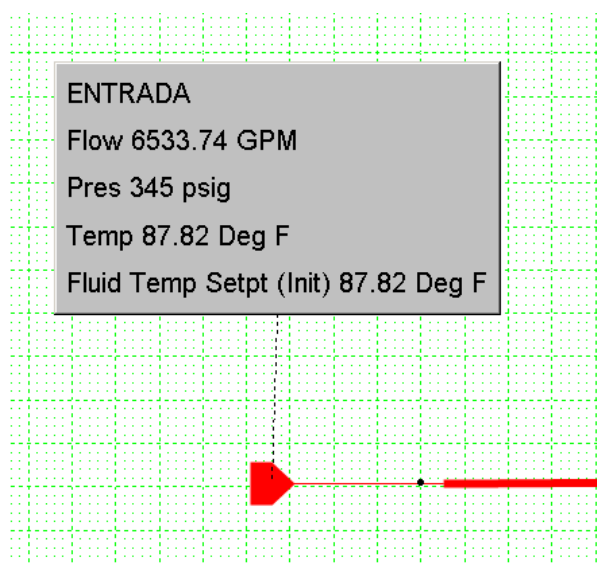
File Edit View Insert Simulation Chart Tools Table Report Window Help



	Device Type	Name	Setpoint	Units	Initial..	60	110	1200	1310	4910
1	Regulator	V. REDUCTORA PRS2	Flow Maximum	BBL/D	224016	224016	0	0	224016	224016
2	Block Valve	VALVULA DE EMERGENCIA	% open	percent	100	100	0	0	100	100

**TERCER ESCENARIO:** Se procedió a incrementar la presión de salida de la estación Chiquilpe a 345 PSI y se utiliza el escenario del “SEGUNDO ESCENARIO”

Tabla 21. Datos del tercer escenario



## 6. ANÁLISIS DE LOS ESCENARIOS.

### 6.1 ANÁLISIS DE CADA UNO DE LOS ESCENARIOS DE OPERACIÓN.

**PRIMER ESCENARIO:** Una vez corrido el primer escenario se obtiene las siguientes graficas las cuales muestran el comportamiento de la presión en el tiempo.

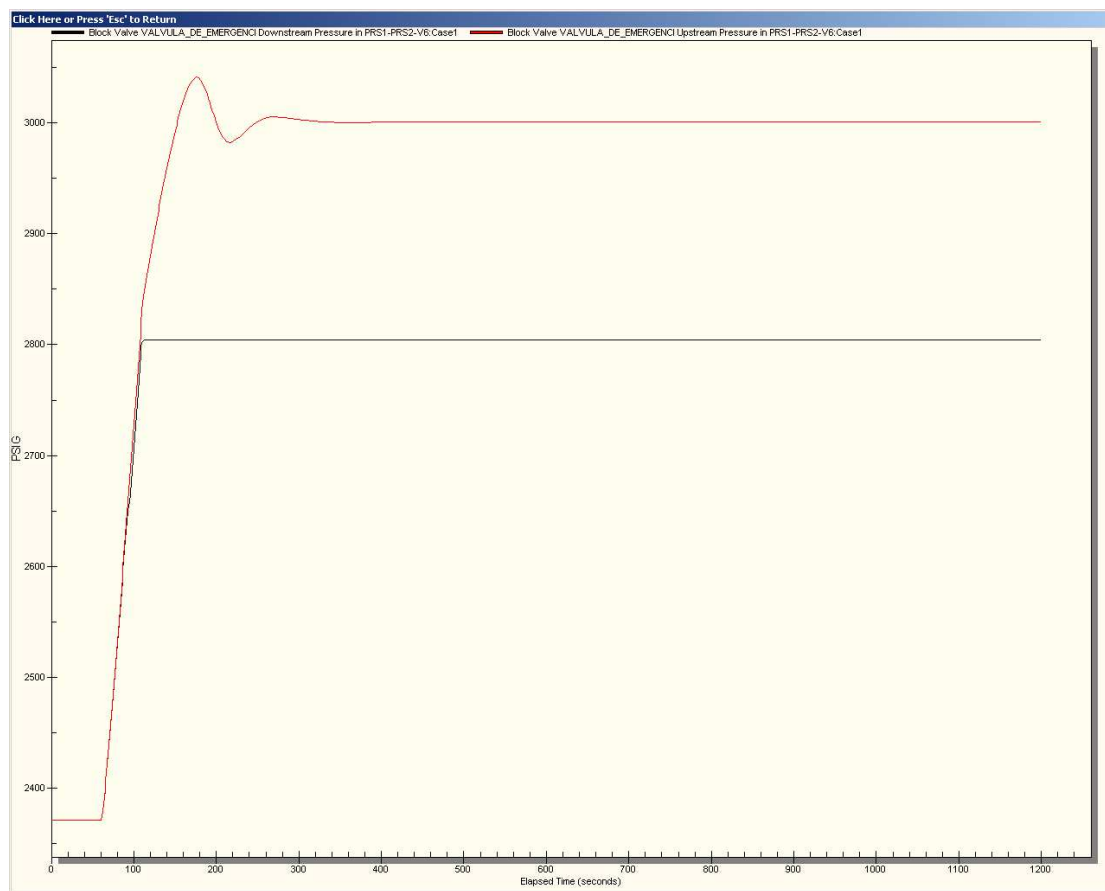


Grafico 48. Comportamiento de la presión del primer escenario

La válvula de emergencia se empieza a cerrar a los 60 segundos, el cierre total de la válvula se produce después de 50 segundos, es decir a los 110 segundos la válvula está completamente cerrada.

La máxima presión aguas arriba de la válvula de emergencia se da a los 197 segundos, llegando la presión a 3040.93 PSI. Luego del transiente de

presión, la presión estática aguas arriba de la válvula se estabiliza en 3000 PSI.

La presión aguas abajo de la válvula de emergencia antes de iniciar el cierre de la misma es de 2371 PSI. Luego a los 112 segundo la presión aguas abajo de la válvula de emergencia se estabiliza en 2804 PSI.

**SEGUNDO ESCENARIO:** Una vez corrido el segundo escenario se obtiene las siguientes graficas las cuales muestran el comportamiento de la presión en el tiempo.

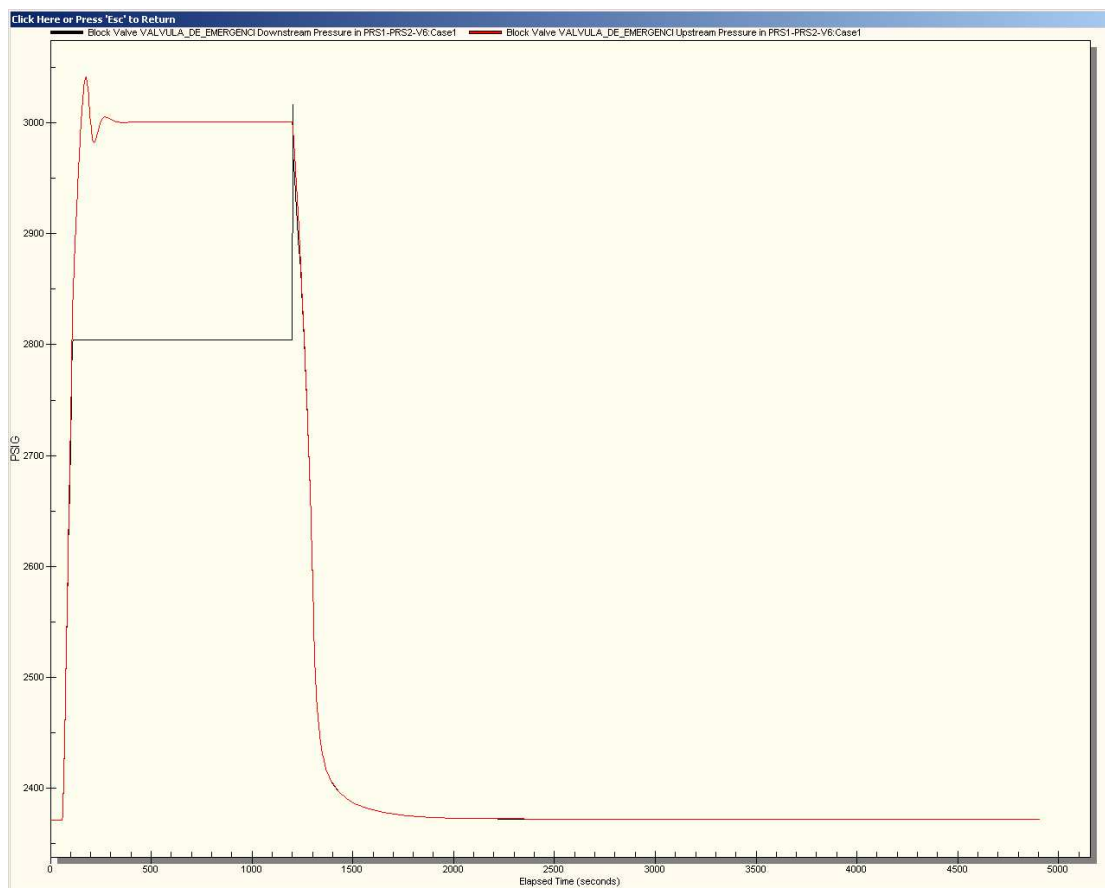


Gráfico 49. Comportamiento de la presión del segundo escenario

La presión aguas abajo de la válvula de emergencia después del cierre de la misma es de 2804 PSI.

La válvula de emergencia se empieza a abrir a los 1200 segundos (los 1200 segundos es un valor cualquiera que se establece el mismo puede ser cambiado y no afecta el comportamiento hidráulico), la apertura total de la



válvula se produce después de 110 segundos, es decir a los 1310 segundos la válvula está completamente abierta.

La máxima presión aguas abajo de la válvula de emergencia se da a los 1202 segundos, llegando la presión a 3016 PSI. Luego del transiente de presión, la presión aguas abajo de la válvula se estabiliza en 2372 PSI.

**TERCER ESCENARIO:** Una vez corrido el escenario se obtiene la siguiente grafica la cual muestra el comportamiento de la presión en el tiempo.

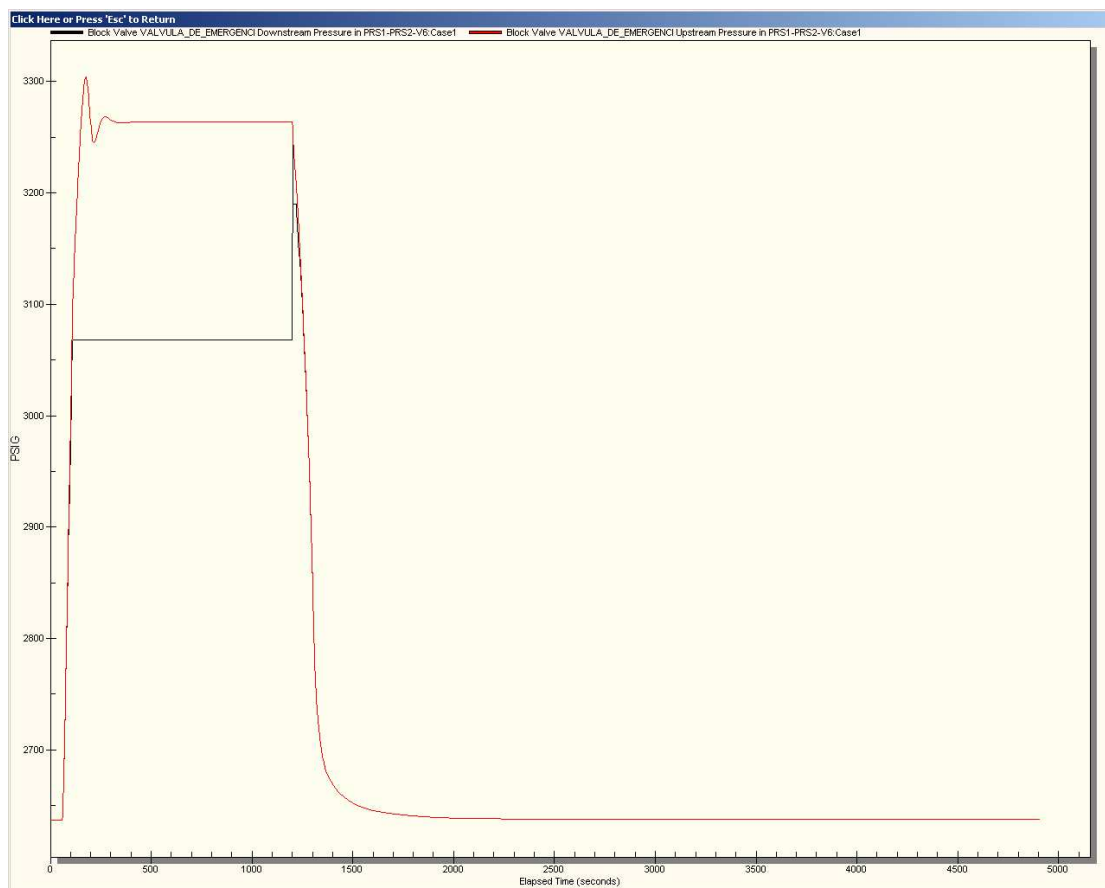


Gráfico 50. Comportamiento de la presión del tercer escenario

La máxima presión aguas arriba de la válvula de emergencia debido al cierre de la válvula, se da a los 174 segundos, llegando la presión a 3303 PSI. Luego del transiente de presión, la presión estática aguas arriba de la válvula se estabiliza en 3263 PSI.



La presión aguas abajo de la válvula de emergencia antes de iniciar el cierre de la misma es de 2637 PSI. Luego del cierre de la válvula a los 111 segundo la presión aguas abajo de la válvula de emergencia se estabiliza en 3068 PSI.

La máxima presión aguas abajo de la válvula de emergencia después de la apertura de la válvula, se da a los 1206 segundos, llegando la presión a 3242 PSI. Luego del transiente de presión, la presión aguas abajo de la válvula se estabiliza en 2637 PSI.

La siguiente grafica es del flujo que pasa a través de la válvula de seguridad

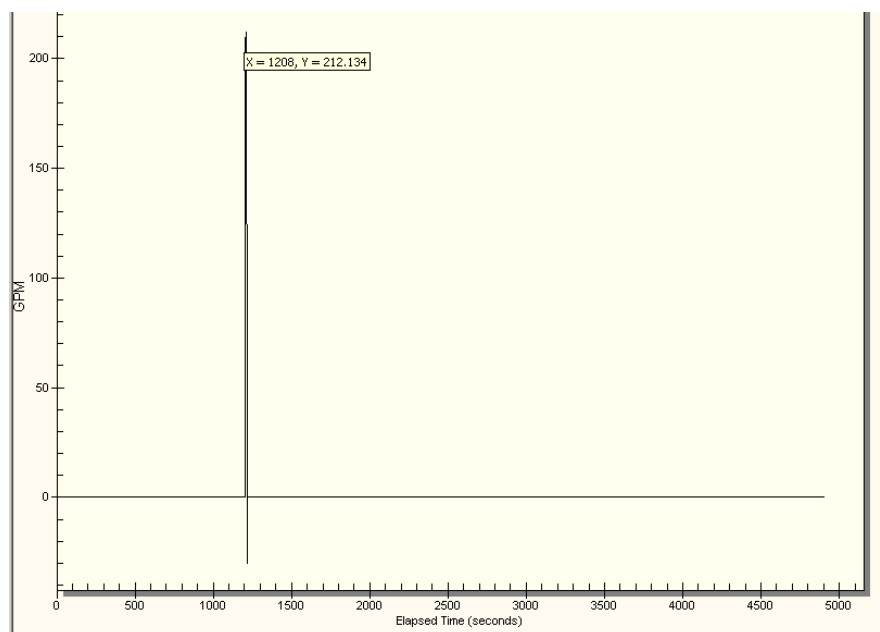


Grafico 51. Flujo máximo de la válvula de seguridad.

A los 1208 segundos por la válvula de seguridad pasa un caudal de 212.134 GPM.

## 6.2. DETERMINACIÓN DEL ESCENARIO MAS PROBABLE QUE PUEDE ESTAR CAUSANDO LA FUGA DE CRUDO A TRAVÉS DE LA VÁLVULA DE DRENAJE DE LA VÁLVULA DE SEGURIDAD TÉRMICA AL INGRESO DE LA ESTACIÓN PUERTO QUITO.

La válvula de seguridad PSV-07003 esta calibrada para abrirse a los 3190 PSI y soportar un caudal de 183.4 GPM.



Grafico 52. Placa de la válvula de seguridad PSV-07003

Tanto en el primer y segundo escenario la presión generada por los transientes no sobrepasa los 3190 PSI. Por lo tanto estos dos escenarios no están causando la fuga de crudo a la entrada de la estación de Puerto Quito.

En el tercer escenario se puede constatar que:

- La presión más alta a la salida de la válvula de emergencia se produce después de la apertura de la misma, llegando la presión a 3242 PSI. Presión suficiente para que entre a actuar la válvula de seguridad PSV-07003.
- El caudal que pasa por la válvula de seguridad es de 212 GPM, caudal superior al que soporta la válvula.

La apertura de la válvula de seguridad a una alta presión y a un caudal mayor al que soporta la válvula causa que las partes internas de la válvula de seguridad se deformen y por consiguiente quede la válvula de seguridad dañada y abierta. Esta conclusión se la puede deducir del informe (Anexo G) del estado en que se encontró la válvula de seguridad.

Por consiguiente la válvula de seguridad sigue descargando crudo de la línea, el alto flujo que pasa por la válvula de seguridad genera una alta temperatura y vibración de la línea de descarga del crudo provocando que la válvula de drenaje se afloje y por consiguiente se produzca el derrame de crudo.

## 7. CONDICIONES ÓPTIMAS DE OPERACIÓN.

### 7.1 DETERMINAR LAS CONDICIONES ÓPTIMAS DE OPERACIÓN DEL TRAMO EN ESTUDIO.

Para determinar las condiciones óptimas de operación se procedió a determinar cuál debería ser la presión de salida máxima de la estación Chiquilpe y cuál debería ser la presión máxima de ingreso a la estación Puerto Quito. Tomando en consideración que:

- La presión de salida de la estación Chiquilpe debe ser mayor en un 20% a la presión de salida que genera Slack Flow en el Oleoducto.
- La presión de vapor del crudo es de 3 PSI.
- La presión aguas arriba de la válvula de emergencia de la Estación Puerto Quito una vez la válvula se haya cerrada, debe ser menor o igual a 3030 PSI. la misma que es menor en un 5 % a la presión de 3190 PSI que es la que genera que la válvula de seguridad actúe.

Se procedió a simular los diferentes escenarios obteniéndose los siguientes resultados:

- Con una presión de salida de 50 PSI, de la estación Chiquilpe se genera flujo con cambio de fase en la línea a 241.58 metros.

```
Slack line detected at 241.58 m from head of pipe  
WARNING: Negative pressures detected  
WARNING: Please examine Steady-State validity !!!
```

Grafico 53. Flujo con cambio de fase.

- Con una presión de salida de 115 PSI, de la estación Chiquilpe. La presión aguas arriba de la válvula de emergencia de la Estación Puerto Quito una vez la válvula se haya cerrado es de 3030 PSI.

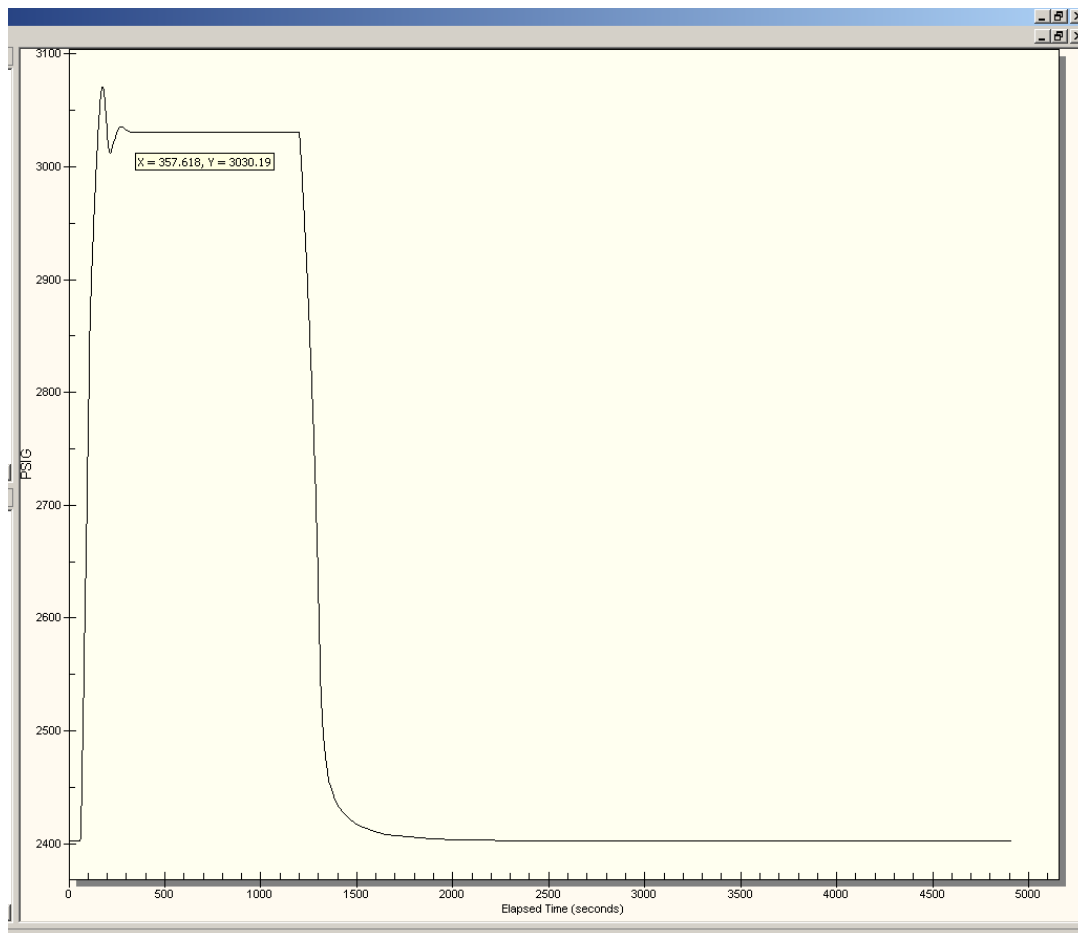


Gráfico 54. Comportamiento de la presión.

Determinándose que:

- La presión de salida de la Estación Chiquilpe debe estar entre 60 y 115 PSI, para un caudal de 224,016 BLL/D.
- La presión de entrada a la estación Puerto Quito no debe ser mayor a 2400 PSI.

## **8. CONCLUSIONES Y RECOMENDACIONES.**

El modelamiento hidráulico con PIPELINESTUDIO permitió determinar las condiciones óptimas de operación del tramo Chiquilpe - Puerto Quito.

El modelamiento hidráulico con PIPELINESTUDIO permitió determinar las causas que provocaron las dos fugas de crudo a la entrada de la estación reductora de presión Puerto Quito.

Es la primera vez que se realiza un análisis del comportamiento hidráulico para un tramo del oleoducto de crudos pesados OCP S.A. utilizando el sistema PIPELINESTUDIO, llegándose a obtener valores calculados de presión, caudal y temperatura del fluido muy cercanos a los valores reales de operación.

El modelamiento hidráulico con PIPELINESTUDIO permite establecer los rangos de caudal y presión de trabajo mínimo y máximo del oleoducto, que no afectan la integridad del oleoducto, las estaciones de bombeo y reductoras de presión.

El modelamiento hidráulico con PIPELINESTUDIO, permite afirmar los parámetros operativos reales, evitando daños al oleoducto y estaciones que antes eran imprevisibles y que luego del modelamiento se transforman en previsibles.

El modelamiento hidráulico con PIPELINESTUDIO permite analizar y determinar si los transientes que se generan en la operación del oleoducto pueden dañar la tubería y las estaciones.

Se recomienda utilizar el mismo esquema de análisis de oleoductos del presente proyecto, para analizar el comportamiento hidráulico de otros oleoductos.

Se recomienda realizar el mismo análisis hidráulico con PIPELINESTUDIO para todos los tramos del oleoducto OCP S.A.,

estableciéndose las presiones y caudales de trabajo que no afectan la integridad del oleoducto.

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## ANEXOS

Anexo A: LIBRO DE TUBERIA.

Anexo B: Corrida del chanco inteligente.

Anexo C: Base de datos que se utilizara para el modelamiento.

Anexo D: Datos del modelamiento Paramo – Chiquilpe.

Anexo E: Datos del modelamiento Chiquilpe – Puerto Quito.

Anexo F: Datos del tiempo de cierre y apertura de la ESDV-07004.

Anexo G: Informe del estado de la válvula de seguridad PSV-07003.

# ANEXO A

PIPE			
ESPESOR ( mm )	DIAMETRO ( pulg )	LONGITUD DE LA TUBERIA ( Km - m )	ELEVACION DE LA TUBERIA ( m )
19	32	185,904.58	2,862.75
19.05	32	185,907.98	2,862.74
17.48	32	185,909.15	2,862.74
17.5	32	185,910.66	2,862.73
19.05	32	185,915.98	2,862.74
22.23	32	185,918.71	2,862.03
19.05	32	185,920.52	2,861.14
22.23	32	185,923.06	2,860.45
19.05	32	185,925.66	2,860.44
19.05	32	185,929.07	2,860.43
19.05	32	185,932.32	2,860.44
15.88	32	185,932.66	2,860.43
19.05	32	185,938.66	2,860.43
22.23	32	185,945.57	2,860.39
22.23	32	185,951.42	2,860.31
19.05	32	185,963.38	2,860.34
22.23	32	185,970.76	2,857.95
15.88	32	185,976.08	2,854.11
15.88	32	185,979.21	2,853.08
15.88	32	185,988.30	2,852.23
15.88	32	186,000.68	2,852.28
15.88	32	186,012.94	2,852.32
15.88	32	186,025.32	2,853.19
15.88	32	186,027.81	2,853.41
15.88	32	186,040.14	2,856.52
15.88	32	186,045.04	2,858.24
19.05	32	186,057.29	2,861.29
19.05	32	186,069.43	2,863.10
19.05	32	186,081.42	2,864.76
19.05	32	186,092.20	2,866.42
19.05	32	186,101.95	2,867.77
19.6	32	186,108.34	2,868.00
15.88	32	186,120.67	2,867.54
19.05	32	186,133.01	2,867.35
19.05	32	186,145.41	2,866.91
19.05	32	186,157.37	2,866.11
15.88	32	186,163.69	2,865.69
15.88	32	186,176.01	2,864.91
15.88	32	186,188.60	2,863.29
15.88	32	186,200.91	2,861.35
15.88	32	186,213.06	2,861.27
15.88	32	186,225.28	2,861.87
15.88	32	186,237.84	2,862.74
15.88	32	186,250.30	2,862.86
15.88	32	186,261.73	2,863.13
15.88	32	186,275.00	2,864.00
15.88	32	186,288.04	2,864.94
15.88	32	186,299.73	2,865.68
15.88	32	186,312.11	2,866.68

15.88	32	186,324.47	2,867.78
15.88	32	186,336.99	2,868.64
15.88	32	186,349.24	2,869.49
15.88	32	186,361.65	2,870.35
15.88	32	186,373.90	2,871.00
15.88	32	186,385.77	2,871.54
15.88	32	186,398.17	2,872.26
15.88	32	186,410.56	2,872.85
15.88	32	186,422.92	2,873.30
15.88	32	186,435.10	2,873.52
15.88	32	186,445.81	2,873.60
15.88	32	186,457.91	2,873.70
15.88	32	186,469.32	2,873.88
15.88	32	186,481.63	2,873.33
15.88	32	186,493.77	2,873.47
15.88	32	186,505.76	2,873.86
15.88	32	186,518.77	2,872.95
15.88	32	186,530.94	2,871.68
15.88	32	186,543.13	2,871.42
15.88	32	186,555.53	2,872.05
15.88	32	186,567.90	2,872.46
15.88	32	186,580.27	2,872.92
15.88	32	186,589.76	2,873.30
15.88	32	186,602.17	2,873.63
15.88	32	186,614.60	2,873.94
15.88	32	186,626.95	2,874.41
15.88	32	186,638.93	2,874.92
15.88	32	186,651.33	2,875.36
15.88	32	186,663.71	2,875.88
15.88	32	186,676.10	2,876.49
15.88	32	186,688.33	2,876.88
15.88	32	186,700.64	2,877.34
15.88	32	186,713.04	2,877.74
15.88	32	186,725.31	2,878.09
15.88	32	186,736.58	2,878.42
15.88	32	186,748.95	2,878.78
15.88	32	186,761.32	2,879.24
15.88	32	186,772.88	2,879.71
15.88	32	186,785.20	2,880.26
15.88	32	186,797.58	2,880.74
15.88	32	186,809.97	2,881.22
15.88	32	186,822.34	2,881.65
15.88	32	186,834.71	2,882.00
15.88	32	186,846.97	2,882.19
15.88	32	186,859.35	2,882.15
15.88	32	186,871.72	2,882.12
15.88	32	186,883.35	2,882.29
15.88	32	186,895.72	2,882.54
15.88	32	186,908.07	2,882.84
15.88	32	186,920.42	2,883.33
15.88	32	186,932.80	2,883.88
15.88	32	186,944.91	2,884.31
15.88	32	186,956.80	2,884.73
15.88	32	186,969.76	2,885.35
15.88	32	186,981.32	2,886.03
15.88	32	186,993.71	2,886.70

15.88	32	187,006.35	2,886.89
15.88	32	187,018.44	2,887.23
15.88	32	187,030.12	2,888.06
15.88	32	187,042.50	2,888.99
15.88	32	187,054.88	2,890.15
15.88	32	187,066.53	2,891.46
15.88	32	187,078.89	2,892.79
15.88	32	187,091.27	2,893.92
15.88	32	187,103.67	2,895.03
15.88	32	187,116.27	2,896.14
15.88	32	187,127.78	2,897.04
15.88	32	187,138.64	2,897.64
15.88	32	187,150.64	2,898.50
15.88	32	187,162.19	2,899.83
15.88	32	187,173.24	2,900.51
15.88	32	187,185.27	2,901.17
15.88	32	187,197.63	2,901.72
15.88	32	187,209.83	2,902.62
15.88	32	187,222.17	2,904.07
15.88	32	187,234.10	2,905.48
15.88	32	187,246.45	2,906.79
15.88	32	187,258.81	2,908.35
15.88	32	187,271.07	2,909.79
15.88	32	187,282.70	2,910.95
15.88	32	187,295.09	2,912.19
15.88	32	187,307.38	2,913.25
15.88	32	187,319.59	2,914.09
15.88	32	187,331.11	2,914.99
15.88	32	187,343.51	2,916.05
15.88	32	187,355.82	2,917.44
15.88	32	187,368.16	2,919.26
15.88	32	187,380.56	2,921.14
15.88	32	187,392.84	2,922.86
15.88	32	187,404.68	2,924.30
15.88	32	187,417.08	2,925.66
15.88	32	187,429.41	2,926.85
15.88	32	187,441.75	2,928.53
15.88	32	187,454.17	2,930.18
15.88	32	187,466.54	2,931.39
15.88	32	187,478.91	2,932.57
15.88	32	187,490.35	2,933.09
15.88	32	187,502.50	2,933.91
15.88	32	187,514.02	2,935.44
15.88	32	187,526.39	2,937.17
15.88	32	187,538.82	2,938.51
15.88	32	187,551.23	2,939.47
15.88	32	187,563.32	2,940.28
15.88	32	187,575.74	2,941.00
15.88	32	187,587.95	2,941.31
15.88	32	187,599.72	2,940.88
15.88	32	187,612.07	2,940.66
15.88	32	187,624.46	2,940.61
15.88	32	187,636.88	2,939.39
15.88	32	187,648.96	2,938.24
15.88	32	187,661.35	2,937.48
15.88	32	187,673.74	2,936.38

15.88	32	188,364.75	2,949.46
15.88	32	188,376.08	2,949.40
15.88	32	188,387.78	2,949.68
15.88	32	188,399.11	2,949.76
15.88	32	188,411.57	2,949.86
15.88	32	188,423.00	2,949.97
15.88	32	188,434.42	2,950.12
15.88	32	188,445.95	2,950.32
15.88	32	188,456.31	2,950.43
15.88	32	188,468.50	2,950.70
15.88	32	188,479.76	2,951.22
15.88	32	188,491.11	2,951.50
15.88	32	188,503.58	2,953.12
15.88	32	188,515.96	2,955.31
15.88	32	188,528.31	2,956.49
15.88	32	188,533.13	2,956.68
15.88	32	188,545.56	2,956.41
15.88	32	188,557.72	2,956.42
15.88	32	188,570.18	2,957.42
15.88	32	188,582.59	2,958.11
15.88	32	188,594.94	2,958.74
15.88	32	188,604.54	2,959.43
15.88	32	188,616.90	2,960.52
15.88	32	188,629.25	2,961.91
15.88	32	188,641.67	2,963.29
15.88	32	188,654.10	2,963.94
15.88	32	188,666.21	2,964.43
15.88	32	188,678.56	2,965.28
15.88	32	188,690.94	2,966.14
15.88	32	188,703.32	2,967.17
15.88	32	188,715.67	2,968.64
15.88	32	188,728.05	2,970.03
15.88	32	188,740.43	2,971.36
15.88	32	188,752.82	2,972.44
15.88	32	188,765.20	2,973.40
15.88	32	188,777.58	2,974.22
15.88	32	188,789.94	2,975.19
15.88	32	188,802.57	2,976.59
15.88	32	188,814.98	2,977.88
15.88	32	188,827.33	2,979.03
15.88	32	188,839.61	2,980.25
15.88	32	188,852.00	2,981.49
15.88	32	188,864.30	2,982.66
15.88	32	188,876.68	2,983.88
15.88	32	188,889.04	2,984.97
15.88	32	188,901.40	2,986.15
15.88	32	188,913.78	2,987.34
15.88	32	188,926.14	2,988.69
15.88	32	188,938.43	2,990.21
15.88	32	188,950.78	2,991.77
15.88	32	188,963.16	2,992.84
15.88	32	188,975.52	2,993.62
15.88	32	188,987.68	2,995.16
15.88	32	189,000.17	2,996.96
15.88	32	189,012.22	2,997.97
15.88	32	189,024.57	2,999.07

15.88	32	189,036.51	3,000.58
15.88	32	189,048.98	3,002.16
15.88	32	189,061.34	3,003.55
15.88	32	189,073.73	3,004.90
15.88	32	189,085.97	3,006.33
15.88	32	189,098.33	3,007.84
15.88	32	189,110.74	3,009.27
15.88	32	189,123.10	3,010.55
14.27	32	189,135.48	3,011.80
14.27	32	189,147.87	3,013.05
14.27	32	189,160.17	3,014.36
14.27	32	189,172.53	3,015.70
14.27	32	189,184.93	3,016.96
14.27	32	189,197.29	3,018.08
14.27	32	189,209.65	3,019.35
14.27	32	189,221.99	3,021.03
14.27	32	189,234.31	3,022.81
14.27	32	189,246.66	3,024.35
14.27	32	189,258.49	3,025.35
14.27	32	189,270.88	3,026.03
14.27	32	189,283.30	3,026.04
14.27	32	189,295.48	3,025.89
14.27	32	189,307.81	3,027.11
14.27	32	189,320.24	3,028.12
14.27	32	189,332.58	3,028.98
14.27	32	189,344.96	3,030.26
14.27	32	189,357.37	3,030.66
14.27	32	189,369.68	3,030.13
14.27	32	189,382.04	3,029.44
14.27	32	189,394.45	3,028.49
14.27	32	189,406.32	3,027.30
14.27	32	189,418.63	3,026.06
14.27	32	189,431.04	3,024.07
14.27	32	189,443.32	3,022.87
14.27	32	189,455.64	3,022.62
14.27	32	189,467.67	3,021.84
14.27	32	189,480.02	3,020.57
14.27	32	189,492.08	3,020.43
14.27	32	189,504.23	3,022.37
14.27	32	189,514.13	3,025.05
14.27	32	189,523.12	3,027.20
14.27	32	189,535.52	3,028.74
14.27	32	189,537.84	3,028.89
14.27	32	189,550.15	3,029.75
14.27	32	189,562.42	3,031.68
14.27	32	189,574.38	3,034.49
14.27	32	189,586.68	3,038.47
14.27	32	189,598.94	3,043.46
14.27	32	189,611.35	3,048.07
14.27	32	189,623.49	3,050.75
14.27	32	189,635.71	3,053.10
14.27	32	189,648.07	3,056.18
14.27	32	189,660.44	3,059.28
14.27	32	189,671.01	3,062.42
14.27	32	189,682.96	3,066.61
14.27	32	189,694.02	3,070.65

14.27	32	189,706.46	3,074.41
14.27	32	189,718.80	3,077.26
14.27	32	189,730.91	3,078.96
14.27	32	189,743.30	3,079.75
14.27	32	189,755.71	3,079.86
14.27	32	189,767.63	3,079.57
14.27	32	189,779.89	3,078.91
14.27	32	189,792.25	3,077.71
14.27	32	189,804.32	3,077.41
14.27	32	189,816.61	3,079.30
14.27	32	189,828.95	3,081.90
14.27	32	189,841.19	3,084.07
14.27	32	189,852.67	3,085.55
14.27	32	189,865.08	3,087.00
14.27	32	189,877.45	3,088.11
14.27	32	189,889.77	3,089.16
14.27	32	189,901.99	3,090.08
14.27	32	189,914.39	3,090.38
15.88	32	189,916.21	3,090.38
14.27	32	189,928.64	3,089.09
14.27	32	189,940.71	3,086.47
14.27	32	189,953.68	3,083.93
14.27	32	189,966.05	3,084.61
14.27	32	189,977.75	3,087.79
14.27	32	189,990.06	3,092.02
14.27	32	190,002.42	3,095.43
14.27	32	190,014.82	3,097.16
14.27	32	190,019.81	3,097.64
14.27	32	190,031.76	3,097.95
14.27	32	190,044.25	3,096.94
14.27	32	190,056.28	3,095.43
14.27	32	190,068.62	3,092.55
14.27	32	190,081.08	3,089.50
14.27	32	190,093.41	3,087.93
14.27	32	190,105.78	3,087.96
14.27	32	190,118.08	3,088.08
14.27	32	190,130.28	3,089.95
14.27	32	190,142.57	3,093.00
14.27	32	190,154.94	3,095.64
14.27	32	190,167.65	3,097.65
14.27	32	190,179.81	3,099.40
14.27	32	190,182.83	3,099.82
14.27	32	190,184.42	3,100.06
14.27	32	190,194.69	3,101.54
14.27	32	190,196.52	3,101.80
14.27	32	190,208.82	3,103.35
14.27	32	190,221.04	3,104.93
14.27	32	190,232.98	3,106.94
14.27	32	190,245.61	3,108.17
14.27	32	190,256.93	3,109.22
19.05	32	190,258.28	3,109.42
19.05	32	190,261.84	3,109.92
19.05	32	190,263.18	3,110.09
14.27	32	190,270.13	3,111.15
14.27	32	190,282.51	3,113.30
14.27	32	190,294.88	3,115.71



14.27	32	190,307.26	3,118.28
14.27	32	190,318.99	3,120.45
14.27	32	190,331.37	3,122.48
14.27	32	190,343.75	3,124.69
14.27	32	190,356.10	3,126.99
14.27	32	190,368.52	3,128.77
14.27	32	190,380.85	3,130.40
14.27	32	190,393.23	3,132.31
14.27	32	190,405.59	3,133.22
14.27	32	190,417.16	3,134.26
14.27	32	190,429.54	3,135.05
14.27	32	190,441.74	3,135.77
14.27	32	190,454.08	3,137.23
14.27	32	190,466.16	3,138.77
14.27	32	190,478.51	3,139.82
14.27	32	190,490.88	3,140.48
14.27	32	190,502.84	3,141.17
14.27	32	190,515.26	3,141.75
14.27	32	190,527.59	3,142.88
14.27	32	190,539.99	3,144.30
14.27	32	190,552.36	3,144.83
14.27	32	190,564.73	3,145.38
14.27	32	190,577.09	3,145.37
14.27	32	190,589.42	3,145.37
14.27	32	190,601.79	3,145.66
14.27	32	190,614.16	3,145.99
14.27	32	190,618.11	3,146.10
14.27	32	190,630.49	3,146.35
14.27	32	190,642.88	3,146.21
14.27	32	190,655.24	3,145.54
14.27	32	190,667.63	3,143.76
14.27	32	190,679.92	3,142.50
14.27	32	190,692.19	3,143.71
14.27	32	190,704.61	3,145.28
14.27	32	190,716.98	3,146.27
14.27	32	190,729.37	3,146.82
14.27	32	190,741.04	3,146.76
14.27	32	190,753.30	3,147.22
14.27	32	190,765.63	3,149.21
14.27	32	190,777.99	3,151.36
14.27	32	190,790.35	3,152.84
14.27	32	190,802.70	3,154.59
14.27	32	190,814.94	3,156.96
14.27	32	190,827.29	3,159.88
14.27	32	190,839.23	3,163.00
14.27	32	190,851.57	3,166.32
14.27	32	190,863.92	3,169.73
14.27	32	190,876.23	3,173.11
14.27	32	190,888.52	3,176.45
14.27	32	190,900.88	3,179.59
14.27	32	190,913.25	3,182.72
14.27	32	190,925.65	3,185.92
14.27	32	190,938.04	3,188.71
14.27	32	190,950.28	3,190.93
14.27	32	190,962.64	3,193.22
14.27	32	190,975.01	3,195.72

14.27	32	190,986.95	3,198.47
14.27	32	190,999.29	3,201.82
14.27	32	191,011.56	3,205.41
11.91	32	191,013.60	3,206.01
11.91	32	191,025.97	3,209.22
11.91	32	191,038.27	3,212.01
11.91	32	191,050.61	3,215.05
11.91	32	191,062.56	3,218.11
11.91	32	191,074.98	3,221.10
11.91	32	191,086.33	3,223.22
11.91	32	191,098.69	3,224.56
11.91	32	191,111.00	3,226.13
11.91	32	191,121.77	3,228.13
11.91	32	191,134.12	3,230.71
11.91	32	191,146.46	3,233.87
11.91	32	191,158.69	3,238.18
11.91	32	191,171.05	3,243.75
11.91	32	191,183.45	3,249.38
11.91	32	191,195.52	3,254.61
11.91	32	191,207.87	3,259.79
11.91	32	191,220.25	3,264.70
11.91	32	191,232.59	3,269.67
11.91	32	191,244.98	3,274.69
11.91	32	191,257.25	3,279.33
11.91	32	191,269.27	3,283.56
11.91	32	191,281.66	3,287.12
11.91	32	191,293.97	3,289.72
11.91	32	191,306.26	3,292.74
11.91	32	191,318.46	3,297.03
11.91	32	191,330.73	3,301.69
11.91	32	191,343.25	3,306.32
11.91	32	191,355.45	3,310.26
11.91	32	191,367.80	3,313.06
11.91	32	191,380.12	3,316.37
11.91	32	191,391.91	3,320.68
11.91	32	191,404.20	3,325.29
11.91	32	191,416.60	3,329.39
11.91	32	191,428.97	3,333.30
11.91	32	191,441.33	3,336.95
11.91	32	191,453.70	3,340.16
11.91	32	191,466.09	3,342.83
11.91	32	191,478.02	3,345.43
11.91	32	191,490.10	3,347.88
11.91	32	191,502.53	3,349.77
11.91	32	191,514.88	3,351.53
11.91	32	191,527.17	3,353.34
11.91	32	191,539.37	3,355.36
11.91	32	191,551.77	3,357.40
11.91	32	191,564.14	3,359.17
11.91	32	191,576.58	3,360.57
11.91	32	191,588.86	3,362.18
11.91	32	191,601.09	3,364.32
11.91	32	191,612.52	3,366.59
11.91	32	191,624.74	3,369.21
11.91	32	191,637.14	3,371.57
11.91	32	191,649.61	3,372.81

11.91	32	191,662.03	3,373.09
11.91	32	191,674.08	3,372.96
11.91	32	191,686.44	3,372.74
11.91	32	191,698.81	3,372.05
11.91	32	191,711.21	3,370.59
11.91	32	191,723.47	3,369.82
11.91	32	191,735.79	3,370.90
11.91	32	191,748.18	3,372.47
11.91	32	191,760.59	3,373.26
11.91	32	191,772.96	3,373.48
11.91	32	191,785.28	3,373.27
11.91	32	191,797.62	3,372.79
11.91	32	191,809.57	3,372.32
11.91	32	191,821.51	3,372.15
11.91	32	191,833.83	3,373.08
11.91	32	191,846.15	3,375.37
11.91	32	191,855.13	3,378.05
11.91	32	191,867.52	3,381.05
11.91	32	191,879.39	3,384.02
11.91	32	191,892.31	3,386.72
11.91	32	191,904.77	3,388.50
11.91	32	191,917.01	3,389.46
11.91	32	191,929.38	3,390.18
11.91	32	191,941.74	3,390.65
11.91	32	191,953.97	3,390.94
11.91	32	191,966.35	3,391.17
11.91	32	191,979.06	3,391.42
11.91	32	191,990.77	3,391.93
11.91	32	192,003.12	3,392.78
11.91	32	192,015.49	3,393.86
11.91	32	192,027.80	3,395.19
11.91	32	192,040.18	3,396.44
11.91	32	192,052.39	3,397.72
11.91	32	192,064.79	3,399.18
11.91	32	192,077.20	3,400.51
11.91	32	192,089.54	3,401.79
11.91	32	192,101.93	3,402.62
11.91	32	192,114.32	3,403.09
11.91	32	192,126.75	3,403.05
11.91	32	192,139.14	3,402.12
11.91	32	192,151.48	3,400.28
11.91	32	192,163.84	3,398.49
11.91	32	192,176.19	3,397.44
11.91	32	192,188.47	3,397.25
11.91	32	192,200.66	3,397.54
11.91	32	192,210.77	3,397.62
11.91	32	192,223.11	3,397.96
11.91	32	192,235.33	3,398.42
11.91	32	192,247.71	3,398.59
11.91	32	192,260.11	3,397.85
11.91	32	192,272.51	3,396.89
11.91	32	192,284.77	3,396.65
11.91	32	192,297.21	3,396.44
11.91	32	192,309.50	3,396.12
11.91	32	192,315.79	3,396.06
11.91	32	192,327.94	3,395.93

11.91	32	192,340.33	3,395.86
11.91	32	192,352.58	3,395.70
11.91	32	192,364.95	3,395.11
11.91	32	192,377.33	3,394.21
11.91	32	192,383.41	3,393.87
11.91	32	192,395.49	3,393.03
11.91	32	192,407.75	3,391.97
11.91	32	192,419.70	3,390.80
11.91	32	192,431.67	3,389.47
11.91	32	192,443.90	3,388.17
11.91	32	192,456.19	3,387.62
11.91	32	192,468.16	3,387.31
11.91	32	192,480.57	3,386.30
11.91	32	192,493.07	3,384.06
11.91	32	192,505.20	3,381.06
11.91	32	192,517.16	3,378.02
11.91	32	192,529.56	3,376.31
11.91	32	192,541.88	3,376.32
11.91	32	192,553.81	3,377.50
11.91	32	192,566.69	3,379.45
11.91	32	192,579.06	3,380.97
11.91	32	192,591.39	3,382.43
11.91	32	192,603.29	3,384.06
11.91	32	192,615.60	3,385.62
11.91	32	192,627.86	3,386.83
11.91	32	192,640.37	3,387.92
11.91	32	192,652.80	3,388.21
11.91	32	192,665.13	3,387.60
11.91	32	192,677.46	3,386.17
11.91	32	192,689.50	3,383.68
11.91	32	192,701.93	3,381.31
11.91	32	192,714.34	3,380.16
11.91	32	192,726.73	3,379.37
11.91	32	192,739.13	3,378.12
11.91	32	192,751.49	3,376.25
11.91	32	192,763.62	3,374.93
11.91	32	192,775.97	3,374.61
11.91	32	192,788.39	3,373.88
11.91	32	192,800.80	3,372.01
11.91	32	192,813.18	3,369.82
11.91	32	192,825.54	3,367.55
11.91	32	192,837.92	3,365.77
11.91	32	192,850.13	3,365.30
11.91	32	192,862.48	3,365.32
11.91	32	192,868.79	3,365.38
11.91	32	192,881.17	3,365.26
11.91	32	192,893.57	3,364.91
11.91	32	192,905.94	3,364.41
11.91	32	192,918.35	3,364.30
11.91	32	192,930.75	3,364.41
11.91	32	192,942.98	3,364.41
11.91	32	192,955.26	3,364.36
11.91	32	192,967.62	3,364.03
11.91	32	192,979.98	3,363.85
11.91	32	192,992.37	3,363.49
11.91	32	193,004.78	3,362.49

11.91	32	193,016.92	3,361.76
11.91	32	193,029.16	3,362.00
11.91	32	193,041.55	3,362.41
11.91	32	193,053.94	3,362.20
11.91	32	193,065.81	3,361.61
11.91	32	193,078.06	3,361.22
11.91	32	193,090.43	3,360.99
11.91	32	193,102.75	3,360.85
11.91	32	193,115.05	3,360.57
11.91	32	193,127.41	3,360.28
11.91	32	193,139.76	3,359.88
11.91	32	193,152.11	3,359.28
11.91	32	193,164.23	3,359.11
11.91	32	193,176.83	3,358.89
11.91	32	193,189.10	3,358.32
11.91	32	193,201.43	3,358.05
11.91	32	193,213.77	3,357.84
11.91	32	193,226.11	3,357.61
11.91	32	193,238.48	3,357.29
11.91	32	193,250.80	3,356.95
11.91	32	193,263.02	3,356.07
11.91	32	193,275.31	3,354.60
11.91	32	193,287.68	3,353.54
11.91	32	193,299.90	3,354.23
11.91	32	193,312.36	3,354.80
11.91	32	193,324.72	3,354.90
11.91	32	193,337.01	3,355.17
11.91	32	193,349.32	3,355.85
11.91	32	193,352.33	3,355.89
11.91	32	193,355.32	3,355.93
11.91	32	193,361.67	3,356.01
11.91	32	193,374.05	3,356.14
11.91	32	193,386.41	3,356.57
11.91	32	193,398.76	3,357.39
11.91	32	193,411.00	3,358.46
11.91	32	193,423.34	3,359.27
11.91	32	193,435.74	3,359.81
11.91	32	193,448.01	3,360.18
11.91	32	193,460.29	3,360.25
11.91	32	193,472.67	3,360.16
11.91	32	193,485.00	3,360.02
11.91	32	193,497.34	3,359.62
11.91	32	193,509.68	3,359.45
11.91	32	193,522.45	3,358.39
11.91	32	193,534.54	3,357.45
11.91	32	193,546.92	3,356.54
11.91	32	193,559.28	3,355.60
11.91	32	193,571.62	3,354.89
11.91	32	193,583.99	3,354.25
11.91	32	193,596.36	3,353.60
11.91	32	193,608.73	3,353.13
11.91	32	193,621.10	3,352.65
11.91	32	193,633.22	3,352.33
11.91	32	193,645.72	3,351.94
11.91	32	193,657.95	3,351.71
11.91	32	193,670.18	3,351.83

11.91	32	193,682.48	3,351.96
14.27	32	193,684.61	3,352.00
15.88	32	193,696.91	3,352.26
15.88	32	193,709.15	3,352.53
15.88	32	193,721.53	3,352.82
15.88	32	193,733.91	3,353.12
15.88	32	193,746.30	3,353.36
15.88	32	193,758.69	3,353.48
15.88	32	193,771.05	3,353.55
15.88	32	193,783.43	3,353.63
15.88	32	193,795.80	3,353.72
15.88	32	193,808.18	3,353.80
15.88	32	193,820.54	3,353.92
15.88	32	193,832.79	3,354.05
15.88	32	193,845.13	3,354.22
15.88	32	193,857.50	3,354.42
15.88	32	193,869.86	3,354.88
15.88	32	193,882.14	3,355.98
15.88	32	193,894.54	3,357.17
15.88	32	193,906.90	3,358.22
15.88	32	193,919.21	3,358.83
15.88	32	193,931.60	3,359.31
15.88	32	193,944.00	3,360.00
15.88	32	193,956.06	3,360.72
15.88	32	193,968.31	3,361.50
15.88	32	193,977.39	3,362.07
15.88	32	193,989.75	3,362.95
15.88	32	194,002.13	3,363.95
15.88	32	194,014.04	3,364.97
15.88	32	194,025.90	3,365.76
15.88	32	194,038.28	3,366.31
15.88	32	194,050.46	3,366.83
15.88	32	194,062.83	3,367.17
15.88	32	194,075.20	3,367.33
15.88	32	194,087.57	3,367.44
15.88	32	194,099.46	3,367.49
15.88	32	194,111.85	3,367.54
15.88	32	194,123.77	3,367.70
15.88	32	194,136.16	3,367.56
15.88	32	194,148.53	3,366.92
15.88	32	194,160.82	3,367.79
15.88	32	194,171.27	3,368.35
15.88	32	194,183.29	3,368.66
15.88	32	194,195.99	3,368.92
15.88	32	194,208.37	3,369.18
15.88	32	194,220.39	3,369.52
15.88	32	194,231.41	3,369.10
15.88	32	194,232.74	3,369.00
15.88	32	194,245.01	3,366.97
15.88	32	194,257.48	3,364.09
15.88	32	194,269.80	3,362.44
15.88	32	194,282.13	3,362.36
15.88	32	194,292.89	3,362.61
15.88	32	194,302.24	3,362.69
15.88	32	194,311.26	3,362.75
15.88	32	194,321.32	3,362.84

15.88	32	194,329.76	3,362.87
15.88	32	194,355.88	3,362.97
15.88	32	194,368.18	3,363.71
15.88	32	194,371.20	3,364.02
15.88	32	194,380.52	3,365.03
15.88	32	194,392.88	3,366.22
15.88	32	194,403.08	3,366.92
15.88	32	194,415.44	3,367.58
15.88	32	194,427.84	3,368.06
15.88	32	194,440.22	3,368.62
15.88	32	194,452.49	3,368.96
15.88	32	194,464.86	3,369.51
15.88	32	194,477.24	3,370.08
15.88	32	194,489.59	3,370.75
15.88	32	194,501.77	3,371.50
15.88	32	194,514.02	3,372.39
15.88	32	194,526.54	3,373.16
15.88	32	194,538.64	3,373.64
15.88	32	194,551.03	3,373.90
15.88	32	194,563.37	3,374.78
15.88	32	194,575.59	3,376.35
15.88	32	194,586.05	3,377.64
15.88	32	194,600.45	3,379.05
15.88	32	194,612.65	3,380.48
15.88	32	194,625.04	3,382.20
15.88	32	194,637.42	3,384.05
15.88	32	194,649.86	3,385.92
15.88	32	194,662.15	3,386.98
15.88	32	194,674.50	3,388.78
15.88	32	194,687.43	3,392.94
15.88	32	194,699.12	3,396.43
15.88	32	194,711.11	3,398.79
15.88	32	194,723.49	3,401.24
15.88	32	194,735.87	3,403.41
14.27	32	194,739.83	3,403.98
15.88	32	194,752.22	3,405.43
15.88	32	194,762.62	3,406.22
15.88	32	194,775.05	3,407.50
15.88	32	194,787.25	3,407.81
15.88	32	194,799.71	3,407.19
15.88	32	194,812.17	3,406.99
15.88	32	194,824.71	3,409.03
15.88	32	194,837.18	3,412.79
15.88	32	194,849.44	3,414.97
15.88	32	194,861.66	3,417.12
15.88	32	194,873.28	3,419.27
15.88	32	194,885.65	3,421.65
15.88	32	194,897.51	3,423.87
15.88	32	194,909.89	3,425.96
15.88	32	194,922.24	3,427.90
15.88	32	194,934.38	3,429.93
15.88	32	194,946.71	3,432.28
15.88	32	194,958.94	3,434.69
15.88	32	194,971.31	3,437.06
15.88	32	194,983.67	3,439.23
15.88	32	194,996.00	3,441.20

15.88	32	195,008.37	3,443.38
15.88	32	195,020.70	3,445.69
15.88	32	195,033.07	3,448.24
15.88	32	195,045.43	3,450.94
15.88	32	195,057.84	3,453.36
14.27	32	195,059.97	3,453.73
11.91	32	195,072.29	3,455.58
11.91	32	195,084.70	3,457.21
11.91	32	195,096.90	3,458.76
11.91	32	195,109.26	3,460.54
11.91	32	195,121.63	3,462.53
11.91	32	195,134.00	3,464.76
11.91	32	195,146.31	3,467.43
11.91	32	195,158.68	3,470.62
11.91	32	195,171.08	3,473.83
11.91	32	195,183.45	3,476.77
11.91	32	195,195.76	3,479.69
11.91	32	195,208.13	3,482.68
11.91	32	195,220.50	3,485.83
11.91	32	195,232.86	3,489.08
11.91	32	195,245.22	3,492.31
11.91	32	195,257.49	3,495.74
11.91	32	195,269.87	3,499.58
11.91	32	195,281.99	3,503.44
11.91	32	195,294.33	3,507.06
11.91	32	195,306.68	3,510.37
11.91	32	195,318.95	3,513.55
11.91	32	195,331.23	3,516.70
11.91	32	195,343.60	3,520.08
11.91	32	195,355.74	3,523.91
11.91	32	195,368.11	3,527.98
11.91	32	195,380.47	3,531.90
11.91	32	195,392.58	3,535.52
11.91	32	195,405.00	3,538.75
11.91	32	195,416.92	3,540.54
11.91	32	195,429.14	3,542.80
11.91	32	195,441.49	3,546.37
11.91	32	195,453.80	3,550.87
11.91	32	195,465.91	3,555.78
11.91	32	195,478.21	3,560.03
8.74	32	195,490.54	3,563.57
8.74	32	195,502.62	3,566.55
8.74	32	195,515.01	3,568.66
8.74	32	195,526.98	3,570.46
8.74	32	195,539.35	3,571.75
8.74	32	195,551.18	3,572.68
8.74	32	195,563.45	3,573.59
14.27	32	195,564.76	3,573.70
14.27	32	195,568.16	3,573.94
14.27	32	195,569.42	3,574.05
8.74	32	195,575.49	3,574.50
8.74	32	195,583.43	3,575.16
8.74	32	195,595.71	3,576.01
8.74	32	195,607.98	3,577.56
8.74	32	195,620.19	3,579.22
8.74	32	195,632.57	3,581.05



8.74	32	195,644.05	3,582.58
8.74	32	195,656.42	3,584.20
8.74	32	195,668.55	3,585.87
8.74	32	195,680.55	3,587.45
8.74	32	195,692.92	3,588.59
8.74	32	195,704.62	3,588.99
8.74	32	195,716.89	3,589.19
8.74	32	195,729.29	3,589.23
8.74	32	195,741.56	3,589.29
8.74	32	195,753.85	3,589.50
8.74	32	195,766.23	3,589.89
8.74	32	195,778.48	3,590.36
8.74	32	195,790.80	3,590.64
8.74	32	195,803.19	3,590.83
8.74	32	195,815.53	3,591.10
8.74	32	195,827.78	3,591.80
8.74	32	195,840.16	3,593.18
8.74	32	195,852.53	3,594.95
8.74	32	195,864.38	3,596.97
8.74	32	195,876.77	3,599.70
8.74	32	195,889.05	3,602.68
8.74	32	195,901.52	3,605.50
8.74	32	195,913.70	3,607.92
8.74	32	195,926.12	3,610.33
8.74	32	195,938.52	3,612.18
8.74	32	195,950.63	3,613.63
8.74	32	195,962.75	3,614.95
8.74	32	195,975.08	3,616.22
8.74	32	195,987.26	3,617.75
8.74	32	195,999.38	3,619.47
8.74	32	196,011.81	3,620.81
8.74	32	196,023.88	3,622.42
8.74	32	196,036.31	3,623.71
8.74	32	196,048.67	3,624.62
8.74	32	196,061.09	3,625.30
8.74	32	196,073.50	3,625.96
8.74	32	196,082.32	3,626.53
8.74	32	196,094.44	3,627.24
8.74	32	196,106.71	3,627.94
8.74	32	196,119.04	3,628.69
8.74	32	196,131.43	3,629.39
8.74	32	196,143.82	3,630.12
8.74	32	196,156.14	3,630.94
8.74	32	196,168.05	3,631.88
8.74	32	196,180.25	3,633.00
8.74	32	196,192.64	3,634.26
8.74	32	196,204.90	3,635.62
8.74	32	196,217.22	3,637.16
8.74	32	196,229.46	3,638.80
8.74	32	196,241.51	3,640.57
8.74	32	196,253.90	3,642.61
8.74	32	196,266.16	3,644.89
8.74	32	196,278.44	3,647.31
8.74	32	196,290.79	3,650.21
8.74	32	196,303.04	3,653.48
8.74	32	196,314.95	3,656.70

8.74	32	196,326.60	3,659.00
8.74	32	196,339.24	3,663.01
8.74	32	196,350.46	3,665.44
8.74	32	196,359.92	3,667.22
8.74	32	196,371.31	3,669.50
8.74	32	196,382.20	3,671.90
8.74	32	196,393.30	3,675.48
8.74	32	196,405.32	3,679.18
11.91	32	196,408.27	3,679.97
8.74	32	196,420.34	3,683.40
8.74	32	196,432.77	3,687.20
8.74	32	196,445.13	3,690.61
8.74	32	196,457.41	3,693.77
8.74	32	196,469.81	3,696.95
8.74	32	196,482.14	3,699.87
8.74	32	196,494.51	3,702.40
8.74	32	196,506.87	3,704.31
8.74	32	196,519.20	3,705.91
8.74	32	196,521.16	3,706.18
8.74	32	196,530.17	3,707.19
8.74	32	196,542.43	3,708.54
8.74	32	196,554.75	3,710.10
8.74	32	196,567.07	3,711.63
8.74	32	196,579.31	3,713.18
8.74	32	196,591.59	3,714.49
8.74	32	196,603.78	3,715.47
8.74	32	196,616.25	3,716.31
8.74	32	196,628.34	3,717.28
8.74	32	196,640.52	3,718.30
8.74	32	196,650.49	3,718.88
8.74	32	196,662.66	3,719.68
8.74	32	196,673.88	3,720.47
11.91	32	196,675.70	3,720.59
8.74	32	196,683.61	3,721.20
8.74	32	196,695.76	3,722.03
8.74	32	196,707.15	3,722.75
8.74	32	196,717.47	3,723.31
11.91	32	196,728.86	3,723.46
11.91	32	196,741.27	3,722.58
9.53	32	196,752.66	3,720.41
9.53	32	196,764.11	3,718.33
9.53	32	196,776.17	3,718.44
9.53	32	196,788.33	3,720.18
8.74	32	196,800.75	3,722.83
8.74	32	196,813.00	3,725.43
8.74	32	196,825.31	3,727.99
8.74	32	196,837.54	3,729.07
8.74	32	196,841.86	3,729.25
8.74	32	196,854.23	3,729.82
8.74	32	196,866.27	3,730.73
8.74	32	196,878.01	3,733.14
8.74	32	196,890.39	3,735.69
8.74	32	196,902.00	3,737.70
8.74	32	196,914.31	3,740.61
8.74	32	196,926.52	3,743.93
8.74	32	196,938.85	3,747.63

8.74	32	196,951.32	3,751.57
8.74	32	196,963.22	3,755.30
8.74	32	196,975.59	3,759.23
8.74	32	196,987.94	3,762.98
8.74	32	197,000.30	3,765.62
8.74	32	197,012.71	3,767.14
8.74	32	197,025.10	3,768.47
8.74	32	197,037.32	3,770.49
8.74	32	197,049.53	3,773.76
8.74	32	197,061.80	3,777.49
8.74	32	197,074.24	3,779.55
8.74	32	197,086.61	3,780.47
8.74	32	197,099.04	3,781.88
8.74	32	197,111.18	3,782.30
8.74	32	197,122.65	3,783.22
8.74	32	197,134.36	3,784.14
8.74	32	197,146.65	3,785.01
8.74	32	197,158.19	3,785.74
8.74	32	197,170.40	3,786.39
8.74	32		
11.91	32	197,182.78	3,787.04
8.74	32	197,195.05	3,787.68
8.74	32	197,207.41	3,788.32
8.74	32	197,219.35	3,788.95
8.74	32	197,231.35	3,789.33
8.74	32	197,243.55	3,789.59
8.74	32	197,255.77	3,789.72
8.74	32	197,267.35	3,789.95
8.74	32	197,279.40	3,790.26
8.74	32	197,291.82	3,790.93
8.74	32	197,303.95	3,791.37
8.74	32	197,316.23	3,791.07
8.74	32	197,328.41	3,791.35
8.74	32	197,340.54	3,791.60
8.74	32	197,352.68	3,791.77
8.74	32	197,364.87	3,791.93
8.74	32	197,377.00	3,792.16
8.74	32	197,389.14	3,793.69
8.74	32	197,401.02	3,796.05
8.74	32	197,413.42	3,798.49
8.74	32	197,425.63	3,800.09
8.74	32	197,438.03	3,801.11
8.74	32	197,450.47	3,801.80
8.74	32	197,462.83	3,802.31
8.74	32	197,475.09	3,802.53
8.74	32	197,487.28	3,803.09
8.74	32	197,499.80	3,803.97
8.74	32	197,511.71	3,805.07
8.74	32	197,524.09	3,806.09
8.74	32	197,536.33	3,806.58
8.74	32	197,548.36	3,806.54
8.74	32	197,560.57	3,807.49
8.74	32	197,572.77	3,807.73
8.74	32	197,584.25	3,807.99
8.74	32	197,595.88	3,808.30
8.74	32	197,608.24	3,808.68

8.74	32	197,620.49	3,808.99
8.74	32	197,632.88	3,809.35
8.74	32	197,645.18	3,810.01
8.74	32	197,657.38	3,810.66
8.74	32	197,669.68	3,811.32
8.74	32	197,682.04	3,812.41
8.74	32	197,694.31	3,813.68
8.74	32	197,706.48	3,815.73
8.74	32	197,718.80	3,818.21
8.74	32	197,730.97	3,821.94
8.74	32	197,743.26	3,826.54
8.74	32	197,754.48	3,830.64
8.74	32	197,766.80	3,834.80
8.74	32	197,778.50	3,838.33
8.74	32	197,790.73	3,841.28
8.74	32	197,803.00	3,843.43
8.74	32	197,815.29	3,845.23
8.74	32	197,827.65	3,846.94
8.74	32	197,839.84	3,848.67
8.74	32	197,852.23	3,850.40
8.74	32	197,864.62	3,852.29
8.74	32	197,876.67	3,853.96
14.27	32	197,889.00	3,855.39
9.53	32	197,901.26	3,856.89
9.53	32	197,911.68	3,857.85
8.74	32	197,923.12	3,858.39
8.74	32	197,934.73	3,859.00
8.74	32	197,947.08	3,859.79
8.74	32	197,959.39	3,860.50
8.74	32	197,971.70	3,861.84
8.74	32	197,983.96	3,863.85
8.74	32	197,996.29	3,865.66
8.74	32	198,007.97	3,866.73
8.74	32	198,019.51	3,867.48
8.74	32	198,031.54	3,868.37
8.74	32	198,043.86	3,869.13
8.74	32	198,055.37	3,869.80
8.74	32	198,067.69	3,871.35
8.74	32	198,080.04	3,872.89
8.74	32	198,092.08	3,874.13
8.74	32	198,104.40	3,875.43
8.74	32	198,116.30	3,876.74
8.74	32	198,128.68	3,878.24
8.74	32	198,140.93	3,879.91
8.74	32	198,152.78	3,881.46
8.74	32	198,164.27	3,882.97
8.74	32	198,176.67	3,884.46
8.74	32	198,185.59	3,885.66
8.74	32	198,197.96	3,888.00
8.74	32	198,209.67	3,890.62
8.74	32	198,221.59	3,893.15
8.74	32	198,233.94	3,895.51
8.74	32	198,246.26	3,897.52
8.74	32	198,258.57	3,899.53
8.74	32	198,270.99	3,901.54
8.74	32	198,283.31	3,902.71

8.74	32	198,295.29	3,902.97
8.74	32	198,307.59	3,904.00
8.74	32	198,319.14	3,905.39
8.74	32	198,331.51	3,906.67
8.74	32	198,332.67	3,906.79
8.74	32	198,343.85	3,907.43
8.74	32	198,356.15	3,907.41
8.74	32	198,368.46	3,906.98
8.74	32	198,380.83	3,907.04
8.74	32	198,393.18	3,907.40
8.74	32	198,405.57	3,907.79
8.74	32	198,417.97	3,908.14
8.74	32	198,430.32	3,908.44
8.74	32	198,442.67	3,908.69
8.74	32	198,455.11	3,908.96
8.74	32	198,467.18	3,909.96
8.74	32	198,479.39	3,911.30
8.74	32	198,491.69	3,912.36
8.74	32	198,504.06	3,913.24
8.74	32	198,516.42	3,914.32
8.74	32	198,528.58	3,915.56
8.74	32	198,540.98	3,916.64
8.74	32	198,553.35	3,917.62
8.74	32	198,565.73	3,918.60
8.74	32	198,577.98	3,919.57
8.74	32	198,590.21	3,920.65
8.74	32	198,602.58	3,922.08
8.74	32	198,614.63	3,924.55
8.74	32	198,626.86	3,928.02
8.74	32	198,639.06	3,931.66
8.74	32	198,651.35	3,935.25
8.74	32	198,663.72	3,938.64
8.74	32	198,675.49	3,941.86
8.74	32	198,687.74	3,944.91
8.74	32	198,700.12	3,947.60
8.74	32	198,712.53	3,949.87
8.74	32	198,724.80	3,951.80
8.74	32	198,737.21	3,953.66
8.74	32	198,747.38	3,954.63
8.74	32	198,759.65	3,954.79
8.74	32	198,772.13	3,954.41
8.74	32	198,784.35	3,953.78
8.74	32	198,796.68	3,952.90
8.74	32	198,808.95	3,952.81
8.74	32	198,821.32	3,953.08
8.74	32	198,833.72	3,953.14
8.74	32	198,845.72	3,953.38
8.74	32	198,858.00	3,954.23
8.74	32	198,870.28	3,955.06
8.74	32	198,882.66	3,955.74
8.74	32	198,895.03	3,956.39
8.74	32	198,907.30	3,956.95
8.74	32	198,919.56	3,957.60
8.74	32	198,931.10	3,957.96
8.74	32	198,943.50	3,957.96
8.74	32	198,955.06	3,957.86

8.74	32	198,967.28	3,956.99
8.74	32	198,979.67	3,955.88
8.74	32	198,992.05	3,954.71
8.74	32	199,004.42	3,953.02
8.74	32	199,016.52	3,951.09
8.74	32	199,028.48	3,948.34
8.74	32	199,040.77	3,945.24
8.74	32	199,044.01	3,944.34
12.7	32	199,048.36	3,943.09
8.74	32	199,050.73	3,942.60
8.74	32	199,063.02	3,940.01
8.74	32	199,074.98	3,938.14
8.74	32	199,087.05	3,936.76
8.74	32	199,098.94	3,935.42
8.74	32	199,111.30	3,934.77
8.74	32	199,123.56	3,934.54
8.74	32	199,135.94	3,934.41
8.74	32	199,148.26	3,935.03
8.74	32	199,160.55	3,937.25
8.74	32	199,172.39	3,940.15
8.74	32	199,184.68	3,942.62
8.74	32	199,197.02	3,944.31
8.74	32	199,209.45	3,945.07
8.74	32	199,221.72	3,944.77
8.74	32	199,233.80	3,943.68
8.74	32	199,246.19	3,942.01
8.74	32	199,258.17	3,939.96
8.74	32	199,270.60	3,937.49
8.74	32	199,282.95	3,934.77
8.74	32	199,286.65	3,933.97
8.74	32	199,295.66	3,931.98
8.74	32	199,308.02	3,929.30
14.27	32	199,320.26	3,927.21
14.27	32	199,332.94	3,925.59
14.27	32	199,344.99	3,924.24
8.74	32	199,357.29	3,924.50
8.74	32	199,369.71	3,925.12
14.27	32	199,382.16	3,924.17
8.74	32	199,394.47	3,922.62
8.74	32	199,406.59	3,922.73
15.88	32	199,409.15	3,922.96
8.74	32	199,419.50	3,923.94
14.27	32	199,431.86	3,923.17
8.74	32	199,444.28	3,919.51
8.74	32	199,456.67	3,915.21
8.74	32	199,468.96	3,912.22
8.74	32	199,481.26	3,910.07
8.74	32	199,493.46	3,908.02
8.74	32	199,505.76	3,904.65
9.53	32	199,518.23	3,899.18
9.53	32	199,519.62	3,898.51
9.53	32	199,531.86	3,891.51
12.7	32	199,535.72	3,890.99
11.91	32	199,547.51	3,892.52
8.74	32	199,559.87	3,894.20
9.53	32	199,572.24	3,897.46

8.74	32	199,583.40	3,901.49
15.88	32	199,585.98	3,902.36
8.74	32	199,592.82	3,903.55
8.74	32	199,605.07	3,905.70
15.88	32	199,607.60	3,906.30
8.74	32	199,619.83	3,909.80
8.74	32	199,632.38	3,913.10
8.74	32	199,644.92	3,916.18
8.74	32	199,656.70	3,920.13
8.74	32	199,668.40	3,923.80
8.74	32	199,680.42	3,926.84
8.74	32	199,692.71	3,929.14
8.74	32	199,704.96	3,930.96
8.74	32	199,717.26	3,933.36
8.74	32	199,729.62	3,936.18
9.53	32	199,742.09	3,937.65
8.74	32	199,753.64	3,938.57
8.74	32	199,763.53	3,939.24
14.27	32	199,775.77	3,940.46
14.27	32	199,788.00	3,942.29
8.74	32	199,791.05	3,942.76
8.74	32	199,803.41	3,944.45
9.53	32	199,815.71	3,947.38
9.53	32	199,828.08	3,950.86
8.74	32	199,829.92	3,951.25
8.74	32	199,844.60	3,952.87
8.74	32	199,854.59	3,953.93
8.74	32	199,866.86	3,954.49
8.74	32	199,879.21	3,955.75
8.74	32	199,891.66	3,955.80
8.74	32	199,903.95	3,955.66
8.74	32	199,916.21	3,955.80
8.74	32	199,928.56	3,956.19
8.74	32	199,940.55	3,956.57
8.74	32	199,952.41	3,956.95
8.74	32	199,964.60	3,957.16
8.74	32	199,976.63	3,957.48
8.74	32	199,978.03	3,957.43
8.74	32	199,990.20	3,958.12
8.74	32	200,001.90	3,959.38
8.74	32	200,014.20	3,960.34
8.74	32	200,026.52	3,961.30
8.74	32	200,038.87	3,962.37
8.74	32	200,051.22	3,963.38
8.74	32	200,063.58	3,964.39
8.74	32	200,075.98	3,965.31
8.74	32	200,088.28	3,966.26
8.74	32	200,100.61	3,967.30
8.74	32	200,112.66	3,968.24
8.74	32	200,124.86	3,969.26
8.74	32	200,137.06	3,970.26
8.74	32	200,149.32	3,971.00
8.74	32	200,161.60	3,971.80
8.74	32	200,173.65	3,972.60
8.74	32	200,185.91	3,973.55
8.74	32	200,198.03	3,974.45

8.74	32	200,210.44	3,975.31
8.74	32	200,222.61	3,976.21
8.74	32	200,234.99	3,977.27
8.74	32	200,247.22	3,978.49
8.74	32	200,259.48	3,979.59
8.74	32	200,271.96	3,980.55
8.74	32	200,284.35	3,981.51
8.74	32	200,287.03	3,981.68
8.74	32	200,299.19	3,982.10
8.74	32	200,311.62	3,982.82
14.27	32	200,324.11	3,983.23
14.27	32	200,336.29	3,982.55
8.74	32	200,348.54	3,981.20
8.74	32	200,360.88	3,981.67
8.74	32	200,373.51	3,982.44
8.74	32	200,384.34	3,982.53
8.74	32	200,396.76	3,982.77
8.74	32	200,409.14	3,983.51
8.74	32	200,421.35	3,984.77
8.74	32	200,433.08	3,986.62
8.74	32	200,445.58	3,988.60
8.74	32	200,457.93	3,990.13
8.74	32	200,469.89	3,990.96
8.74	32	200,482.14	3,991.68
8.74	32	200,494.54	3,992.08
8.74	32	200,506.96	3,992.49
8.74	32	200,519.07	3,993.11
8.74	32	200,531.16	3,994.93
8.74	32	200,543.67	3,997.48
8.74	32	200,556.06	3,999.89
8.74	32	200,568.40	4,003.55
11.91	32	200,580.57	4,006.58
11.91	32	200,592.18	4,008.36
11.91	32	200,604.41	4,009.90
11.91	32	200,606.13	4,010.11
8.74	32	200,617.26	4,011.42
19.6	32	200,619.37	4,011.64
8.74	32	200,622.65	4,011.87
8.74	32	200,634.90	4,012.71
8.74	32	200,647.42	4,013.57
8.74	32	200,659.78	4,014.56
8.74	32	200,671.97	4,015.63
8.74	32	200,684.18	4,016.69
8.74	32	200,696.48	4,017.72
8.74	32	200,708.86	4,018.94
8.74	32	200,721.14	4,020.10
8.74	32	200,733.51	4,021.23
8.74	32	200,745.78	4,022.26
8.74	32	200,758.05	4,023.44
8.74	32	200,770.15	4,024.90
8.74	32	200,782.79	4,026.46
8.74	32	200,795.17	4,027.78
8.74	32	200,807.30	4,028.78
8.74	32	200,819.66	4,029.62
8.74	32	200,831.90	4,030.41
8.74	32	200,844.24	4,031.17



8.74	32	200,856.52	4,031.90
8.74	32	200,868.89	4,032.79
8.74	32	200,881.24	4,033.77
8.74	32	200,893.60	4,034.86
8.74	32	200,905.93	4,035.98
8.74	32	200,918.14	4,037.07
8.74	32	200,930.13	4,038.03
8.74	32	200,942.45	4,039.01
8.74	32	200,954.70	4,040.03
8.74	32	200,966.56	4,040.90
8.74	32	200,978.52	4,041.83
8.74	32	200,990.87	4,043.31
8.74	32	201,003.19	4,045.64
8.74	32	201,015.57	4,048.63
8.74	32	201,028.00	4,050.79
8.74	32	201,040.14	4,051.63
8.74	32	201,052.41	4,051.90
8.74	32	201,064.59	4,052.74
8.74	32	201,076.98	4,054.17
8.74	32	201,087.16	4,055.65
8.74	32	201,099.48	4,057.46
8.74	32	201,111.82	4,058.93
8.74	32	201,124.09	4,060.02
8.74	32	201,136.53	4,060.81
8.74	32	201,148.93	4,061.26
8.74	32	201,161.22	4,061.34
8.74	32	201,173.60	4,061.09
8.74	32	201,186.00	4,060.35
8.74	32	201,197.58	4,059.66
11.91	32	201,209.93	4,059.57
11.91	32	201,222.10	4,059.63
8.74	32	201,233.06	4,059.15
8.74	32	201,245.33	4,057.80
8.74	32	201,257.68	4,056.23
8.74	32	201,269.97	4,054.62
8.74	32	201,282.13	4,052.36
8.74	32	201,294.42	4,050.12
8.74	32	201,306.85	4,048.63
8.74	32	201,319.16	4,046.60
8.74	32	201,331.90	4,043.63
8.74	32	201,343.87	4,040.93
8.74	32	201,355.80	4,038.25
8.74	32	201,368.10	4,034.93
8.74	32	201,380.30	4,031.54
8.74	32	201,392.43	4,029.09
8.74	32	201,404.63	4,027.35
8.74	32	201,416.92	4,025.89
8.74	32	201,429.06	4,024.55
8.74	32	201,441.11	4,023.36
8.74	32	201,453.48	4,023.42
8.74	32	201,465.73	4,024.71
8.74	32	201,478.20	4,025.84
8.74	32	201,490.46	4,026.61
8.74	32	201,502.76	4,026.91
8.74	32	201,515.05	4,026.48
8.74	32	201,527.44	4,025.65

8.74	32	201,539.81	4,025.09
8.74	32	201,552.16	4,024.47
8.74	32	201,564.26	4,023.97
8.74	32	201,575.28	4,023.76
8.74	32	201,587.70	4,023.10
8.74	32	201,599.91	4,022.33
8.74	32	201,612.26	4,022.77
8.74	32	201,624.56	4,024.46
8.74	32	201,636.75	4,026.33
8.74	32	201,649.01	4,027.50
8.74	32	201,661.36	4,028.53
8.74	32	201,673.70	4,029.40
8.74	32	201,686.14	4,030.70
8.74	32	201,698.51	4,032.23
8.74	32	201,710.92	4,032.97
8.74	32	201,723.04	4,033.68
8.74	32	201,735.41	4,034.16
8.74	32	201,747.68	4,034.51
8.74	32	201,759.78	4,034.75
8.74	32	201,772.04	4,035.22
8.74	32	201,783.88	4,036.00
8.74	32	201,796.14	4,037.31
8.74	32	201,808.50	4,039.34
8.74	32	201,820.43	4,040.86
8.74	32	201,832.75	4,042.61
8.74	32	201,844.97	4,043.97
8.74	32	201,857.28	4,045.25
8.74	32	201,869.02	4,046.79
8.74	32	201,881.25	4,049.37
8.74	32	201,893.23	4,051.90
8.74	32	201,905.49	4,054.19
8.74	32	201,917.87	4,056.57
8.74	32	201,929.95	4,058.54
8.74	32	201,942.35	4,059.53
8.74	32	201,954.29	4,058.84
8.74	32	201,966.60	4,056.21
8.74	32	201,977.00	4,052.95
8.74	32	201,988.90	4,049.19
8.74	32	202,000.42	4,046.09
8.74	32	202,012.32	4,043.57
8.74	32	202,024.20	4,041.55
8.74	32	202,036.69	4,039.76
8.74	32	202,048.72	4,038.24
8.74	32	202,061.00	4,036.53
8.74	32	202,073.35	4,034.95
8.74	32	202,085.69	4,034.41
9.53	32	202,097.05	4,033.95
11.91	32	202,109.36	4,033.66
8.74	32	202,121.71	4,033.87
8.74	32	202,133.68	4,034.57
8.74	32	202,135.67	4,034.73
8.74	32	202,145.63	4,035.18
11.8	32	202,148.80	4,035.20
8.74	32	202,161.02	4,034.93
8.74	32	202,172.92	4,034.81
8.74	32	202,184.29	4,033.86

8.74	32	202,196.49	4,032.24
8.74	32	202,209.03	4,030.80
8.74	32	202,221.37	4,028.22
8.74	32	202,232.73	4,024.75
8.74	32	202,245.08	4,020.76
8.74	32	202,257.43	4,017.29
8.74	32	202,269.82	4,013.77
8.74	32	202,282.24	4,008.72
8.74	32	202,294.45	4,002.27
8.74	32	202,306.83	3,995.91
8.74	32	202,319.20	3,989.60
8.74	32	202,332.94	3,983.46
8.74	32	202,341.95	3,980.47
11.8	32	202,344.30	3,979.83
8.74	32	202,356.50	3,977.82
11.8	32	202,358.39	3,977.70
8.74	32	202,359.91	3,977.53
8.74	32	202,372.36	3,976.22
8.74	32	202,384.35	3,974.95
8.74	32	202,396.63	3,972.78
8.74	32	202,408.79	3,971.63
11.91	32	202,421.07	3,971.24
11.91	32	202,433.30	3,971.05
11.91	32	202,445.67	3,970.92
11.91	32	202,457.97	3,970.85
11.91	32	202,470.33	3,970.82
11.91	32	202,482.60	3,970.82
11.91	32	202,494.98	3,970.80
11.91	32	202,507.24	3,970.71
11.91	32	202,519.52	3,970.37
11.91	32	202,531.75	3,970.26
11.91	32	202,544.07	3,970.68
11.91	32	202,556.20	3,970.91
8.74	32	202,568.49	3,972.54
8.74	32	202,580.77	3,975.53
8.74	32	202,593.17	3,979.42
8.74	32	202,605.29	3,982.90
8.74	32	202,617.54	3,985.76
8.74	32	202,629.97	3,987.88
8.74	32	202,642.38	3,989.16
8.74	32	202,654.72	3,990.24
8.74	32	202,667.10	3,991.64
8.74	32	202,679.38	3,993.62
8.74	32	202,691.41	3,995.54
8.74	32	202,703.40	3,996.94
8.74	32	202,715.63	3,998.88
8.74	32	202,727.94	4,001.16
8.74	32	202,740.19	4,003.48
8.74	32	202,752.49	4,005.58
8.74	32	202,764.71	4,007.65
8.74	32	202,776.86	4,009.67
8.74	32	202,788.84	4,011.36
8.74	32	202,801.18	4,012.61
8.74	32	202,813.45	4,013.16
8.74	32	202,825.99	4,012.11
8.74	32	202,838.34	4,010.73

8.74	32	202,850.39	4,010.68
8.74	32	202,860.45	4,012.09
8.74	32	202,873.58	4,013.84
8.74	32	202,879.38	4,014.10
8.74	32	202,891.61	4,014.22
8.74	32	202,903.89	4,013.52
8.74	32	202,916.03	4,011.92
8.74	32	202,928.41	4,009.16
8.74	32	202,940.71	4,005.75
8.74	32	202,952.93	4,002.36
8.74	32	202,965.16	3,999.13
8.74	32	202,977.50	3,995.91
8.74	32	202,989.98	3,993.15
8.74	32	203,002.28	3,991.01
8.74	32	203,014.54	3,989.24
8.74	32	203,026.99	3,987.53
8.74	32	203,039.25	3,985.84
8.74	32	203,051.53	3,984.11
8.74	32	203,063.91	3,982.33
8.74	32	203,076.02	3,980.57
8.74	32	203,088.01	3,978.79
8.74	32	203,097.35	3,977.42
8.74	32	203,098.78	3,977.23
8.74	32	203,109.76	3,975.87
8.74	32	203,121.94	3,974.89
8.74	32	203,134.33	3,974.09
8.74	32	203,146.75	3,972.93
8.74	32	203,159.18	3,970.63
8.74	32	203,169.88	3,967.86
8.74	32	203,182.27	3,964.17
8.74	32	203,194.54	3,959.83
8.74	32	203,206.91	3,955.20
8.74	32	203,218.68	3,951.29
8.74	32	203,230.91	3,948.28
8.74	32	203,243.29	3,945.60
8.74	32	203,255.45	3,942.99
8.74	32	203,267.77	3,940.89
8.74	32	203,280.09	3,938.97
8.74	32	203,292.50	3,937.11
8.74	32	203,304.83	3,935.43
8.74	32	203,317.21	3,933.74
8.74	32	203,329.59	3,931.92
8.74	32	203,341.98	3,930.05
8.74	32	203,354.23	3,928.45
8.74	32	203,366.47	3,927.30
8.74	32	203,378.84	3,926.75
8.74	32	203,391.12	3,926.44
8.74	32	203,403.49	3,926.02
8.74	32	203,415.83	3,925.20
8.74	32	203,428.23	3,923.75
8.74	32	203,440.12	3,921.97
8.74	32	203,452.47	3,920.47
8.74	32	203,464.42	3,919.38
8.74	32	203,475.93	3,918.05
8.74	32	203,488.29	3,915.98
8.74	32	203,500.67	3,913.24

8.74	32	203,513.02	3,909.79
8.74	32	203,525.49	3,905.70
8.74	32	203,537.83	3,901.70
8.74	32	203,550.22	3,897.77
8.74	32	203,562.51	3,893.15
8.74	32	203,574.91	3,888.32
8.74	32	203,587.24	3,883.83
8.74	32	203,599.11	3,880.29
8.74	32	203,611.38	3,878.16
8.74	32	203,618.27	3,877.50
8.74	32	203,630.89	3,875.51
14.27	32	203,641.55	3,873.72
14.27	32	203,653.88	3,874.39
8.74	32	203,665.89	3,875.84
8.74	32	203,672.60	3,876.22
8.74	32	203,685.36	3,876.88
8.74	32	203,697.72	3,877.15
8.74	32	203,710.09	3,877.70
8.74	32	203,722.36	3,878.20
8.74	32	203,734.73	3,877.98
8.74	32	203,747.12	3,876.68
8.74	32	203,759.25	3,874.71
8.74	32	203,771.15	3,871.63
8.74	32	203,783.15	3,870.16
11.91	32	203,795.47	3,869.49
11.91	32	203,807.27	3,868.86
11.91	32	203,818.76	3,868.32
8.74	32	203,830.94	3,867.74
8.74	32	203,843.23	3,866.92
8.74	32	203,855.58	3,865.95
8.74	32	203,867.80	3,864.86
8.74	32	203,875.92	3,864.20
8.74	32	203,877.75	3,864.07
8.74	32	203,890.12	3,863.02
8.74	32	203,902.45	3,862.33
14.27	32	203,912.90	3,860.86
14.27	32	203,924.73	3,858.22
19.6	32	203,926.06	3,858.25
8.74	32	203,929.12	3,858.71
8.74	32	203,941.26	3,861.56
19.6	32	203,942.39	3,861.78
14.27	32	203,953.87	3,861.83
8.74	32	203,966.22	3,861.45
8.74	32	203,978.50	3,861.49
11.91	32	203,990.90	3,861.61
11.91	32	204,003.10	3,861.78
11.91	32	204,015.12	3,861.82
11.91	32	204,027.64	3,861.88
11.91	32	204,039.76	3,862.08
11.91	32	204,051.41	3,862.06
11.91	32	204,063.65	3,862.20
11.91	32	204,076.01	3,862.35
8.74	32	204,084.91	3,862.63
8.74	32	204,095.41	3,863.13
8.74	32	204,107.80	3,863.69
8.74	32	204,120.00	3,865.21

8.74	32	204,132.25	3,868.05
8.74	32	204,144.49	3,870.53
8.74	32	204,156.71	3,871.52
8.74	32	204,169.10	3,872.05
8.74	32	204,181.41	3,872.55
8.74	32	204,193.71	3,873.30
8.74	32	204,206.02	3,874.52
8.74	32	204,218.36	3,875.83
8.74	32	204,230.66	3,876.44
9.53	32	204,232.33	3,876.44
8.74	32	204,244.58	3,876.06
8.74	32	204,256.69	3,875.42
8.74	32	204,268.70	3,874.55
8.74	32	204,279.00	3,873.92
8.74	32	204,291.41	3,873.12
8.74	32	204,303.78	3,872.14
8.74	32	204,316.14	3,871.36
8.74	32	204,328.43	3,870.72
8.74	32	204,339.82	3,870.18
8.74	32	204,352.12	3,869.56
8.74	32	204,364.52	3,868.59
8.74	32	204,376.89	3,867.42
8.74	32	204,389.20	3,866.31
8.74	32	204,401.47	3,865.23
8.74	32	204,413.68	3,864.24
8.74	32	204,425.96	3,863.36
8.74	32	204,438.38	3,862.65
8.74	32	204,450.56	3,861.82
8.74	32	204,462.87	3,860.99
8.74	32	204,473.69	3,860.20
8.74	32	204,486.05	3,859.37
8.74	32	204,498.19	3,858.58
8.74	32	204,510.53	3,857.96
8.74	32	204,522.75	3,857.26
8.74	32	204,534.45	3,856.44
8.74	32	204,546.72	3,855.49
8.74	32	204,559.00	3,854.62
8.74	32	204,571.21	3,853.62
8.74	32	204,583.04	3,852.63
8.74	32	204,595.09	3,851.68
8.74	32	204,607.20	3,850.94
8.74	32	204,619.09	3,850.13
8.74	32	204,631.54	3,849.29
8.74	32	204,643.90	3,848.41
8.74	32	204,656.09	3,847.56
8.74	32	204,668.56	3,846.72
8.74	32	204,680.70	3,845.86
8.74	32	204,692.95	3,844.59
8.74	32	204,704.74	3,843.52
8.74	32	204,713.52	3,842.77
8.74	32	204,725.73	3,841.68
8.74	32	204,737.73	3,840.00
8.74	32	204,749.74	3,839.25
8.74	32	204,761.86	3,838.72
8.74	32	204,774.12	3,838.28
8.74	32	204,786.45	3,837.93

8.74	32	204,799.01	3,837.47
8.74	32	204,811.33	3,836.73
8.74	32	204,823.51	3,835.97
8.74	32	204,835.80	3,835.21
8.74	32	204,847.94	3,834.47
8.74	32	204,860.17	3,833.61
8.74	32	204,872.54	3,832.60
8.74	32	204,884.51	3,831.63
8.74	32	204,896.82	3,830.73
8.74	32	204,907.84	3,829.99
8.74	32	204,920.21	3,829.24
8.74	32	204,932.59	3,828.52
8.74	32	204,944.79	3,827.79
8.74	32	204,956.97	3,826.90
8.74	32	204,967.57	3,826.05
8.74	32	204,979.52	3,825.05
8.74	32	204,991.68	3,824.20
8.74	32	205,003.76	3,823.45
8.74	32	205,015.56	3,822.76
8.74	32	205,027.16	3,822.17
8.74	32	205,039.13	3,821.48
8.74	32	205,051.17	3,820.64
8.74	32	205,063.62	3,819.81
8.74	32	205,075.92	3,818.89
8.74	32	205,087.97	3,818.01
8.74	32	205,100.18	3,816.99
8.74	32	205,112.17	3,815.87
8.74	32	205,124.50	3,814.69
8.74	32	205,136.33	3,813.52
8.74	32	205,148.63	3,812.17
8.74	32	205,160.54	3,811.10
8.74	32	205,172.67	3,810.42
8.74	32	205,185.05	3,809.66
8.74	32	205,197.42	3,809.07
8.74	32	205,209.81	3,808.39
8.74	32	205,222.25	3,807.54
8.74	32	205,234.40	3,806.70
8.74	32	205,246.56	3,805.89
8.74	32	205,258.81	3,805.17
8.74	32	205,270.72	3,804.47
8.74	32	205,282.99	3,803.51
8.74	32	205,295.34	3,802.48
8.74	32	205,305.88	3,801.63
8.74	32	205,318.35	3,800.66
8.74	32	205,330.69	3,799.87
8.74	32	205,342.96	3,799.34
8.74	32	205,355.32	3,798.84
8.74	32	205,367.74	3,798.36
8.74	32	205,380.12	3,797.58
8.74	32	205,392.47	3,796.41
8.74	32	205,404.70	3,795.38
8.74	32	205,417.06	3,794.40
8.74	32	205,429.28	3,793.50
8.74	32	205,441.39	3,792.51
8.74	32	205,453.69	3,791.35
8.74	32	205,465.90	3,790.32

8.74	32	205,478.27	3,789.55
8.74	32	205,490.43	3,788.72
8.74	32	205,502.66	3,787.76
8.74	32	205,514.84	3,786.74
8.74	32	205,527.08	3,785.85
8.74	32	205,539.24	3,785.04
8.74	32	205,551.03	3,784.18
8.74	32	205,563.45	3,783.10
8.74	32	205,575.57	3,782.02
8.74	32	205,587.92	3,780.94
8.74	32	205,599.84	3,779.94
8.74	32	205,612.30	3,778.97
8.74	32	205,624.48	3,778.00
8.74	32	205,637.03	3,776.97
8.74	32	205,649.10	3,776.06
8.74	32	205,661.43	3,775.28
8.74	32	205,673.61	3,774.51
8.74	32	205,685.88	3,773.73
8.74	32	205,698.01	3,773.00
8.74	32	205,709.73	3,772.43
8.74	32	205,721.94	3,771.61
8.74	32	205,734.19	3,770.60
8.74	32	205,746.34	3,769.58
8.74	32	205,758.31	3,768.70
8.74	32	205,770.67	3,767.77
8.74	32	205,782.05	3,766.90
14.27	32	205,794.42	3,766.04
14.27	32	205,806.76	3,765.26
14.27	32	205,819.07	3,764.56
14.27	32	205,831.32	3,763.97
14.27	32	205,843.58	3,763.39
14.27	32	205,855.74	3,762.70
14.27	32	205,868.06	3,761.93
14.27	32	205,869.30	3,761.85
14.27	32	205,880.37	3,761.04
15.88	32	205,884.74	3,760.68
14.27	32	205,897.07	3,759.51
14.27	32	205,909.49	3,758.22
14.27	32	205,921.90	3,757.13
14.27	32	205,934.35	3,756.11
11.91	32	205,946.77	3,754.98
11.91	32	205,959.09	3,754.13
11.91	32	205,971.05	3,753.17
11.91	32	205,983.44	3,752.14
11.91	32	205,995.80	3,751.42
11.91	32	206,008.18	3,751.08
11.91	32	206,020.57	3,750.73
11.91	32	206,032.88	3,750.02
11.91	32	206,045.27	3,749.12
11.91	32	206,057.54	3,748.89
11.91	32	206,069.92	3,749.49
11.91	32	206,082.32	3,749.78
11.91	32	206,094.68	3,750.07
11.91	32	206,107.02	3,750.70
11.91	32	206,119.29	3,751.46
11.91	32	206,131.61	3,751.81



11.91	32	206,143.99	3,751.84
11.91	32	206,156.28	3,751.84
11.91	32	206,168.58	3,752.00
11.91	32	206,181.07	3,752.12
11.91	32	206,193.34	3,751.75
11.91	32	206,205.61	3,751.38
11.91	32	206,217.97	3,751.24
11.91	32	206,230.61	3,750.92
11.91	32	206,242.69	3,750.71
8.74	32	206,254.96	3,750.55
8.74	32	206,267.27	3,750.30
8.74	32	206,279.56	3,750.02
8.74	32	206,291.71	3,749.79
8.74	32	206,303.92	3,749.57
8.74	32	206,316.32	3,749.27
8.74	32	206,328.39	3,749.07
8.74	32	206,340.76	3,748.88
8.74	32	206,353.02	3,748.67
8.74	32	206,365.42	3,748.28
8.74	32	206,377.56	3,748.29
8.74	32	206,388.30	3,749.12
8.74	32	206,400.69	3,750.19
8.74	32	206,412.95	3,750.36
8.74	32	206,424.91	3,749.98
8.74	32	206,437.27	3,749.91
8.74	32	206,448.48	3,750.07
8.74	32	206,460.63	3,750.52
8.74	32	206,472.65	3,750.58
8.74	32	206,484.92	3,749.99
8.74	32	206,497.31	3,749.37
8.74	32	206,509.45	3,748.99
8.74	32	206,521.83	3,748.77
8.74	32	206,534.04	3,748.13
8.74	32	206,546.12	3,745.88
8.74	32	206,558.37	3,743.13
8.74	32	206,570.70	3,741.51
8.74	32	206,583.07	3,740.92
8.74	32	206,595.48	3,740.30
8.74	32	206,607.80	3,739.11
8.74	32	206,620.09	3,737.48
8.74	32	206,632.16	3,735.59
8.74	32	206,644.50	3,733.72
8.74	32	206,656.88	3,732.34
8.74	32	206,668.99	3,731.34
8.74	32	206,680.21	3,730.50
8.74	32	206,681.99	3,730.36
8.74	32	206,694.26	3,729.44
8.74	32	206,706.32	3,728.95
8.74	32	206,717.78	3,728.15
8.74	32	206,730.19	3,727.00
8.74	32	206,742.38	3,726.13
8.74	32	206,754.73	3,725.58
8.74	32	206,766.93	3,725.00
8.74	32	206,779.30	3,724.54
8.74	32	206,791.36	3,724.42
8.74	32	206,803.68	3,725.02

8.74	32	206,816.00	3,726.43
8.74	32	206,828.35	3,727.93
8.74	32	206,840.75	3,728.95
8.74	32	206,853.02	3,729.56
8.74	32	206,865.36	3,729.68
8.74	32	206,877.59	3,729.53
8.74	32	206,889.84	3,729.25
8.74	32	206,902.12	3,728.95
8.74	32	206,914.40	3,728.71
8.74	32	206,926.78	3,728.42
8.74	32	206,938.80	3,727.96
8.74	32	206,951.11	3,727.74
8.74	32	206,963.32	3,727.89
8.74	32	206,975.60	3,728.25
8.74	32	206,988.02	3,728.56
8.74	32	207,000.18	3,728.92
8.74	32	207,012.48	3,729.25
8.74	32	207,024.71	3,729.52
8.74	32	207,036.89	3,729.68
8.74	32	207,048.94	3,729.83
8.74	32	207,061.20	3,730.04
8.74	32	207,073.39	3,730.20
8.74	32	207,085.54	3,730.25
8.74	32	207,097.86	3,730.12
8.74	32	207,110.08	3,729.65
8.74	32	207,122.04	3,729.11
8.74	32	207,134.40	3,728.61
8.74	32	207,146.21	3,727.91
8.74	32	207,158.37	3,727.16
8.74	32	207,167.50	3,726.64
8.74	32	207,179.73	3,725.91
8.74	32	207,192.10	3,725.12
8.74	32	207,204.22	3,724.28
8.74	32	207,216.59	3,723.55
8.74	32	207,228.95	3,722.86
8.74	32	207,241.02	3,722.18
8.74	32	207,253.39	3,721.44
8.74	32	207,265.77	3,720.79
8.74	32	207,278.11	3,720.30
8.74	32	207,290.33	3,719.90
8.74	32	207,302.73	3,719.52
8.74	32	207,314.55	3,719.14
8.74	32	207,326.98	3,718.67
8.74	32	207,339.05	3,718.29
8.74	32	207,351.28	3,718.00
8.74	32	207,363.41	3,717.71
8.74	32	207,375.73	3,717.29
8.74	32	207,387.78	3,716.68
8.74	32	207,400.08	3,715.82
8.74	32	207,412.37	3,714.97
8.74	32	207,424.44	3,714.37
8.74	32	207,436.77	3,713.95
8.74	32	207,449.15	3,713.45
8.74	32	207,461.53	3,713.06
8.74	32	207,473.86	3,712.71
8.74	32	207,486.11	3,712.49

8.74	32	207,498.43	3,712.26
8.74	32	207,510.40	3,712.04
8.74	32	207,521.86	3,711.76
8.74	32	207,534.15	3,711.48
8.74	32	207,545.54	3,711.02
8.74	32	207,557.85	3,710.24
8.74	32	207,570.22	3,709.53
8.74	32	207,582.58	3,709.02
8.74	32	207,594.96	3,708.71
8.74	32	207,607.33	3,708.44
8.74	32	207,619.71	3,708.46
8.74	32	207,631.94	3,708.63
8.74	32	207,643.73	3,708.85
8.74	32	207,652.21	3,708.88
8.74	32	207,664.36	3,708.90
8.74	32	207,676.72	3,709.43
8.74	32	207,689.05	3,710.30
8.74	32	207,701.46	3,710.88
8.74	32	207,713.87	3,710.87
8.74	32	207,726.02	3,710.67
8.74	32	207,738.33	3,710.79
8.74	32	207,750.74	3,711.28
8.74	32	207,762.95	3,711.39
8.74	32	207,775.23	3,711.24
8.74	32	207,787.54	3,711.08
8.74	32	207,799.90	3,710.92
8.74	32	207,812.11	3,710.70
8.74	32	207,824.47	3,710.25
8.74	32	207,836.84	3,709.74
8.74	32	207,848.41	3,709.43
8.74	32	207,860.67	3,709.29
8.74	32	207,872.83	3,709.28
8.74	32	207,885.21	3,709.27
8.74	32	207,897.58	3,709.26
8.74	32	207,909.95	3,709.28
8.74	32	207,922.34	3,709.25
8.74	32	207,934.52	3,709.28
8.74	32	207,946.57	3,709.22
8.74	32	207,958.80	3,708.95
8.74	32	207,969.84	3,708.76
8.74	32	207,980.18	3,708.66
8.74	32	207,992.47	3,708.74
8.74	32	208,004.77	3,709.06
8.74	32	208,017.15	3,709.46
8.74	32	208,029.51	3,709.95
8.74	32	208,041.48	3,710.61
8.74	32	208,053.87	3,711.19
8.74	32	208,066.22	3,711.56
8.74	32	208,078.53	3,711.82
8.74	32	208,090.92	3,712.11
8.74	32	208,102.86	3,712.29
8.74	32	208,113.76	3,712.40
9.53	32	208,114.97	3,712.41
8.74	32	208,127.19	3,712.70
8.74	32	208,139.34	3,713.10
8.74	32	208,151.77	3,713.50

8.74	32	208,163.96	3,713.93
8.74	32	208,176.34	3,714.45
8.74	32	208,188.52	3,715.23
8.74	32	208,200.89	3,716.09
8.74	32	208,213.29	3,716.78
8.74	32	208,225.54	3,717.32
8.74	32	208,237.85	3,717.92
9.53	32	208,239.45	3,717.98
8.74	32	208,251.30	3,718.55
8.74	32	208,263.55	3,719.27
8.74	32	208,275.77	3,720.09
8.74	32	208,287.22	3,720.90
8.74	32	208,299.57	3,721.84
8.74	32	208,311.94	3,722.81
8.74	32	208,322.61	3,723.56
8.74	32	208,334.16	3,724.24
8.74	32	208,346.42	3,724.77
8.74	32	208,358.86	3,725.06
8.74	32	208,371.25	3,724.91
8.74	32	208,382.33	3,724.62
8.74	32	208,394.72	3,724.25
8.74	32	208,406.98	3,723.72
8.74	32	208,419.31	3,722.97
8.74	32	208,431.56	3,722.07
8.74	32	208,443.92	3,721.18
8.74	32	208,456.31	3,720.56
8.74	32	208,468.69	3,720.10
8.74	32	208,480.82	3,719.88
8.74	32	208,493.12	3,719.84
8.74	32	208,505.08	3,719.93
8.74	32	208,517.47	3,719.86
8.74	32	208,529.85	3,719.65
8.74	32	208,541.98	3,719.33
8.74	32	208,554.42	3,718.66
8.74	32	208,566.77	3,717.52
8.74	32	208,579.03	3,716.28
8.74	32	208,591.30	3,714.92
8.74	32	208,603.27	3,713.59
8.74	32	208,615.54	3,712.23
8.74	32	208,627.91	3,710.69
8.74	32	208,640.12	3,708.88
8.74	32	208,652.44	3,706.94
8.74	32	208,664.20	3,705.04
8.74	32	208,676.63	3,703.11
8.74	32	208,688.93	3,701.16
8.74	32	208,701.31	3,699.13
8.74	32	208,713.66	3,697.08
8.74	32	208,725.46	3,695.25
8.74	32	208,737.88	3,693.47
8.74	32	208,750.28	3,691.82
8.74	32	208,762.38	3,690.33
8.74	32	208,774.74	3,688.95
8.74	32	208,786.69	3,687.49
8.74	32	208,799.10	3,686.19
8.74	32	208,811.47	3,684.99
8.74	32	208,823.77	3,683.88

17.48	24	309,141.16	1,229.44
17.48	24	309,153.50	1,228.27
17.48	24	309,165.77	1,225.93
17.48	24	309,178.12	1,224.15
17.48	24	309,180.86	1,223.87
17.48	24	309,191.00	1,223.01
17.48	24	309,203.39	1,221.49
17.48	24	309,215.78	1,219.33
17.48	24	309,228.00	1,218.81
17.48	24	309,240.40	1,219.83
17.48	24	309,252.80	1,219.65
17.48	24	309,265.20	1,218.00
17.48	24	309,277.47	1,217.86
17.48	24	309,289.83	1,220.07
17.48	24	309,302.14	1,221.17
17.48	24	309,314.62	1,219.91
17.48	24	309,327.03	1,217.34
17.48	24	309,339.42	1,215.26
17.48	24	309,351.68	1,215.39
17.48	24	309,364.08	1,216.73
17.48	24	309,376.67	1,215.24
17.48	24	309,388.86	1,213.22
17.48	24	309,401.27	1,213.81
17.48	24	309,413.53	1,216.68
17.48	24	309,423.68	1,219.49
17.48	24	309,436.16	1,220.55
17.48	24	309,448.61	1,218.73
17.48	24	309,461.11	1,215.42
17.48	24	309,472.82	1,211.02
17.48	24	309,485.18	1,205.99
17.48	24	309,496.82	1,204.11
17.48	24	309,509.24	1,205.16
17.48	24	309,521.34	1,208.05
17.48	24	309,533.68	1,211.76
17.48	24	309,545.86	1,215.43
17.48	24	309,558.29	1,218.53
17.48	24	309,570.43	1,219.61
17.48	24	309,582.61	1,219.28
17.48	24	309,594.01	1,219.00
17.48	24	309,605.78	1,218.90
17.48	24	309,617.74	1,218.90
17.48	24	309,629.78	1,218.56
17.48	24	309,642.14	1,216.81
17.48	24	309,654.27	1,215.18
17.48	24	309,666.17	1,215.34
17.48	24	309,677.57	1,216.91
17.48	24	309,689.05	1,218.13
17.48	24	309,700.64	1,217.81
17.48	24	309,712.08	1,217.05
17.48	24	309,723.81	1,216.24
17.48	24	309,735.70	1,215.12
17.48	24	309,747.26	1,214.12
17.48	24	309,759.08	1,214.55
17.48	24	309,771.45	1,215.57
17.48	24	309,783.61	1,215.10
17.48	24	309,796.05	1,213.85

17.48	24	309,808.42	1,212.99
17.48	24	309,820.82	1,212.48
17.48	24	309,832.50	1,212.13
17.48	24	309,844.58	1,211.38
17.48	24	309,856.15	1,209.84
17.48	24	309,868.26	1,207.24
17.48	24	309,880.22	1,204.21
17.48	24	309,892.19	1,201.28
17.48	24	309,903.72	1,198.99
17.48	24	309,915.67	1,196.97
17.48	24	309,927.46	1,194.90
17.48	24	309,939.68	1,192.14
17.48	24	309,951.37	1,188.54
17.48	24	309,963.33	1,183.65
17.48	24	309,975.39	1,181.40
17.48	24	309,987.49	1,183.74
17.48	24	309,996.33	1,187.04
17.48	24	310,008.60	1,190.89
17.48	24	310,020.77	1,192.31
17.48	24	310,032.48	1,191.78
17.48	24	310,044.74	1,191.10
17.48	24	310,056.14	1,190.51
17.48	24	310,068.19	1,191.22
17.48	24	310,080.16	1,192.66
17.48	24	310,081.40	1,192.80
17.48	24	310,092.19	1,193.15
17.48	24	310,104.19	1,192.66
17.48	24	310,116.56	1,192.53
17.48	24	310,128.92	1,192.63
17.48	24	310,140.68	1,192.37
17.48	24	310,152.46	1,191.83
17.48	24	310,165.02	1,189.09
17.48	24	310,177.01	1,185.25
17.48	24	310,188.69	1,181.77
17.48	24	310,200.39	1,180.13
17.48	24	310,213.18	1,182.30
17.48	24	310,222.59	1,185.55
17.48	24	310,234.89	1,189.16
17.48	24	310,247.05	1,192.00
17.48	24	310,258.96	1,194.79
17.48	24	310,271.08	1,197.39
17.48	24	310,283.21	1,199.18
17.48	24	310,295.46	1,200.48
17.48	24	310,307.79	1,200.95
17.48	24	310,320.17	1,200.07
17.48	24	310,332.13	1,198.86
17.48	24	310,344.41	1,198.15
17.48	24	310,357.07	1,198.84
17.48	24	310,369.45	1,200.35
17.48	24	310,381.62	1,201.59
17.48	24	310,393.95	1,201.65
17.48	24	310,406.25	1,200.93
17.48	24	310,418.33	1,199.83
17.48	24	310,430.48	1,198.77
17.48	24	310,442.86	1,198.07
17.48	24	310,455.10	1,197.43

17.48	24	310,467.33	1,196.50
17.48	24	310,479.71	1,194.61
17.48	24	310,492.11	1,191.90
17.48	24	310,504.33	1,190.56
17.48	24	310,516.61	1,191.40
17.48	24	310,528.94	1,193.52
17.48	24	310,541.47	1,193.83
17.48	24	310,553.87	1,192.49
17.48	24	310,566.02	1,191.88
17.48	24	310,578.06	1,191.30
17.48	24	310,579.66	1,191.19
17.48	24	310,590.40	1,191.02
17.48	24	310,602.56	1,191.20
17.48	24	310,614.51	1,191.45
17.48	24	310,626.53	1,190.77
17.48	24	310,637.95	1,189.59
17.48	24	310,648.09	1,188.32
17.48	24	310,658.25	1,186.70
17.48	24	310,669.04	1,184.71
17.48	24	310,677.99	1,183.06
17.48	24	310,690.21	1,182.78
17.48	24	310,702.22	1,183.45
17.48	24	310,714.44	1,182.54
17.48	24	310,726.33	1,182.67
17.48	24	310,737.03	1,183.95
17.48	24	310,749.29	1,184.40
17.48	24	310,761.33	1,183.49
17.48	24	310,773.61	1,181.98
17.48	24	310,785.31	1,179.77
17.48	24	310,795.87	1,176.39
17.48	24	310,808.30	1,171.53
17.48	24	310,820.05	1,168.82
17.48	24	310,832.11	1,170.62
17.48	24	310,843.02	1,173.83
17.48	24	310,853.90	1,175.72
17.48	24	310,864.07	1,176.40
17.48	24	310,876.06	1,176.87
17.48	24	310,888.00	1,177.47
17.48	24	310,900.15	1,178.37
17.48	24	310,912.26	1,179.42
17.48	24	310,921.45	1,180.35
19.05	24	310,927.54	1,181.08
19.05	24	310,939.35	1,181.59
19.05	24	310,951.17	1,181.10
19.05	24	310,963.53	1,180.02
19.05	24	310,975.78	1,178.63
19.05	24	310,988.13	1,177.14
19.05	24	310,999.62	1,175.82
19.05	24	311,012.03	1,174.45
19.05	24	311,023.92	1,173.77
19.05	24	311,036.13	1,173.50
19.05	24	311,048.50	1,173.14
19.05	24	311,060.04	1,173.09
19.05	24	311,072.03	1,172.82
19.05	24	311,083.49	1,171.50
19.05	24	311,089.32	1,170.32

19.05	24	311,101.44	1,168.47
19.05	24	311,113.99	1,169.70
19.05	24	311,126.04	1,171.77
19.05	24	311,137.04	1,172.64
19.05	24	311,149.35	1,173.01
19.05	24	311,160.81	1,172.10
19.05	24	311,172.67	1,171.11
19.05	24	311,184.94	1,170.94
19.05	24	311,197.19	1,171.44
19.05	24	311,209.42	1,172.39
19.05	24	311,221.75	1,173.01
19.05	24	311,234.10	1,172.31
19.05	24	311,246.42	1,171.24
19.05	24	311,258.70	1,170.69
19.05	24	311,270.86	1,171.29
19.05	24	311,283.05	1,172.82
19.05	24	311,295.37	1,173.77
19.05	24	311,307.88	1,173.51
19.05	24	311,320.17	1,173.38
19.05	24	311,332.51	1,173.81
19.05	24	311,339.79	1,173.87
19.05	24	311,352.19	1,172.40
19.05	24	311,364.56	1,169.78
19.05	24	311,376.34	1,167.72
19.05	24	311,388.74	1,166.34
19.05	24	311,400.85	1,163.28
19.05	24	311,404.61	1,161.99
19.05	24	311,416.87	1,158.19
19.05	24	311,429.27	1,156.39
20.62	24	311,431.66	1,157.18
19.05	24	311,444.34	1,163.50
19.05	24	311,454.03	1,168.03
19.05	24	311,467.26	1,173.07
19.05	24	311,473.79	1,174.70
19.05	24	311,485.82	1,176.54
19.05	24	311,498.16	1,176.09
19.05	24	311,510.56	1,174.12
19.05	24	311,522.92	1,171.86
19.05	24	311,537.34	1,169.46
19.05	24	311,547.98	1,168.59
19.05	24	311,560.05	1,167.90
19.05	24	311,572.01	1,167.73
19.05	24	311,583.83	1,168.07
19.05	24	311,596.06	1,167.80
19.05	24	311,608.46	1,165.85
19.05	24	311,619.80	1,163.42
19.05	24	311,632.17	1,161.00
19.05	24	311,644.10	1,158.81
19.05	24	311,655.76	1,156.64
19.05	24	311,667.14	1,155.46
19.05	24	311,678.75	1,154.69
19.05	24	311,690.10	1,153.25
19.05	24	311,701.22	1,151.69
19.05	24	311,712.79	1,152.26
19.05	24	311,725.49	1,153.41
19.05	24	311,737.33	1,155.69



19.05	24	311,749.71	1,157.59
19.05	24	311,761.62	1,158.12
19.05	24	311,771.94	1,158.49
19.05	24	311,784.25	1,158.61
19.05	24	311,796.65	1,158.60
19.05	24	311,809.95	1,158.19
19.05	24	311,813.52	1,158.15
19.05	24	311,825.83	1,158.20
19.05	24	311,838.19	1,158.53
19.05	24	311,850.59	1,158.77
19.05	24	311,862.95	1,159.83
19.05	24	311,875.20	1,161.18
19.05	24	311,887.47	1,160.42
19.05	24	311,899.85	1,158.23
19.05	24	311,912.04	1,156.86
19.05	24	311,924.32	1,156.30
19.05	24	311,936.67	1,156.53
19.05	24	311,948.67	1,156.78
19.05	24	311,961.06	1,156.20
19.05	24	311,973.45	1,155.35
19.05	24	311,985.74	1,155.68
19.05	24	311,998.10	1,157.61
19.05	24	312,010.18	1,159.67
19.05	24	312,022.46	1,160.90
19.05	24	312,034.11	1,161.02
19.05	24	312,045.93	1,159.73
19.05	24	312,058.22	1,158.45
19.05	24	312,064.86	1,158.24
19.05	24	312,077.10	1,157.42
19.05	24	312,085.92	1,156.35
19.05	24	312,098.25	1,155.23
19.05	24	312,110.63	1,154.92
19.05	24	312,123.03	1,154.95
19.05	24	312,135.37	1,154.58
19.05	24	312,147.76	1,153.76
19.05	24	312,160.20	1,152.75
19.05	24	312,172.54	1,152.08
19.05	24	312,184.88	1,152.11
19.05	24	312,197.28	1,152.28
19.05	24	312,209.65	1,152.27
19.05	24	312,222.04	1,152.24
19.05	24	312,234.31	1,152.02
19.05	24	312,246.62	1,151.55
19.05	24	312,259.06	1,150.65
19.05	24	312,271.51	1,149.88
19.05	24	312,283.75	1,149.88
19.05	24	312,296.12	1,151.33
19.05	24	312,300.64	1,152.08
19.05	24	312,313.04	1,153.32
19.05	24	312,325.40	1,153.30
19.05	24	312,337.67	1,151.93
19.05	24	312,350.01	1,150.44
19.05	24	312,362.42	1,149.03
19.05	24	312,374.77	1,147.48
19.05	24	312,387.03	1,146.50
19.05	24	312,399.43	1,146.06

19.05	24	312,411.61	1,145.14
19.05	24	312,423.89	1,143.33
19.05	24	312,436.11	1,141.95
19.05	24	312,448.44	1,141.90
19.05	24	312,460.81	1,143.09
19.05	24	312,473.03	1,145.14
19.05	24	312,485.58	1,145.24
19.05	24	312,497.99	1,143.45
19.05	24	312,502.33	1,142.85
19.05	24	312,514.68	1,142.38
19.05	24	312,526.95	1,142.76
19.05	24	312,537.03	1,142.89
19.05	24	312,549.37	1,142.66
19.05	24	312,561.76	1,142.15
19.05	24	312,574.11	1,141.47
19.05	24	312,586.58	1,140.89
19.05	24	312,598.44	1,140.43
19.05	24	312,610.68	1,139.94
19.05	24	312,622.74	1,139.97
19.05	24	312,634.98	1,140.99
19.05	24	312,647.08	1,141.20
19.05	24	312,659.57	1,139.41
19.05	24	312,671.65	1,136.85
19.05	24	312,683.83	1,135.50
19.05	24	312,696.21	1,135.55
19.05	24	312,708.54	1,136.03
19.05	24	312,720.93	1,136.58
19.05	24	312,733.34	1,136.27
19.05	24	312,745.57	1,135.75
19.05	24	312,757.95	1,134.65
19.05	24	312,770.17	1,133.38
19.05	24	312,782.50	1,132.50
19.05	24	312,794.86	1,131.33
19.05	24	312,807.22	1,130.25
19.05	24	312,819.51	1,130.83
19.05	24	312,831.89	1,132.77
19.05	24	312,844.26	1,134.48
19.05	24	312,856.42	1,134.26
19.05	24	312,868.43	1,132.04
19.05	24	312,880.69	1,130.49
19.05	24	312,893.03	1,131.39
19.05	24	312,905.41	1,133.23
19.05	24	312,917.74	1,134.65
19.05	24	312,929.15	1,134.57
19.05	24	312,940.84	1,133.65
19.05	24	312,953.00	1,131.73
19.05	24	312,965.04	1,130.02
19.05	24	312,977.25	1,128.56
19.05	24	312,983.25	1,127.89
19.05	24	312,995.45	1,125.86
19.05	24	313,007.22	1,123.22
19.05	24	313,019.51	1,120.34
19.05	24	313,027.47	1,118.91
19.05	24	313,039.77	1,118.81
19.05	24	313,047.90	1,120.36
19.05	24	313,060.20	1,122.90

19.05	24	313,072.60	1,124.04
19.05	24	313,085.01	1,124.81
19.05	24	313,097.34	1,125.56
19.05	24	313,109.72	1,125.65
19.05	24	313,122.06	1,125.52
19.05	24	313,134.30	1,125.29
19.05	24	313,146.68	1,124.70
19.05	24	313,159.08	1,123.77
19.05	24	313,171.44	1,123.04
19.05	24	313,174.28	1,122.90
19.05	24	313,186.60	1,122.96
19.05	24	313,196.06	1,123.91
19.05	24	313,205.74	1,125.64
19.05	24	313,218.14	1,127.43
19.05	24	313,230.39	1,128.50
19.05	24	313,242.24	1,128.61
19.05	24	313,254.66	1,126.73
19.05	24	313,260.16	1,125.55
19.05	24	313,272.04	1,123.04
19.05	24	313,283.52	1,120.88
19.05	24	313,295.88	1,118.77
19.05	24	313,308.24	1,116.13
19.05	24	313,320.58	1,114.47
19.05	24	313,323.16	1,114.26
19.05	24	313,334.02	1,113.36
19.05	24	313,346.30	1,112.91
19.05	24	313,358.74	1,112.01
19.05	24	313,370.93	1,111.38
19.05	24	313,383.29	1,111.85
19.05	24	313,395.73	1,112.42
19.05	24	313,408.15	1,110.74
19.05	24	313,420.32	1,108.23
19.05	24	313,432.66	1,106.39
19.05	24	313,444.98	1,105.74
19.05	24	313,457.30	1,107.38
19.05	24	313,469.69	1,110.07
19.05	24	313,481.74	1,111.66
19.05	24	313,493.63	1,111.11
19.05	24	313,505.77	1,110.87
19.05	24	313,517.94	1,110.37
19.05	24	313,528.51	1,109.40
19.05	24	313,540.80	1,107.25
19.05	24	313,552.98	1,105.29
19.05	24	313,564.11	1,104.78
19.05	24	313,575.44	1,106.57
19.05	24	313,587.89	1,108.73
19.05	24	313,600.18	1,108.76
19.05	24	313,612.55	1,106.94
19.05	24	313,624.63	1,105.93
19.05	24	313,636.99	1,106.63
19.05	24	313,649.37	1,107.18
19.05	24	313,661.12	1,106.59
19.05	24	313,673.44	1,104.17
19.05	24	313,685.86	1,100.05
19.05	24	313,696.16	1,096.18
19.05	24	313,708.42	1,092.03

19.05	24	313,720.69	1,090.51
19.05	24	313,732.76	1,091.50
19.05	24	313,744.82	1,092.82
19.05	24	313,757.08	1,093.20
19.05	24	313,769.47	1,092.24
19.05	24	313,781.09	1,088.81
19.05	24	313,792.35	1,085.86
19.05	24	313,803.69	1,082.94
19.05	24	313,805.25	1,082.51
19.05	24	313,816.82	1,077.81
19.05	24	313,828.20	1,072.55
19.05	24	313,840.47	1,066.69
19.05	24	313,852.80	1,060.71
19.05	24	313,865.23	1,054.68
19.05	24	313,877.21	1,048.42
19.05	24	313,889.17	1,042.15
19.05	24	313,901.51	1,035.73
19.05	24	313,906.69	1,033.10
19.05	24	313,918.52	1,027.09
19.05	24	313,930.74	1,020.55
20.62	24	313,932.79	1,020.18
19.05	24	313,945.02	1,021.49
19.05	24	313,957.48	1,022.28
19.05	24	313,969.91	1,019.38
19.05	24	313,982.29	1,015.25
19.05	24	313,994.24	1,011.51
19.05	24	314,006.19	1,007.89
19.05	24	314,016.67	1,005.08
19.05	24	314,028.61	1,002.63
19.05	24	314,040.19	1,000.55
19.05	24	314,052.55	998.44
19.05	24	314,065.03	995.44
19.05	24	314,077.33	991.34
19.05	24	314,081.85	989.89
19.05	24	314,094.31	985.00
19.05	24	314,106.74	978.37
19.05	24	314,118.91	971.99
19.05	24	314,131.05	969.57
19.05	24	314,143.28	969.58
19.05	24	314,151.78	969.85
19.05	24	314,163.79	969.86
19.05	24	314,175.62	970.55
19.05	24	314,186.98	972.14
20.62	24	314,189.09	972.54
20.62	24	314,193.38	973.43
19.05	24	314,194.54	973.61
19.05	24	314,206.53	979.00
19.05	24	314,219.06	984.96
19.05	24	314,231.38	990.91
19.05	24	314,243.67	997.02
19.05	24	314,255.68	1,003.37
19.05	24	314,270.05	1,011.81
19.05	24	314,282.49	1,018.68
19.05	24	314,293.34	1,024.99
19.05	24	314,305.28	1,032.39
19.05	24	314,318.05	1,040.50

19.05	24	314,320.30	1,041.97
20.62	24	314,332.97	1,050.32
20.62	24	314,345.20	1,058.29
20.62	24	314,356.82	1,065.98
20.62	24	314,365.42	1,070.79
20.62	24	314,378.15	1,075.38
20.62	24	314,390.97	1,078.76
20.62	24	314,402.35	1,080.44
20.62	24	314,414.85	1,082.05
20.62	24	314,427.20	1,084.37
20.62	24	314,439.56	1,087.07
20.62	24	314,451.60	1,089.95
20.62	24	314,463.97	1,093.10
20.62	24	314,476.48	1,096.06
20.62	24	314,481.43	1,097.05
20.62	24	314,493.81	1,098.94
20.62	24	314,506.19	1,099.66
19.05	24	314,516.06	1,099.69
19.05	24	314,528.23	1,098.69
19.05	24	314,540.44	1,098.05
19.05	24	314,552.78	1,097.96
19.05	24	314,567.77	1,097.28
19.05	24	314,580.05	1,096.19
19.05	24	314,592.45	1,094.98
19.05	24	314,604.80	1,093.80
19.05	24	314,617.13	1,093.04
19.05	24	314,629.54	1,092.07
19.05	24	314,641.92	1,089.35
19.05	24	314,654.73	1,085.69
19.05	24	314,666.96	1,083.71
19.05	24	314,676.96	1,082.45
19.05	24	314,689.44	1,080.23
19.05	24	314,701.78	1,077.21
19.05	24	314,714.07	1,074.09
19.05	24	314,726.55	1,069.59
19.05	24	314,738.93	1,063.54
19.05	24	314,751.22	1,057.96
19.05	24	314,763.44	1,055.61
19.05	24	314,775.72	1,058.06
19.05	24	314,787.98	1,063.87
19.05	24	314,799.97	1,069.78
19.05	24	314,812.44	1,073.70
19.05	24	314,824.87	1,075.97
19.05	24	314,827.03	1,076.38
19.05	24	314,839.26	1,079.00
19.05	24	314,851.42	1,081.47
19.05	24	314,863.15	1,082.85
19.05	24	314,875.44	1,083.95
19.05	24	314,887.80	1,085.02
19.05	24	314,900.26	1,085.57
19.05	24	314,912.59	1,084.56
19.05	24	314,925.01	1,083.06
19.05	24	314,937.31	1,082.19
19.05	24	314,949.52	1,082.33
19.05	24	314,960.96	1,083.63
19.05	24	314,973.33	1,085.04

19.05	24	314,985.73	1,086.31
19.05	24	314,998.10	1,087.85
19.05	24	315,010.31	1,090.46
19.05	24	315,022.74	1,092.79
19.05	24	315,035.02	1,093.73
19.05	24	315,046.98	1,093.38
19.05	24	315,059.16	1,092.49
19.05	24	315,071.58	1,090.53
19.05	24	315,083.94	1,087.86
19.05	24	315,096.22	1,085.89
19.05	24	315,108.55	1,084.75
19.05	24	315,120.96	1,083.79
19.05	24	315,132.69	1,083.10
19.05	24	315,144.97	1,082.92
19.05	24	315,156.66	1,082.12
19.05	24	315,169.02	1,080.63
19.05	24	315,181.02	1,079.16
19.05	24	315,193.21	1,077.85
19.05	24	315,205.94	1,076.62
19.05	24	315,215.47	1,076.43
19.05	24	315,227.83	1,076.48
19.05	24	315,240.15	1,076.69
19.05	24	315,252.18	1,076.85
19.05	24	315,264.34	1,077.09
19.05	24	315,276.71	1,077.32
19.05	24	315,289.08	1,076.87
19.05	24	315,301.45	1,076.04
19.05	24	315,313.77	1,076.45
19.05	24	315,326.04	1,076.29
19.05	24	315,338.30	1,075.11
19.05	24	315,350.70	1,073.67
19.05	24	315,362.65	1,072.70
19.05	24	315,374.19	1,072.72
19.05	24	315,386.83	1,074.70
19.05	24	315,399.14	1,077.05
19.05	24	315,411.51	1,077.79
19.05	24	315,423.82	1,078.09
19.05	24	315,436.15	1,077.73
19.05	24	315,448.57	1,076.81
19.05	24	315,460.58	1,074.91
19.05	24	315,473.01	1,072.76
19.05	24	315,485.14	1,071.37
19.05	24	315,497.35	1,070.58
19.05	24	315,509.62	1,070.11
19.05	24	315,522.04	1,069.66
19.05	24	315,534.36	1,069.55
19.05	24	315,546.23	1,070.12
19.05	24	315,558.55	1,071.59
19.05	24	315,571.12	1,073.64
19.05	24	315,583.58	1,075.88
19.05	24	315,596.18	1,077.25
19.05	24	315,607.85	1,077.76
19.05	24	315,620.15	1,077.87
19.05	24	315,631.89	1,078.00
19.05	24	315,642.19	1,077.62
19.05	24	315,654.67	1,076.75

19.05	24	316,330.14	1,050.67
19.05	24	316,342.50	1,049.63
19.05	24	316,354.81	1,048.92
19.05	24	316,366.91	1,048.65
19.05	24	316,379.08	1,048.46
19.05	24	316,391.16	1,048.24
19.05	24	316,403.53	1,048.06
19.05	24	316,415.89	1,047.99
19.05	24	316,428.18	1,047.95
19.05	24	316,440.53	1,048.15
19.05	24	316,450.31	1,048.34
19.05	24	316,462.71	1,048.71
19.05	24	316,475.14	1,048.90
19.05	24	316,487.58	1,048.42
19.05	24	316,500.18	1,047.02
19.05	24	316,512.40	1,045.27
19.05	24	316,524.68	1,043.67
19.05	24	316,536.37	1,043.35
19.05	24	316,548.38	1,044.44
19.05	24	316,560.82	1,045.39
19.05	24	316,573.26	1,045.40
19.05	24	316,585.52	1,045.16
19.05	24	316,597.85	1,045.01
19.05	24	316,610.23	1,044.01
19.05	24	316,622.45	1,041.52
19.05	24	316,634.86	1,038.38
19.05	24	316,647.22	1,036.56
19.05	24	316,659.34	1,037.80
19.05	24	316,671.39	1,040.71
19.05	24	316,683.82	1,042.98
19.05	24	316,696.21	1,043.32
19.05	24	316,708.60	1,042.70
19.05	24	316,721.01	1,041.08
19.05	24	316,733.38	1,038.65
19.05	24	316,745.69	1,036.89
19.05	24	316,757.94	1,036.53
19.05	24	316,770.39	1,036.67
19.05	24	316,782.77	1,036.12
19.05	24	316,795.20	1,034.74
19.05	24	316,807.47	1,032.44
19.05	24	316,819.87	1,029.43
19.05	24	316,832.27	1,027.12
19.05	24	316,843.98	1,026.46
19.05	24	316,854.60	1,026.32
19.05	24	316,864.00	1,024.84
19.05	24	316,876.30	1,023.36
19.05	24	316,888.79	1,025.43
19.05	24	316,901.17	1,026.98
19.05	24	316,913.24	1,027.27
19.05	24	316,925.55	1,029.10
19.05	24	316,937.92	1,031.28
19.05	24	316,950.16	1,033.26
19.05	24	316,962.27	1,034.22
19.05	24	316,974.74	1,033.79
19.05	24	316,987.10	1,032.20
19.05	24	316,999.44	1,031.06

19.05	24	317,011.66	1,031.13
19.05	24	317,024.03	1,031.43
19.05	24	317,033.11	1,031.66
19.05	24	317,045.46	1,031.35
19.05	24	317,055.75	1,030.64
19.05	24	317,067.72	1,030.12
19.05	24	317,078.87	1,030.19
19.05	24	317,091.19	1,030.55
19.05	24	317,103.75	1,030.12
19.05	24	317,116.07	1,029.32
19.05	24	317,125.98	1,029.10
19.05	24	317,137.97	1,029.44
19.05	24	317,149.89	1,029.83
19.05	24	317,162.39	1,029.28
19.05	24	317,174.68	1,027.54
19.05	24	317,187.19	1,025.94
19.05	24	317,199.40	1,025.40
19.05	24	317,211.76	1,025.66
19.05	24	317,224.15	1,026.48
19.05	24	317,236.40	1,027.65
19.05	24	317,248.35	1,028.46
19.05	24	317,259.98	1,028.67
19.05	24	317,261.51	1,028.64
19.05	24	317,272.54	1,028.32
19.05	24	317,281.10	1,028.04
19.05	24	317,293.45	1,027.52
19.05	24	317,305.88	1,026.88
19.05	24	317,317.83	1,026.02
19.05	24	317,330.25	1,024.60
19.05	24	317,342.59	1,022.35
19.05	24	317,354.84	1,020.70
19.05	24	317,367.47	1,019.72
19.05	24	317,379.07	1,019.12
19.05	24	317,391.36	1,018.79
19.05	24	317,403.68	1,018.89
19.05	24	317,416.05	1,019.26
19.05	24	317,428.30	1,019.56
19.05	24	317,440.70	1,019.73
19.05	24	317,453.02	1,019.77
19.05	24	317,464.74	1,020.05
19.05	24	317,477.06	1,020.68
19.05	24	317,489.44	1,020.83
19.05	24	317,501.81	1,019.86
19.05	24	317,514.14	1,017.72
19.05	24	317,526.40	1,015.66
19.05	24	317,536.88	1,014.61
19.05	24	317,548.06	1,014.76
19.05	24	317,560.22	1,016.72
19.05	24	317,572.63	1,018.80
19.05	24	317,584.96	1,020.58
19.05	24	317,597.31	1,022.47
19.05	24	317,609.90	1,023.30
19.05	24	317,622.13	1,023.34
19.05	24	317,633.62	1,023.20
19.05	24	317,646.08	1,022.19
19.05	24	317,658.77	1,020.14



19.05	24	317,670.42	1,018.13
19.05	24	317,682.61	1,018.94
19.05	24	317,693.33	1,020.63
19.05	24	317,705.56	1,020.37
19.05	24	317,716.29	1,019.83
19.05	24	317,728.57	1,018.76
19.05	24	317,741.08	1,016.79
19.05	24	317,753.31	1,015.25
19.05	24	317,765.54	1,013.61
19.05	24	317,777.71	1,012.01
19.05	24	317,789.90	1,010.56
19.05	24	317,802.09	1,009.70
19.05	24	317,811.93	1,010.00
19.05	24	317,824.53	1,011.67
19.05	24	317,836.89	1,012.53
19.05	24	317,848.80	1,011.63
19.05	24	317,861.16	1,009.95
19.05	24	317,873.48	1,008.34
19.05	24	317,885.82	1,006.70
19.05	24	317,898.32	1,004.69
19.05	24	317,910.54	1,003.49
19.05	24	317,922.71	1,004.03
19.05	24	317,935.18	1,006.01
19.05	24	317,946.80	1,008.93
19.05	24	317,959.31	1,012.33
19.05	24	317,971.82	1,014.10
19.05	24	317,984.31	1,011.89
19.05	24	317,996.98	1,008.84
19.05	24	318,009.19	1,008.53
19.05	24	318,021.12	1,009.48
19.05	24	318,031.57	1,010.18
19.05	24	318,033.85	1,010.36
19.05	24	318,046.23	1,011.07
19.05	24	318,058.66	1,012.68
19.05	24	318,070.88	1,013.87
19.05	24	318,083.49	1,012.90
19.05	24	318,095.75	1,010.68
19.05	24	318,108.02	1,009.24
19.05	24	318,120.37	1,008.38
19.05	24	318,132.86	1,007.32
19.05	24	318,145.19	1,006.05
19.05	24	318,157.60	1,005.08
19.05	24	318,169.89	1,004.50
19.05	24	318,182.27	1,004.53
19.05	24	318,194.54	1,005.10
19.05	24	318,206.92	1,005.87
19.05	24	318,219.27	1,006.51
19.05	24	318,231.22	1,007.26
19.05	24	318,243.69	1,008.59
19.05	24	318,255.90	1,009.81
19.05	24	318,268.44	1,010.13
19.05	24	318,280.90	1,009.08
19.05	24	318,293.43	1,007.41
19.05	24	318,305.22	1,006.78
19.05	24	318,317.79	1,008.17
19.05	24	318,330.19	1,009.19

19.05	24	318,336.92	1,009.16
19.05	24	318,349.32	1,008.53
19.05	24	318,361.71	1,006.77
19.05	24	318,374.04	1,004.76
19.05	24	318,383.01	1,003.05
19.05	24	318,395.30	1,000.51
19.05	24	318,407.14	998.69
19.05	24	318,419.38	997.87
19.05	24	318,431.65	999.70
19.05	24	318,444.11	1,000.59
19.05	24	318,456.36	1,000.78
19.05	24	318,468.42	1,000.04
19.05	24	318,478.12	998.26
19.05	24	318,490.49	995.60
19.05	24	318,502.73	992.84
19.05	24	318,515.08	990.08
19.05	24	318,527.53	988.73
19.05	24	318,539.74	989.65
19.05	24	318,551.37	991.21
19.05	24	318,563.61	993.38
19.05	24	318,575.33	995.56
19.05	24	318,587.33	996.94
19.05	24	318,599.70	996.70
19.05	24	318,612.05	995.77
19.05	24	318,624.33	993.47
19.05	24	318,636.43	991.52
19.05	24	318,648.82	990.17
19.05	24	318,661.18	989.27
19.05	24	318,673.56	988.56
19.05	24	318,685.82	986.62
19.05	24	318,698.22	985.24
19.05	24	318,710.57	985.55
19.05	24	318,722.99	987.12
19.05	24	318,735.04	988.75
19.05	24	318,747.38	989.78
19.05	24	318,759.89	989.25
19.05	24	318,770.00	987.40
19.05	24	318,782.51	983.94
19.05	24	318,794.50	981.86
19.05	24	318,806.53	984.03
19.05	24	318,819.07	985.91
19.05	24	318,831.37	985.97
19.05	24	318,842.80	985.87
19.05	24	318,855.07	985.23
19.05	24	318,867.44	984.00
19.05	24	318,879.75	982.82
19.05	24	318,892.02	981.74
19.05	24	318,904.03	980.65
19.05	24	318,916.04	979.42
19.05	24	318,928.03	978.19
19.05	24	318,940.16	977.53
19.05	24	318,952.77	977.25
19.05	24	318,964.81	978.05
19.05	24	318,976.64	980.08
19.05	24	318,988.66	982.00
19.05	24	319,001.11	983.16

19.05	24	319,013.53	983.15
19.05	24	319,024.93	982.72
19.05	24	319,037.27	982.08
19.05	24	319,049.58	980.59
19.05	24	319,061.84	978.40
19.05	24	319,073.92	975.76
19.05	24	319,086.16	973.86
19.05	24	319,097.95	972.26
19.05	24	319,110.21	972.05
19.05	24	319,122.64	973.68
19.05	24	319,135.13	976.28
19.05	24	319,146.96	977.37
19.05	24	319,159.38	977.60
19.05	24	319,171.63	977.80
19.05	24	319,184.03	977.48
19.05	24	319,196.67	974.94
19.05	24	319,208.94	971.64
19.05	24	319,221.00	970.27
19.05	24	319,233.26	970.91
19.05	24	319,244.79	972.67
19.05	24	319,257.32	972.94
19.05	24	319,269.77	970.49
19.05	24	319,282.07	966.97
19.05	24	319,294.40	964.29
19.05	24	319,306.52	964.33
19.05	24	319,314.83	965.35
19.05	24	319,316.87	965.47
19.05	24	319,328.91	966.43
19.05	24	319,341.28	966.52
19.05	24	319,353.69	966.26
19.05	24	319,366.19	964.19
19.05	24	319,378.44	962.15
19.05	24	319,390.77	961.48
19.05	24	319,403.08	961.96
19.05	24	319,415.47	962.92
19.05	24	319,427.01	964.07
19.05	24	319,435.63	965.18
19.05	24	319,447.60	966.54
19.05	24	319,460.01	967.24
19.05	24	319,472.37	967.26
19.05	24	319,484.73	966.86
19.05	24	319,496.99	965.57
19.05	24	319,509.26	963.20
19.05	24	319,521.18	961.06
19.05	24	319,534.68	959.46
19.05	24	319,545.90	959.35
19.05	24	319,558.15	959.53
19.05	24	319,570.50	959.61
19.05	24	319,582.38	959.21
19.05	24	319,594.69	958.14
19.05	24	319,607.09	957.58
19.05	24	319,619.34	957.36
19.05	24	319,631.65	957.29
19.05	24	319,643.30	956.92
19.05	24	319,655.66	955.95
19.05	24	319,667.62	955.39

19.05	24	319,679.49	955.27
19.05	24	319,691.71	955.78
19.05	24	319,703.19	956.99
19.05	24	319,714.68	958.53
19.05	24	319,723.32	959.36
19.05	24	319,735.77	959.94
19.05	24	319,748.16	959.50
19.05	24	319,760.53	958.48
19.05	24	319,772.44	957.86
19.05	24	319,784.89	957.73
19.05	24	319,796.97	956.74
19.05	24	319,809.25	954.30
19.05	24	319,821.58	950.89
19.05	24	319,833.99	946.88
19.05	24	319,846.23	944.70
19.05	24	319,858.47	945.74
19.05	24	319,870.54	947.41
19.05	24	319,882.99	948.57
19.05	24	319,895.41	948.66
19.05	24	319,907.85	948.20
19.05	24	319,915.80	947.69
19.05	24	319,928.09	946.80
20.62	24	319,939.54	946.23
20.62	24	319,951.46	945.37
20.62	24	319,963.79	944.97
20.62	24	319,976.06	945.77
20.62	24	319,988.47	947.27
20.62	24	320,000.78	948.94
20.62	24	320,013.15	950.24
20.62	24	320,025.46	950.75
20.62	24	320,037.77	950.78
20.62	24	320,050.03	951.17
20.62	24	320,062.39	952.46
20.62	24	320,074.68	953.76
20.62	24	320,087.04	954.75
20.62	24	320,098.46	955.26
20.62	24	320,110.82	955.75
20.62	24	320,123.15	956.46
20.62	24	320,135.51	956.90
20.62	24	320,148.03	956.41
20.62	24	320,160.39	954.64
20.62	24	320,172.50	951.98
20.62	24	320,184.81	949.31
20.62	24	320,197.13	946.56
20.62	24	320,209.49	944.48
20.62	24	320,221.80	944.33
20.62	24	320,234.09	945.05
20.62	24	320,246.27	945.98
20.62	24	320,258.46	946.36
20.62	24	320,270.03	946.18
20.62	24	320,271.38	946.13
20.62	24	320,283.47	945.50
20.62	24	320,296.05	944.50
20.62	24	320,308.44	943.38
20.62	24	320,320.46	941.02
20.62	24	320,332.81	938.37

20.62	24	321,030.59	925.64
20.62	24	321,042.25	926.41
20.62	24	321,054.71	926.92
20.62	24	321,067.09	926.87
20.62	24	321,079.50	926.14
20.62	24	321,091.94	924.51
20.62	24	321,103.32	923.24
20.62	24	321,111.14	922.41
20.62	24	321,123.48	919.95
20.62	24	321,135.77	918.48
20.62	24	321,147.45	918.02
20.62	24	321,159.83	917.78
20.62	24	321,172.25	917.30
20.62	24	321,185.38	915.24
20.62	24	321,197.05	912.70
20.62	24	321,209.31	911.11
20.62	24	321,221.62	911.23
20.62	24	321,233.22	912.85
20.62	24	321,245.81	914.74
20.62	24	321,258.05	915.98
20.62	24	321,269.85	916.70
20.62	24	321,281.67	917.45
20.62	24	321,294.13	917.97
20.62	24	321,306.55	917.63
20.62	24	321,318.83	916.39
20.62	24	321,331.48	914.05
20.62	24	321,343.71	910.80
20.62	24	321,356.47	907.77
20.62	24	321,368.11	906.56
20.62	24	321,379.01	906.81
20.62	24	321,391.30	907.96
20.62	24	321,403.57	909.48
20.62	24	321,415.45	910.55
20.62	24	321,425.63	910.40
20.62	24	321,437.02	910.06
20.62	24	321,449.23	910.15
20.62	24	321,461.63	910.72
20.62	24	321,473.96	912.50
20.62	24	321,485.75	914.78
20.62	24	321,497.45	916.13
20.62	24	321,509.35	916.32
20.62	24	321,520.84	916.11
20.62	24	321,533.29	914.79
20.62	24	321,545.55	912.63
20.62	24	321,557.87	910.79
20.62	24	321,570.31	910.21
20.62	24	321,582.56	910.59
20.62	24	321,595.05	910.63
20.62	24	321,607.49	909.23
20.62	24	321,619.77	907.09
20.62	24	321,630.00	905.44
20.62	24	321,642.19	904.99
20.62	24	321,654.21	906.52
20.62	24	321,666.49	908.35
20.62	24	321,678.83	908.71
20.62	24	321,691.20	907.64

20.62	24	321,703.57	905.89
20.62	24	321,715.86	904.54
20.62	24	321,728.09	904.07
20.62	24	321,740.32	904.03
20.62	24	321,752.68	904.16
20.62	24	321,765.06	903.55
20.62	24	321,777.59	901.70
20.62	24	321,789.59	900.24
20.62	24	321,801.96	899.61
20.62	24	321,814.34	899.48
20.62	24	321,826.64	899.53
20.62	24	321,838.95	899.74
20.62	24	321,851.09	900.28
20.62	24	321,863.57	900.92
20.62	24	321,875.98	901.31
20.62	24	321,888.09	901.36
20.62	24	321,900.05	901.44
20.62	24	321,912.22	901.47
20.62	24	321,924.63	901.49
20.62	24	321,937.08	900.58
20.62	24	321,948.28	899.65
20.62	24	321,960.30	900.44
20.62	24	321,972.48	902.56
20.62	24	321,984.68	904.58
20.62	24	321,996.76	907.05
20.62	24	322,009.20	908.75
20.62	24	322,021.57	908.39
20.62	24	322,033.59	907.96
20.62	24	322,044.03	907.94
20.62	24	322,056.25	908.18
20.62	24	322,068.64	908.24
20.62	24	322,081.05	907.18
20.62	24	322,092.97	906.03
20.62	24	322,105.24	905.77
20.62	24	322,117.66	905.95
20.62	24	322,129.06	905.40
20.62	24	322,140.89	904.42
20.62	24	322,153.15	903.39
20.62	24	322,165.48	902.60
20.62	24	322,177.85	901.96
20.62	24	322,190.24	901.07
20.62	24	322,202.75	898.90
20.62	24	322,214.92	896.81
20.62	24	322,227.17	895.60
20.62	24	322,239.64	895.28
20.62	24	322,249.68	895.46
20.62	24	322,262.08	896.50
20.62	24	322,274.43	898.19
20.62	24	322,286.81	898.91
20.62	24	322,299.14	898.54
20.62	24	322,311.43	897.97
20.62	24	322,323.33	897.57
20.62	24	322,334.81	897.83
20.62	24	322,346.67	898.98
20.62	24	322,358.47	900.32
20.62	24	322,370.87	901.55

20.62	24	322,383.24	902.37
20.62	24	322,395.61	902.67
20.62	24	322,408.02	902.32
20.62	24	322,420.56	901.03
20.62	24	322,432.56	899.12
20.62	24	322,444.56	897.16
20.62	24	322,456.82	895.65
20.62	24	322,469.18	894.83
20.62	24	322,481.53	894.34
20.62	24	322,493.86	893.84
20.62	24	322,505.99	893.43
20.62	24	322,518.24	892.97
20.62	24	322,530.66	892.10
20.62	24	322,542.94	890.86
20.62	24	322,552.63	889.79
20.62	24	322,564.77	888.46
20.62	24	322,577.14	887.41
20.62	24	322,589.57	886.62
20.62	24	322,601.92	885.83
20.62	24	322,614.31	884.93
20.62	24	322,626.16	884.34
20.62	24	322,638.41	884.69
20.62	24	322,650.85	885.33
20.62	24	322,662.38	884.47
20.62	24	322,673.76	883.18
20.62	24	322,686.01	882.65
20.62	24	322,698.20	883.37
20.62	24	322,710.51	884.95
20.62	24	322,722.64	886.24
20.62	24	322,735.18	886.07
20.62	24	322,747.68	884.35
20.62	24	322,759.91	883.31
20.62	24	322,772.01	883.42
20.62	24	322,780.03	883.99
20.62	24	322,792.40	883.69
20.62	24	322,804.45	881.68
20.62	24	322,816.72	880.26
20.62	24	322,828.98	880.44
20.62	24	322,841.36	881.54
20.62	24	322,853.74	883.08
20.62	24	322,866.19	884.05
20.62	24	322,878.01	883.35
20.62	24	322,889.65	881.43
20.62	24	322,901.22	878.64
20.62	24	322,913.01	876.33
20.62	24	322,924.26	875.48
20.62	24	322,935.64	875.63
20.62	24	322,948.09	875.40
20.62	24	322,959.98	874.18
20.62	24	322,972.43	873.37
20.62	24	322,984.21	873.67
20.62	24	322,996.55	874.55
20.62	24	323,008.88	874.90
20.62	24	323,021.22	874.54
20.62	24	323,033.22	874.19
20.62	24	323,045.63	874.28

20.62	24	323,057.95	875.57
20.62	24	323,069.70	876.69
20.62	24	323,081.65	876.78
20.62	24	323,094.03	875.90
20.62	24	323,105.60	873.31
20.62	24	323,117.85	869.68
20.62	24	323,129.90	868.00
20.62	24	323,142.14	869.55
20.62	24	323,154.70	871.04
20.62	24	323,166.94	872.07
20.62	24	323,179.41	871.67
20.62	24	323,191.12	869.49
20.62	24	323,203.28	867.21
20.62	24	323,215.66	865.81
20.62	24	323,228.07	865.37
20.62	24	323,240.51	864.77
20.62	24	323,252.74	865.45
20.62	24	323,265.19	867.78
20.62	24	323,277.47	868.88
20.62	24	323,289.93	868.39
20.62	24	323,302.18	867.61
20.62	24	323,314.58	867.24
20.62	24	323,323.15	867.30
20.62	24	323,335.65	866.97
20.62	24	323,348.09	865.19
20.62	24	323,360.24	862.87
20.62	24	323,372.57	860.43
20.62	24	323,384.51	858.32
20.62	24	323,396.43	856.26
20.62	24	323,408.65	854.30
20.62	24	323,421.00	852.98
20.62	24	323,433.34	852.47
20.62	24	323,445.71	852.34
20.62	24	323,458.01	852.45
20.62	24	323,469.92	852.35
20.62	24	323,482.27	850.90
20.62	24	323,494.61	847.78
20.62	24	323,506.94	843.76
20.62	24	323,519.22	839.64
20.62	24	323,531.58	835.56
20.62	24	323,543.90	833.38
20.62	24	323,555.70	832.27
20.62	24	323,565.84	832.34
20.62	24	323,576.86	830.17
20.62	24	323,589.38	824.92
20.62	24	323,601.92	817.57
20.62	24	323,614.18	811.59
20.62	24	323,626.60	809.02
20.62	24	323,638.68	811.29
20.62	24	323,651.01	817.55
20.62	24	323,663.52	824.68
20.62	24	323,676.01	829.76
20.62	24	323,688.34	833.39
20.62	24	323,690.99	834.11
20.62	24	323,702.77	836.76
20.62	24	323,715.12	838.31



20.62	24	323,727.33	838.99
20.62	24	323,737.67	839.92
20.62	24	323,750.12	841.20
20.62	24	323,762.57	842.48
20.62	24	323,775.10	842.71
20.62	24	323,787.12	842.64
20.62	24	323,798.41	842.61
20.62	24	323,810.53	843.22
20.62	24	323,822.60	844.17
20.62	24	323,835.12	845.35
20.62	24	323,846.96	846.53
20.62	24	323,858.76	848.20
20.62	24	323,870.94	851.83
20.62	24	323,883.23	856.14
20.62	24	323,895.76	860.17
20.62	24	323,908.09	863.91
20.62	24	323,920.14	867.44
20.62	24	323,932.55	871.36
20.62	24	323,944.72	875.18
20.62	24	323,957.17	878.11
20.62	24	323,969.40	880.16
20.62	24	323,981.77	882.14
20.62	24	323,993.39	883.20
20.62	24	324,005.81	883.16
20.62	24	324,018.12	882.84
20.62	24	324,030.39	882.38
20.62	24	324,042.78	881.06
20.62	24	324,055.15	878.79
20.62	24	324,067.51	876.59
20.62	24	324,079.73	874.98
20.62	24	324,091.45	873.97
20.62	24	324,103.78	873.27
20.62	24	324,115.17	872.80
20.62	24	324,128.10	871.81
20.62	24	324,139.77	872.13
20.62	24	324,152.00	872.66
20.62	24	324,164.43	872.73
20.62	24	324,176.88	870.98
20.62	24	324,189.22	868.19
20.62	24	324,201.49	866.16
20.62	24	324,213.69	864.46
20.62	24	324,225.01	863.94
20.62	24	324,237.29	865.70
20.62	24	324,249.65	867.92
20.62	24	324,262.15	869.44
20.62	24	324,274.51	870.60
20.62	24	324,287.00	870.22
20.62	24	324,299.13	867.38
20.62	24	324,311.41	864.33
20.62	24	324,323.74	863.28
20.62	24	324,335.89	864.00
20.62	24	324,348.32	864.19
20.62	24	324,360.78	863.24
20.62	24	324,373.02	862.64
20.62	24	324,384.96	863.90
20.62	24	324,397.23	867.22

20.62	24	324,409.76	871.35
20.62	24	324,422.28	873.48
20.62	24	324,434.06	873.31
20.62	24	324,446.42	872.26
20.62	24	324,458.42	871.46
20.62	24	324,470.82	871.66
20.62	24	324,483.19	872.40
20.62	24	324,495.37	872.16
20.62	24	324,507.47	870.68
20.62	24	324,519.90	868.89
20.62	24	324,531.95	867.69
20.62	24	324,544.24	867.04
20.62	24	324,556.54	866.92
20.62	24	324,568.85	867.14
20.62	24	324,581.29	867.10
20.62	24	324,593.53	866.41
20.62	24	324,605.90	863.96
20.62	24	324,618.13	860.34
20.62	24	324,630.69	856.21
20.62	24	324,642.85	854.80
20.62	24	324,655.04	856.70
20.62	24	324,666.65	858.36
20.62	24	324,672.92	861.35
20.62	24	324,685.42	861.74
20.62	24	324,697.73	859.48
20.62	24	324,710.03	857.70
20.62	24	324,718.98	857.22
20.62	24	324,731.34	856.93
20.62	24	324,743.83	856.83
20.62	24	324,754.96	856.64
20.62	24	324,767.25	857.00
20.62	24	324,779.60	857.13
20.62	24	324,791.81	857.39
20.62	24	324,804.07	858.43
20.62	24	324,816.39	860.73
20.62	24	324,828.66	863.21
20.62	24	324,841.14	864.80
20.62	24	324,853.46	864.14
20.62	24	324,865.93	861.14
20.62	24	324,878.42	858.02
20.62	24	324,890.55	858.20
20.62	24	324,896.35	859.63
20.62	24	324,908.07	861.80
20.62	24	324,920.57	862.43
20.62	24	324,932.87	863.52
20.62	24	324,945.38	864.21
20.62	24	324,957.65	863.46
20.62	24	324,969.64	861.29
20.62	24	324,981.48	858.27
20.62	24	324,993.71	856.03
20.62	24	325,005.99	854.87
20.62	24	325,017.74	854.05
20.62	24	325,030.21	853.26
20.62	24	325,042.34	852.96
20.62	24	325,054.72	853.10
20.62	24	325,067.13	852.94

20.62	24	325,745.75	831.03
20.62	24	325,758.04	831.70
20.62	24	325,770.33	831.97
20.62	24	325,782.77	831.51
20.62	24	325,795.16	829.12
20.62	24	325,807.32	826.10
20.62	24	325,819.60	823.26
20.62	24	325,831.94	821.52
20.62	24	325,843.35	820.74
20.62	24	325,855.64	820.03
20.62	24	325,868.09	819.57
20.62	24	325,880.65	819.63
20.62	24	325,892.91	820.17
20.62	24	325,905.36	820.65
20.62	24	325,917.52	821.02
20.62	24	325,929.88	821.62
20.62	24	325,942.23	821.49
20.62	24	325,954.07	819.11
20.62	24	325,966.39	817.76
20.62	24	325,977.72	818.32
20.62	24	325,989.94	818.75
20.62	24	326,002.23	818.38
20.62	24	326,014.45	817.68
20.62	24	326,026.70	817.39
20.62	24	326,039.18	817.52
20.62	24	326,051.66	817.41
20.62	24	326,063.75	816.45
20.62	24	326,076.07	815.33
20.62	24	326,088.16	814.91
20.62	24	326,100.52	814.51
20.62	24	326,112.82	814.05
20.62	24	326,125.32	813.51
20.62	24	326,137.66	812.62
20.62	24	326,150.06	810.99
20.62	24	326,162.34	808.21
20.62	24	326,174.50	806.58
20.62	24	326,186.88	808.23
20.62	24	326,198.73	810.71
20.62	24	326,211.14	812.86
20.62	24	326,223.57	814.00
20.62	24	326,235.92	813.68
20.62	24	326,237.88	813.54
20.62	24	326,250.05	812.61
20.62	24	326,262.03	811.39
20.62	24	326,274.28	809.11
20.62	24	326,285.70	808.09
20.62	24	326,298.05	808.94
20.62	24	326,310.32	809.47
20.62	24	326,314.35	809.52
20.62	24	326,326.64	809.43
20.62	24	326,339.04	808.70
20.62	24	326,351.37	806.88
20.62	24	326,363.31	804.74
20.62	24	326,375.64	803.15
20.62	24	326,388.04	802.16
20.62	24	326,400.48	800.65

20.62	24	326,412.67	799.95
20.62	24	326,425.00	802.28
20.62	24	326,437.22	805.71
20.62	24	326,449.51	808.72
20.62	24	326,461.99	811.57
20.62	24	326,474.23	814.45
20.62	24	326,486.68	817.01
20.62	24	326,498.38	818.21
20.62	24	326,510.38	817.11
20.62	24	326,522.35	815.23
20.62	24	326,534.64	814.83
20.62	24	326,547.08	814.93
20.62	24	326,559.51	813.56
20.62	24	326,571.61	813.99
20.62	24	326,582.35	814.76
20.62	24	326,594.76	813.48
20.62	24	326,607.03	810.55
20.62	24	326,619.46	807.19
20.62	24	326,631.70	804.12
20.62	24	326,643.93	801.72
20.62	24	326,655.65	799.66
20.62	24	326,667.95	797.75
20.62	24	326,680.34	795.95
20.62	24	326,692.67	793.03
20.62	24	326,705.06	788.69
20.62	24	326,717.29	785.40
20.62	24	326,729.42	785.14
20.62	24	326,740.61	787.04
20.62	24	326,752.82	790.39
20.62	24	326,764.85	792.90
20.62	24	326,777.21	795.02
20.62	24	326,789.48	796.27
20.62	24	326,801.49	796.46
20.62	24	326,813.93	795.86
20.62	24	326,826.29	793.64
20.62	24	326,838.56	791.14
20.62	24	326,850.91	789.02
20.62	24	326,863.26	787.23
20.62	24	326,875.62	785.45
20.62	24	326,887.99	783.38
20.62	24	326,900.36	781.01
20.62	24	326,912.60	779.42
20.62	24	326,925.09	776.22
20.62	24	326,937.44	773.84
20.62	24	326,949.51	771.55
20.62	24	326,961.89	769.29
20.62	24	326,974.16	767.20
20.62	24	326,986.52	765.14
20.62	24	326,998.09	762.08
20.62	24	327,010.49	756.28
20.62	24	327,022.85	749.80
20.62	24	327,024.60	749.35
20.62	24	327,036.61	749.76
20.62	24	327,049.00	749.79
20.62	24	327,061.27	752.02
20.62	24	327,073.52	757.74

20.62	24	327,085.89	764.93
20.62	24	327,098.09	771.48
20.62	24	327,110.52	777.81
20.62	24	327,122.98	783.70
20.62	24	327,135.34	788.87
20.62	24	327,147.75	792.83
20.62	24	327,160.66	795.02
20.62	24	327,170.67	795.38
20.62	24	327,182.10	795.79
22.23	24	327,187.41	796.28
20.62	24	327,199.65	797.70
22.23	24	327,205.25	798.21
20.62	24	327,206.99	798.28
22.23	24	327,212.55	798.40
20.62	24	327,218.35	798.45
20.62	24	327,218.65	798.45
20.62	24	327,219.74	798.46
22.23	24	327,223.06	799.84
22.23	24	327,226.90	801.43
20.62	24	327,228.50	801.43
22.2	24	327,230.00	801.43
25.4	24	327,230.86	801.43
20.62	24	327,235.83	801.43
31.75	24	327,239.03	801.43
25	24		

# ANEXO B

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
M - 1	Marcador		00.00.00	0.000	X70	12.700	13755
W - 1	Soldadura	10		0.714	X70	12.700	13755
W - 2	Soldadura	20		1.369	X70	12.700	13755
F - 1	Accesorio		20.00.35	1.722	X70	12.700	13755
W - 3	Soldadura	30		2.159	X70	12.700	13755
W - 4	Soldadura	40		2.687	X70	12.700	13755
F - 2	Accesorio		40.00.16	2.847	X70	12.700	13755
W - 5	Soldadura	50		3.175	X70	12.700	13755
W - 6	Soldadura	60		3.896	X70	9.525	13755
F - 3	Accesorio		60.00.51	4.404	X70	9.525	10315
F - 4	Accesorio		60.01.02	4.915	X70	9.525	10315
F - 5	Accesorio		60.07.94	11.831	X70	9.525	10315
F - 6	Accesorio		60.12.17	16.066	X70	9.525	10315
W - 7	Soldadura	70		16.406	X70	9.525	10315
W - 8	Soldadura	80		17.366	X70	9.525	10315
W - 9	Soldadura	90		29.578	X70	9.525	10315
W - 10	Soldadura	100		29.901	X70	9.525	10315
W - 11	Soldadura	110		36.911	X70	9.525	10315
F - 7	Accesorio		110.04.98	41.895	X70	9.525	10315
W - 12	Soldadura	120		49.152	X70	9.525	10315
W - 13	Soldadura	130		61.107	X70	9.525	10315
M - 2	Marcador		130.12.09	73.200	X70	9.525	10315
W - 14	Soldadura	140		73.497	X70	9.525	10315
W - 15	Soldadura	150		85.217	X70	9.525	10315
W - 16	Soldadura	160		95.738	X70	9.525	10315
A - 4	Anomalía		160.06.89	102.629	X70	9.525	10315
A - 5	Anomalía		160.07.00	102.740	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 7	Anomalía		160.07.26	103.000	X70	9.525	10315
A - 8	Anomalía		160.07.38	103.116	X70	9.525	10315
W - 17	Soldadura	170		107.653	X70	9.525	10315
A - 9	Anomalía		170.00.52	108.176	X70	9.525	10315
A - 15	Anomalía		170.10.57	118.224	X70	9.525	10315
W - 18	Soldadura	180		119.992	X70	9.525	10315
A - 16	Anomalía		180.05.32	125.313	X70	9.525	10315
W - 19	Soldadura	190		132.400	X70	9.525	10315
W - 20	Soldadura	200		144.800	X70	9.525	10315
A - 18	Anomalía		200.09.60	154.396	X70	9.525	10315
W - 21	Soldadura	210		157.025	X70	9.525	10315
W - 22	Soldadura	220		169.446	X70	9.525	10315
A - 21	Anomalía		220.02.06	171.503	X70	9.525	10315
A - 22	Anomalía		220.04.13	173.576	X70	9.525	10315
A - 23	Anomalía		220.07.51	176.952	X70	9.525	10315
W - 23	Soldadura	230		181.818	X70	9.525	10315
W - 24	Soldadura	240		194.033	X70	9.525	10315
A - 25	Anomalía		240.00.57	194.602	X70	9.525	10315
A - 26	Anomalía		240.01.21	195.247	X70	9.525	10315
W - 25	Soldadura	250		206.423	X70	9.525	10315
A - 29	Anomalía		250.06.27	212.692	X70	9.525	10315
W - 26	Soldadura	260		218.755	X70	9.525	10315
W - 27	Soldadura	270		230.960	X70	9.525	10315
W - 28	Soldadura	280		243.365	X70	9.525	10315
A - 31	Anomalía		280.00.84	244.208	X70	9.525	10315
W - 29	Soldadura	290		255.763	X70	9.525	10315
W - 30	Soldadura	300		268.089	X70	9.525	10315



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 31	Soldadura	310		280.446	X70	9.525	10315
W - 32	Soldadura	320		292.865	X70	9.525	10315
A - 34	Anomalía		320.02.89	295.760	X70	9.525	10315
W - 33	Soldadura	330		305.102	X70	9.525	10315
W - 34	Soldadura	340		317.477	X70	9.525	10315
W - 35	Soldadura	350		329.420	X70	9.525	10315
W - 36	Soldadura	360		341.737	X70	9.525	10315
A - 35	Anomalía		360.01.35	343.088	X70	9.525	10315
W - 37	Soldadura	370		353.972	X70	9.525	10315
W - 38	Soldadura	380		365.915	X70	9.525	10315
A - 41	Anomalía		380.10.31	376.227	X70	9.525	10315
A - 42	Anomalía		380.10.43	376.349	X70	9.525	10315
W - 39	Soldadura	390		378.264	X70	9.525	10315
W - 40	Soldadura	400		390.647	X70	9.525	10315
W - 41	Soldadura	410		402.923	X70	9.525	10315
W - 42	Soldadura	420		415.346	X70	9.525	10315
A - 44	Anomalía		420.11.99	427.337	X70	9.525	10315
W - 43	Soldadura	430		427.746	X70	9.525	10315
A - 45	Anomalía		430.00.14	427.883	X70	9.525	10315
W - 44	Soldadura	440		440.073	X70	9.525	10315
W - 45	Soldadura	450		452.443	X70	9.525	10315
W - 46	Soldadura	460		464.812	X70	9.525	10315
A - 46	Anomalía		460.05.31	470.118	X70	9.525	10315
W - 47	Soldadura	470		476.707	X70	9.525	10315
W - 48	Soldadura	480		489.047	X70	9.525	10315
A - 47	Anomalía		480.01.46	490.507	X70	9.525	10315
W - 49	Soldadura	490		501.454	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 50	Soldadura	500		513.819	X70	9.525	10315
W - 51	Soldadura	510		524.825	X70	9.525	10315
W - 52	Soldadura	520		531.467	X70	9.525	10315
A - 51	Anomalía		520.08.15	539.620	X70	9.525	10315
W - 53	Soldadura	530		543.773	X70	9.525	10315
W - 54	Soldadura	540		555.587	X70	9.525	10315
W - 55	Soldadura	550		567.921	X70	9.525	10315
W - 56	Soldadura	560		580.306	X70	9.525	10315
A - 55	Anomalía		560.09.77	590.075	X70	9.525	10315
A - 56	Anomalía		560.10.24	590.547	X70	9.525	10315
A - 57	Anomalía		560.10.78	591.091	X70	9.525	10315
A - 58	Anomalía		560.10.95	591.259	X70	9.525	10315
A - 60	Anomalía		560.11.21	591.518	X70	9.525	10315
W - 57	Soldadura	570		592.643	X70	9.525	10315
A - 62	Anomalía		570.00.51	593.156	X70	9.525	10315
W - 58	Soldadura	580		604.832	X70	9.525	10315
W - 59	Soldadura	590		617.113	X70	9.525	10315
W - 60	Soldadura	600		629.323	X70	9.525	10315
W - 61	Soldadura	610		634.959	X70	9.525	10315
A - 64	Anomalía		610.08.49	643.446	X70	9.525	10315
A - 65	Anomalía		610.08.59	643.547	X70	9.525	10315
W - 62	Soldadura	620		647.355	X70	9.525	10315
A - 67	Anomalía		620.08.29	655.648	X70	9.525	10315
W - 63	Soldadura	630		659.608	X70	9.525	10315
A - 68	Anomalía		630.10.63	670.237	X70	9.525	10315
W - 64	Soldadura	640		671.896	X70	9.525	10315
A - 69	Anomalía		640.02.08	673.976	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 70	Anomalía		640.11.75	683.649	X70	9.525	10315
W - 65	Soldadura	650		684.266	X70	9.525	10315
W - 66	Soldadura	660		696.620	X70	9.525	10315
A - 74	Anomalía		660.11.84	708.457	X70	9.525	10315
A - 75	Anomalía		660.12.01	708.627	X70	9.525	10315
W - 67	Soldadura	670		708.970	X70	9.525	10315
W - 68	Soldadura	680		721.319	X70	9.525	10315
W - 69	Soldadura	690		733.636	X70	9.525	10315
A - 76	Anomalía		690.00.18	733.816	X70	9.525	10315
W - 70	Soldadura	700		745.635	X70	9.525	10315
W - 71	Soldadura	710		757.606	X70	9.525	10315
W - 72	Soldadura	720		769.932	X70	9.525	10315
W - 73	Soldadura	730		782.203	X70	9.525	10315
W - 74	Soldadura	740		794.426	X70	9.525	10315
W - 75	Soldadura	750		806.816	X70	9.525	10315
A - 85	Anomalía		750.0.666	813.473	X70	9.525	10315
A - 86	Anomalía		750.07.00	813.821	X70	9.525	10315
W - 76	Soldadura	760		819.163	X70	9.525	10315
W - 77	Soldadura	770		831.517	X70	9.525	10315
W - 78	Soldadura	780		843.874	X70	9.525	10315
W - 79	Soldadura	790		856.168	X70	9.525	10315
W - 80	Soldadura	800		868.601	X70	9.525	10315
W - 81	Soldadura	810		880.727	X70	9.525	10315
A - 89	Anomalía		810.03.30	884.027	X70	9.525	10315
W - 82	Soldadura	820		892.896	X70	9.525	10315
W - 83	Soldadura	830		905.035	X70	9.525	10315
A - 90	Anomalía		830.00.31	905.340	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 84	Soldadura	840		917.324	X70	9.525	10315
W - 85	Soldadura	850		929.574	X70	9.525	10315
A - 92	Anomalía		850.00.81	930.382	X70	9.525	10315
A - 94	Anomalía		850.02.55	932.122	X70	9.525	10315
A - 95	Anomalía		850.02.69	932.264	X70	9.525	10315
W - 86	Soldadura	860		934.583	X70	9.525	10315
W - 87	Soldadura	870		946.986	X70	9.525	10315
A - 96	Anomalía		870.03.97	950.958	X70	9.525	10315
W - 88	Soldadura	880		959.033	X70	9.525	10315
W - 89	Soldadura	890		971.420	X70	9.525	10315
A - 98	Anomalía		890.07.88	979.305	X70	9.525	10315
A - 101	Anomalía		890.11.36	982.779	X70	9.525	10315
A - 102	Anomalía		890.11.97	983.389	X70	9.525	10315
W - 90	Soldadura	900		983.701	X70	9.525	10315
W - 91	Soldadura	910		996.145	X70	9.525	10315
A - 103	Anomalía		910.11.95	1008.098	X70	9.525	10315
W - 92	Soldadura	920		1008.520	X70	9.525	10315
A - 104	Anomalía		920.11.65	1020.168	X70	9.525	10315
W - 93	Soldadura	930		1020.653	X70	9.525	10315
W - 94	Soldadura	940		1032.962	X70	9.525	10315
W - 95	Soldadura	950		1045.388	X70	9.525	10315
A - 105	Anomalía		950.01.53	1046.922	X70	9.525	10315
W - 96	Soldadura	960		1057.816	X70	9.525	10315
A - 106	Anomalía		960.03.62	1061.438	X70	9.525	10315
A - 107	Anomalía		960.09.42	1067.239	X70	9.525	10315
W - 97	Soldadura	970		1070.021	X70	9.525	10315
W - 98	Soldadura	980		1082.482	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 99	Soldadura	990		1089.002	X70	9.525	10315
A - 111	Anomalía		990.03.18	1092.182	X70	9.525	10315
A - 112	Anomalía		990.03.51	1092.515	X70	9.525	10315
A - 114	Anomalía		990.05.25	1094.247	X70	9.525	10315
A - 115	Anomalía		990.05.33	1094.336	X70	9.525	10315
A - 116	Anomalía		990.08.02	1097.018	X70	9.525	10315
A - 117	Anomalía		990.08.12	1097.125	X70	9.525	10315
A - 118	Anomalía		990.11.02	1100.026	X70	9.525	10315
W - 100	Soldadura	1000		1101.314	X70	9.525	10315
A - 121	Anomalía		1000.01.98	1103.297	X70	9.525	10315
A - 122	Anomalía		1000.02.20	1103.516	X70	9.525	10315
W - 101	Soldadura	1010		1113.480	X70	9.525	10315
A - 123	Anomalía		1010.08.07	1121.545	X70	9.525	10315
A - 126	Anomalía		1010.11.23	1124.715	X70	9.525	10315
W - 102	Soldadura	1020		1125.799	X70	9.525	10315
A - 127	Anomalía		1020.03.16	1128.961	X70	9.525	10315
A - 128	Anomalía		1020.08.90	1134.704	X70	9.525	10315
W - 103	Soldadura	1030		1137.958	X70	9.525	10315
W - 104	Soldadura	1040		1150.071	X70	9.525	10315
W - 105	Soldadura	1050		1161.948	X70	9.525	10315
A - 132	Anomalía		1050.08.24	1170.193	X70	9.525	10315
W - 106	Soldadura	1060		1174.323	X70	9.525	10315
A - 134	Anomalía		1060.09.05	1183.378	X70	9.525	10315
W - 107	Soldadura	1070		1186.696	X70	9.525	10315
W - 108	Soldadura	1080		1198.682	X70	9.525	10315
W - 109	Soldadura	1090		1210.757	X70	9.525	10315
A - 139	Anomalía		1090.05.83	1216.584	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 110	Soldadura	1100		1222.832	X70	9.525	10315
W - 111	Soldadura	1110		1235.194	X70	9.525	10315
W - 112	Soldadura	1120		1247.028	X70	9.525	10315
W - 113	Soldadura	1130		1258.542	X70	9.525	10315
W - 114	Soldadura	1140		1270.056	X70	9.525	10315
A - 142	Anomalia		1140.05.84	1275.895	X70	9.525	10315
A - 143	Anomalia		1140.08.30	1278.354	X70	9.525	10315
W - 115	Soldadura	1150		1280.137	X70	9.525	10315
A - 147	Anomalia		1150.05.64	1285.773	X70	9.525	10315
A - 148	Anomalia		1150.10.82	1290.960	X70	9.525	10315
A - 149	Anomalia		1150.10.96	1291.097	X70	9.525	10315
A - 151	Anomalia		1150.11.39	1291.524	X70	9.525	10315
A - 152	Anomalia		1150.11.61	1291.747	X70	9.525	10315
W - 116	Soldadura	1160		1292.466	X70	9.525	10315
W - 117	Soldadura	1170		1304.851	X70	9.525	10315
A - 153	Anomalia		1170.00.55	1305.400	X70	9.525	10315
A - 154	Anomalia		1170.11.84	1316.690	X70	9.525	10315
W - 118	Soldadura	1180		1317.252	X70	9.525	10315
W - 119	Soldadura	1190		1329.576	X70	9.525	10315
A - 157	Anomalia		1190.01.22	1330.800	X70	9.525	10315
W - 120	Soldadura	1200		1341.984	X70	9.525	10315
W - 121	Soldadura	1210		1354.381	X70	9.525	10315
A - 159	Anomalia		1210.02.45	1356.830	X70	9.525	10315
W - 122	Soldadura	1220		1366.695	X70	9.525	10315
W - 123	Soldadura	1230		1379.068	X70	9.525	10315
W - 124	Soldadura	1240		1391.455	X70	9.525	10315
A - 160	Anomalia		1240.07.06	1398.516	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 161	Anomalía		1240.08.95	1400.401	X70	9.525	10315
A - 162	Anomalía		1240.11.08	1402.537	X70	9.525	10315
W - 125	Soldadura	1250		1403.833	X70	9.525	10315
A - 163	Anomalía		1250.00.63	1404.468	X70	9.525	10315
W - 126	Soldadura	1260		1416.086	X70	9.525	10315
W - 127	Soldadura	1270		1428.074	X70	9.525	10315
W - 128	Soldadura	1280		1440.414	X70	9.525	10315
W - 129	Soldadura	1290		1452.700	X70	9.525	10315
W - 130	Soldadura	1300		1464.876	X70	9.525	10315
A - 166	Anomalía		1300.01.90	1466.781	X70	9.525	10315
A - 167	Anomalía		1300.02.62	1467.493	X70	9.525	10315
A - 168	Anomalía		1300.02.62	1467.495	X70	9.525	10315
W - 131	Soldadura	1310		1477.033	X70	9.525	10315
W - 132	Soldadura	1320		1489.377	X70	9.525	10315
W - 133	Soldadura	1330		1501.526	X70	9.525	10315
W - 134	Soldadura	1340		1513.771	X70	9.525	10315
W - 135	Soldadura	1350		1526.040	X70	9.525	10315
W - 136	Soldadura	1360		1538.394	X70	9.525	10315
W - 137	Soldadura	1370		1550.759	X70	9.525	10315
W - 138	Soldadura	1380		1562.999	X70	9.525	10315
W - 139	Soldadura	1390		1575.275	X70	9.525	10315
W - 140	Soldadura	1400		1587.243	X70	9.525	10315
W - 141	Soldadura	1410		1599.529	X70	9.525	10315
W - 142	Soldadura	1420		1611.904	X70	9.525	10315
W - 143	Soldadura	1430		1624.089	X70	9.525	10315
A - 177	Anomalía		1430.08.06	1632.146	X70	9.525	10315
A - 179	Anomalía		1430.11.42	1635.509	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 144	Soldadura	1440		1636.337	X70	9.525	10315
W - 145	Soldadura	1450		1648.567	X70	9.525	10315
W - 146	Soldadura	1460		1660.794	X70	9.525	10315
W - 147	Soldadura	1470		1673.159	X70	9.525	10315
W - 148	Soldadura	1480		1685.521	X70	9.525	10315
W - 149	Soldadura	1490		1697.576	X70	9.525	10315
W - 150	Soldadura	1500		1709.900	X70	9.525	10315
W - 151	Soldadura	1510		1722.244	X70	9.525	10315
A - 181	Anomalía		1510.06.71	1728.950	X70	9.525	10315
W - 152	Soldadura	1520		1734.223	X70	9.525	10315
W - 153	Soldadura	1530		1746.575	X70	9.525	10315
W - 154	Soldadura	1540		1758.904	X70	9.525	10315
W - 155	Soldadura	1550		1771.147	X70	9.525	10315
W - 156	Soldadura	1560		1783.415	X70	9.525	10315
A - 182	Anomalía		1560.10.82	1794.231	X70	9.525	10315
W - 157	Soldadura	1570		1795.747	X70	9.525	10315
A - 183	Anomalía		1570.01.22	1796.971	X70	9.525	10315
A - 184	Anomalía		1570.04.93	1800.675	X70	9.525	10315
A - 186	Anomalía		1570.05.68	1801.432	X70	9.525	10315
A - 188	Anomalía		1570.06.09	1801.838	X70	9.525	10315
A - 190	Anomalía		1570.06.76	1802.508	X70	9.525	10315
A - 192	Anomalía		1570.07.33	1803.077	X70	9.525	10315
A - 193	Anomalía		1570.07.66	1803.403	X70	9.525	10315
A - 194	Anomalía		1570.08.63	1804.378	X70	9.525	10315
A - 195	Anomalía		1570.08.92	1804.667	X70	9.525	10315
A - 196	Anomalía		1570.10.32	1806.064	X70	9.525	10315
A - 197	Anomalía		1570.11.43	1807.182	X70	9.525	10315



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 158	Soldadura	1580		1807.655	X70	9.525	10315
A - 198	Anomalía		1580.05.00	1812.658	X70	9.525	10315
W - 159	Soldadura	1590		1819.953	X70	9.525	10315
W - 160	Soldadura	1600		1832.252	X70	9.525	10315
W - 161	Soldadura	1610		1844.258	X70	9.525	10315
A - 199	Anomalía		1610.08.21	1852.468	X70	9.525	10315
W - 162	Soldadura	1620		1856.631	X70	9.525	10315
A - 201	Anomalía		1620.02.74	1859.371	X70	9.525	10315
W - 163	Soldadura	1630		1866.979	X70	9.525	10315
W - 164	Soldadura	1640		1879.285	X70	9.525	10315
W - 165	Soldadura	1650		1891.508	X70	9.525	10315
W - 166	Soldadura	1660		1903.755	X70	9.525	10315
W - 167	Soldadura	1670		1916.151	X70	9.525	10315
W - 168	Soldadura	1680		1928.259	X70	9.525	10315
A - 209	Anomalía		1680.08.07	1936.326	X70	9.525	10315
W - 169	Soldadura	1690		1940.433	X70	9.525	10315
W - 170	Soldadura	1700		1952.587	X70	9.525	10315
W - 171	Soldadura	1710		1964.558	X70	9.525	10315
A - 210	Anomalía		1710.10.85	1975.404	X70	9.525	10315
W - 172	Soldadura	1720		1976.725	X70	9.525	10315
A - 212	Anomalía		1720.11.69	1988.419	X70	9.525	10315
W - 173	Soldadura	1730		1988.977	X70	9.525	10315
A - 214	Anomalía		1730.09.72	1998.701	X70	9.525	10315
W - 174	Soldadura	1740		1999.562	X70	9.525	10315
W - 175	Soldadura	1750		2011.843	X70	9.525	10315
W - 176	Soldadura	1760		2023.786	X70	9.525	10315
A - 215	Anomalía		1760.08.44	2032.226	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 216	Anomalía		1760.08.65	2032.432	X70	9.525	10315
A - 217	Anomalía		1760.10.13	2033.913	X70	9.525	10315
A - 220	Anomalía		1760.11.29	2035.073	X70	9.525	10315
W - 177	Soldadura	1770		2035.713	X70	9.525	10315
A - 221	Anomalía		1770.00.63	2036.346	X70	9.525	10315
W - 178	Soldadura	1780		2048.020	X70	9.525	10315
W - 179	Soldadura	1790		2060.395	X70	9.525	10315
W - 180	Soldadura	1800		2072.686	X70	9.525	10315
W - 181	Soldadura	1810		2085.122	X70	9.525	10315
W - 182	Soldadura	1820		2097.562	X70	9.525	10315
W - 183	Soldadura	1830		2109.815	X70	9.525	10315
W - 184	Soldadura	1840		2121.726	X70	9.525	10315
W - 185	Soldadura	1850		2126.808	X70	9.525	10315
W - 186	Soldadura	1860		2139.099	X70	9.525	10315
A - 223	Anomalía		1860.02.92	2142.020	X70	9.525	10315
W - 187	Soldadura	1870		2151.332	X70	9.525	10315
W - 188	Soldadura	1880		2163.630	X70	9.525	10315
W - 189	Soldadura	1890		2175.916	X70	9.525	10315
A - 224	Anomalía		1890.03.28	2179.193	X70	9.525	10315
A - 225	Anomalía		1890.04.95	2180.862	X70	9.525	10315
A - 226	Anomalía		1890.11.03	2186.943	X70	9.525	10315
W - 190	Soldadura	1900		2188.248	X70	9.525	10315
W - 191	Soldadura	1910		2200.293	X70	9.525	10315
A - 228	Anomalía	1	1910.00.11	2200.402	X70	9.525	10315
A - 229	Anomalía		1910.00.48	2200.775	X70	9.525	10315
A - 230	Anomalía		1910.11.60	2211.890	X70	9.525	10315
W - 192	Soldadura	1920		2212.673	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 231	Anomalía		1920.10.92	2223.590	X70	9.525	10315
W - 193	Soldadura	1930		2225.002	X70	9.525	10315
W - 194	Soldadura	1940		2237.141	X70	9.525	10315
W - 195	Soldadura	1950		2249.528	X70	9.525	10315
W - 196	Soldadura	1960		2256.610	X70	9.525	10315
A - 233	Anomalía		1960.08.98	2265.591	X70	9.525	10315
W - 197	Soldadura	1970		2268.972	X70	9.525	10315
W - 198	Soldadura	1980		2281.324	X70	9.525	10315
A - 236	Anomalía		1980.01.16	2282.487	X70	9.525	10315
W - 199	Soldadura	1990		2293.760	X70	9.525	10315
W - 200	Soldadura	2000		2305.715	X70	9.525	10315
W - 201	Soldadura	2010		2318.032	X70	12.700	13755
W - 202	Soldadura	2020		2330.384	X70	12.700	13755
W - 203	Soldadura	2030		2342.772	X70	12.700	13755
W - 204	Soldadura	2040		2355.174	X70	12.700	13755
W - 205	Soldadura	2050		2367.549	X70	12.700	13755
W - 206	Soldadura	2060		2379.924	X70	12.700	13755
W - 207	Soldadura	2070		2392.126	X70	12.700	13755
A - 237	Anomalía		2070.02.61	2394.735	X70	12.700	13755
A - 238	Anomalía		2070.02.61	2394.735	X70	12.700	13755
W - 208	Soldadura	2080		2404.135	X70	12.700	13755
W - 209	Soldadura	2090		2416.421	X70	12.700	13755
W - 210	Soldadura	2100		2428.804	X70	12.700	13755
W - 211	Soldadura	2110		2441.006	X70	12.700	13755
W - 212	Soldadura	2120		2453.229	X70	12.700	13755
W - 213	Soldadura	2130		2465.565	X70	12.700	13755
W - 214	Soldadura	2140		2477.953	X70	12.700	13755

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 215	Soldadura	2150		2490.325	X70	12.700	13755
W - 216	Soldadura	2160		2502.723	X70	12.700	13755
W - 217	Soldadura	2170		2515.095	X70	12.700	13755
W - 218	Soldadura	2180		2527.343	X70	12.700	13755
W - 219	Soldadura	2190		2539.749	X70	12.700	13755
W - 220	Soldadura	2200		2553.076	X70	12.700	13755
W - 221	Soldadura	2210		2565.397	X70	12.700	13755
W - 222	Soldadura	2220		2577.970	X70	12.700	13755
W - 223	Soldadura	2230		2590.856	X70	12.700	13755
W - 224	Soldadura	2240		2603.122	X70	12.700	13755
W - 225	Soldadura	2250		2614.851	X70	12.700	13755
A - 239	Anomalía		2250.01.56	2616.411	X70	12.700	13755
W - 226	Soldadura	2260		2625.908	X70	12.700	13755
W - 227	Soldadura	2270		2637.688	X70	12.700	13755
W - 228	Soldadura	2280		2648.958	X70	12.700	13755
W - 229	Soldadura	2290		2661.257	X70	12.700	13755
W - 230	Soldadura	2300		2673.576	X70	12.700	13755
W - 231	Soldadura	2310		2685.760	X70	12.700	13755
W - 232	Soldadura	2320		2697.935	X70	12.700	13755
W - 233	Soldadura	2330		2711.018	X70	12.700	13755
W - 234	Soldadura	2340		2723.309	X70	12.700	13755
W - 235	Soldadura	2350		2735.577	X70	12.700	13755
W - 236	Soldadura	2360		2747.427	X70	12.700	13755
W - 237	Soldadura	2370		2759.728	X70	12.700	13755
W - 238	Soldadura	2380		2772.029	X70	12.700	13755
W - 239	Soldadura	2390		2784.330	X70	12.700	13755
W - 240	Soldadura	2400		2796.736	X70	12.700	13755

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 241	Soldadura	2410		2808.199	X70	12.700	13755
W - 242	Soldadura	2420		2818.602	X70	17.475	13755
W - 243	Soldadura	2430		2821.043	X70	12.700	18926
W - 244	Soldadura	2440		2825.849	X70	12.700	13755
W - 245	Soldadura	2450		2832.872	X70	12.700	13755
F - 8	Accesorio		2450.00.37	2833.246	X70	12.700	13755
W - 246	Soldadura	2460		2833.748	X70	12.700	13755
M - 3	Marcador		2460.01.38	2835.133	X70	12.700	13755
W - 247	Soldadura	2470		2836.520	X70	12.700	13755
F - 9	Accesorio		2470.00.49	2837.012	X70	12.700	13755
F - 10	Accesorio		2470.03.05	2839.565	X70	12.700	13755
W - 248	Soldadura	2480		2839.715	X70	12.700	13755
W - 249	Soldadura	2490		2844.114	X70	22.225	13755
W - 250	Soldadura	2500		2846.664	X70	12.700	24070
W - 251	Soldadura	2510		2848.206	X70	12.700	13755
W - 252	Soldadura	2520		2851.064	X70	12.700	13755
W - 253	Soldadura	2530		2859.634	X70	17.475	18926
W - 254	Soldadura	2540		2861.262	X70	12.700	13755
W - 255	Soldadura	2550		2867.716	X70	12.700	13755
W - 256	Soldadura	2560		2880.538	X70	12.700	13755
W - 257	Soldadura	2570		2891.838	X70	12.700	13755
W - 258	Soldadura	2580		2904.096	X70	12.700	13755
W - 259	Soldadura	2590		2916.319	X70	12.700	13755
W - 260	Soldadura	2600		2928.737	X70	12.700	13755
W - 261	Soldadura	2610		2940.995	X70	12.700	13755
W - 262	Soldadura	2620		2952.151	X70	12.700	13755
W - 263	Soldadura	2630		2964.312	X70	12.700	13755

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
M - 4	Marcador		2630.11.75	2976.060	X70	12.700	13755
W - 264	Soldadura	2640		2976.413	X70	12.700	13755
W - 265	Soldadura	2650		2988.447	X70	12.700	13755
W - 266	Soldadura	2660		3000.614	X70	12.700	13755
W - 267	Soldadura	2670		3002.270	X70	14.275	15458
F - 11	Accesorio		2670.01.33	3003.603	X70	14.275	15458
W - 268	Soldadura	2680		3004.995	X70	12.700	15458
W - 269	Soldadura	2690		3006.527	X70	12.700	13755
W - 270	Soldadura	2700		3018.798	X70	12.700	13755
W - 271	Soldadura	2710		3030.708	X70	12.700	13755
A - 242	Anomalía		2710.03.46	3034.170	X70	12.700	13755
A - 244	Anomalía		2710.06.25	3036.959	X70	12.700	13755
W - 272	Soldadura	2720		3040.243	X70	12.700	13755
W - 273	Soldadura	2730		3051.708	X70	12.700	13755
W - 274	Soldadura	2740		3064.063	X70	12.700	13755
W - 275	Soldadura	2750		3076.496	X70	12.700	13755
W - 276	Soldadura	2760		3088.904	X70	12.700	13755
A - 245	Anomalía		2760.04.28	3093.184	X70	12.700	13755
W - 277	Soldadura	2770		3101.325	X70	12.700	13755
W - 278	Soldadura	2780		3107.439	X70	12.700	13755
W - 279	Soldadura	2790		3117.400	X70	12.700	13755
W - 280	Soldadura	2800		3129.770	X70	12.700	13755
W - 281	Soldadura	2810		3133.138	X70	12.700	13755
W - 282	Soldadura	2820		3145.239	X70	12.700	13755
W - 283	Soldadura	2830		3157.604	X70	12.700	13755
W - 284	Soldadura	2840		3169.971	X70	12.700	13755
W - 285	Soldadura	2850		3179.948	X70	12.700	13755

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 286	Soldadura	2860		3191.568	X70	12.700	13755
W - 287	Soldadura	2870		3203.999	X70	12.700	13755
W - 288	Soldadura	2880		3216.725	X70	9.525	10315
W - 289	Soldadura	2890		3228.124	X70	9.525	10315
W - 290	Soldadura	2900		3240.123	X70	9.525	10315
W - 291	Soldadura	2910		3244.494	X70	9.525	10315
W - 292	Soldadura	2920		3256.001	X70	9.525	10315
W - 293	Soldadura	2930		3268.038	X70	9.525	10315
W - 294	Soldadura	2940		3276.041	X70	9.525	10315
A - 250	Anomalía		2940.06.13	3282.170	X70	9.525	10315
A - 251	Anomalía		2940.06.41	3282.455	X70	9.525	10315
W - 295	Soldadura	2950		3288.444	X70	9.525	10315
A - 253	Anomalía		2950.02.00	3290.440	X70	9.525	10315
W - 296	Soldadura	2960		3300.760	X70	9.525	10315
W - 297	Soldadura	2970		3313.151	X70	9.525	10315
A - 255	Anomalía		2970.11.95	3325.104	X70	9.525	10315
W - 298	Soldadura	2980		3325.500	X70	9.525	10315
W - 299	Soldadura	2990		3338.502	X70	9.525	10315
W - 300	Soldadura	3000		3350.692	X70	9.525	10315
W - 301	Soldadura	3010		3362.912	X70	9.525	10315
W - 302	Soldadura	3020		3367.695	X70	9.525	10315
W - 303	Soldadura	3030		3380.120	X70	9.525	10315
A - 256	Anomalía		3030.10.23	3390.354	X70	9.525	10315
W - 304	Soldadura	3040		3392.018	X70	9.525	10315
A - 257	Anomalía		3040.06.34	3398.360	X70	9.525	10315
W - 305	Soldadura	3050		3403.531	X70	9.525	10315
A - 259	Anomalía		3050.11.74	3415.266	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 260	Anomalía		3050.12.00	3415.530	X70	9.525	10315
W - 306	Soldadura	3060		3415.807	X70	9.525	10315
A - 261	Anomalía		3060.11.33	3427.133	X70	9.525	10315
W - 307	Soldadura	3070		3427.926	X70	9.525	10315
W - 308	Soldadura	3080		3440.021	X70	9.525	10315
A - 263	Anomalía		3080.00.50	3440.524	X70	9.525	10315
W - 309	Soldadura	3090		3452.388	X70	9.525	10315
W - 310	Soldadura	3100		3459.432	X70	9.525	10315
A - 265	Anomalía		3100.09.49	3468.926	X70	9.525	10315
A - 266	Anomalía		3100.09.50	3468.931	X70	9.525	10315
W - 311	Soldadura	3110		3471.540	X70	9.525	10315
W - 312	Soldadura	3120		3483.818	X70	9.525	10315
W - 313	Soldadura	3130		3496.361	X70	9.525	10315
A - 268	Anomalía		3130.11.91	3508.271	X70	9.525	10315
W - 314	Soldadura	3140		3508.619	X70	9.525	10315
A - 269	Anomalía		3140.00.97	3509.594	X70	9.525	10315
A - 270	Anomalía		3140.11.97	3520.585	X70	9.525	10315
W - 315	Soldadura	3150		3520.839	X70	9.525	10315
W - 316	Soldadura	3160		3533.259	X70	9.525	10315
W - 317	Soldadura	3170		3546.183	X70	9.525	10315
W - 318	Soldadura	3180		3558.550	X70	9.525	10315
W - 319	Soldadura	3190		3570.953	X70	9.525	10315
W - 320	Soldadura	3200		3583.805	X70	9.525	10315
W - 321	Soldadura	3210		3596.831	X70	9.525	10315
W - 322	Soldadura	3220		3609.205	X70	9.525	10315
W - 323	Soldadura	3230		3621.783	X70	9.525	10315
A - 273	Anomalía		3230.04.63	3626.409	X70	9.525	10315



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 324	Soldadura	3240		3633.869	X70	9.525	10315
W - 325	Soldadura	3250		3644.684	X70	9.525	10315
W - 326	Soldadura	3260		3657.305	X70	9.525	10315
W - 327	Soldadura	3270		3669.800	X70	9.525	10315
W - 328	Soldadura	3280		3682.215	X70	9.525	10315
W - 329	Soldadura	3290		3685.177	X70	9.525	10315
W - 330	Soldadura	3300		3697.689	X70	9.525	10315
W - 331	Soldadura	3310		3710.374	X70	9.525	10315
W - 332	Soldadura	3320		3722.761	X70	9.525	10315
W - 333	Soldadura	3330		3735.306	X70	9.525	10315
A - 274	Anomalía		3330.01.99	3737.298	X70	9.525	10315
A - 275	Anomalía		3330.02.33	3737.633	X70	9.525	10315
A - 276	Anomalía		3330.09.69	3744.994	X70	9.525	10315
W - 334	Soldadura	3340		3747.493	X70	9.525	10315
W - 335	Soldadura	3350		3760.445	X70	9.525	10315
W - 336	Soldadura	3360		3767.501	X70	9.525	10315
W - 337	Soldadura	3370		3772.677	X70	9.525	10315
W - 338	Soldadura	3380		3785.695	X70	9.525	10315
A - 279	Anomalía		3380.00.68	3786.375	X70	9.525	10315
A - 280	Anomalía		3380.11.19	3796.889	X70	9.525	10315
W - 339	Soldadura	3390		3797.920	X70	9.525	10315
W - 340	Soldadura	3400		3810.264	X70	9.525	10315
W - 341	Soldadura	3410		3822.619	X70	9.525	10315
W - 342	Soldadura	3420		3834.978	X70	9.525	10315
W - 343	Soldadura	3430		3847.323	X70	9.525	10315
W - 344	Soldadura	3440		3859.687	X70	9.525	10315
A - 281	Anomalía		3440.00.12	3859.802	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 345	Soldadura	3450		3871.976	X70	9.525	10315
A - 283	Anomalía		3450.00.21	3872.187	X70	9.525	10315
A - 284	Anomalía		3450.00.65	3872.629	X70	9.525	10315
A - 285	Anomalía		3450.10.34	3882.321	X70	9.525	10315
W - 346	Soldadura	3460		3884.287	X70	9.525	10315
W - 347	Soldadura	3470		3896.614	X70	9.525	10315
W - 348	Soldadura	3480		3908.562	X70	9.525	10315
A - 286	Anomalía		3480.1.222	3920.777	X70	9.525	10315
W - 349	Soldadura	3490		3920.955	X70	9.525	10315
A - 287	Anomalía		3490.00.59	3921.547	X70	9.525	10315
W - 350	Soldadura	3500		3933.355	X70	9.525	10315
W - 351	Soldadura	3510		3945.661	X70	9.525	10315
W - 352	Soldadura	3520		3957.955	X70	9.525	10315
A - 288	Anomalía		3520.00.37	3958.326	X70	9.525	10315
A - 289	Anomalía		3520.11.45	3969.410	X70	9.525	10315
W - 353	Soldadura	3530		3970.266	X70	9.525	10315
W - 354	Soldadura	3540		3982.659	X70	9.525	10315
A - 290	Anomalía		3540.06.93	3989.591	X70	9.525	10315
W - 355	Soldadura	3550		3995.014	X70	9.525	10315
A - 291	Anomalía		3550.00.59	3995.605	X70	9.525	10315
W - 356	Soldadura	3560		4006.466	X70	9.525	10315
W - 357	Soldadura	3570		4018.801	X70	9.525	10315
W - 358	Soldadura	3580		4031.160	X70	9.525	10315
W - 359	Soldadura	3590		4043.528	X70	9.525	10315
A - 294	Anomalía		3590.11.42	4054.950	X70	9.525	10315
W - 360	Soldadura	3600		4055.877	X70	9.525	10315
A - 295	Anomalía		3600.10.88	4066.758	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 296	Anomalía		3600.11.03	4066.908	X70	9.525	10315
A - 297	Anomalía		3600.11.64	4067.518	X70	9.525	10315
A - 298	Anomalía		3600.11.82	4067.701	X70	9.525	10315
W - 361	Soldadura	3610		4068.186	X70	9.525	10315
W - 362	Soldadura	3620		4080.474	X70	9.525	10315
W - 363	Soldadura	3630		4085.956	X70	9.525	10315
A - 300	Anomalía		3630.10.09	4096.047	X70	9.525	10315
W - 364	Soldadura	3640		4098.366	X70	9.525	10315
A - 301	Anomalía		3640.03.01	4101.371	X70	9.525	10315
A - 302	Anomalía		3640.03.27	4101.638	X70	9.525	10315
W - 365	Soldadura	3650		4110.579	X70	9.525	10315
A - 303	Anomalía		3650.01.85	4112.428	X70	9.525	10315
F - 12	Accesorio		3650.07.71	4118.285	X70	9.525	10315
W - 366	Soldadura	3660		4122.722	X70	9.525	10315
F - 13	Accesorio		3660.00.83	4123.555	X70	9.525	10315
W - 367	Soldadura	3670		4135.092	X70	9.525	10315
W - 368	Soldadura	3680		4147.297	X70	9.525	10315
W - 369	Soldadura	3690		4159.601	X70	9.525	10315
W - 370	Soldadura	3700		4166.420	X70	9.525	10315
A - 304	Anomalía		3700.03.57	4169.992	X70	9.525	10315
W - 371	Soldadura	3710		4178.821	X70	9.525	10315
W - 372	Soldadura	3720		4191.135	X70	9.525	10315
W - 373	Soldadura	3730		4197.500	X70	9.525	10315
W - 374	Soldadura	3740		4209.781	X70	9.525	10315
A - 306	Anomalía		3740.05.50	4215.285	X70	9.525	10315
W - 375	Soldadura	3750		4222.059	X70	9.525	10315
A - 307	Anomalía		3750.06.11	4228.168	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 376	Soldadura	3760		4234.355	X70	9.525	10315
W - 377	Soldadura	3770		4243.593	X70	9.525	10315
A - 308	Anomalía		3770.00.94	4244.528	X70	9.525	10315
W - 378	Soldadura	3780		4245.115	X70	17.475	18926
W - 379	Soldadura	3790		4246.692	X70	9.525	10315
W - 380	Soldadura	3800		4248.424	X70	17.475	10315
W - 381	Soldadura	3810		4251.676	X70	9.525	10315
W - 382	Soldadura	3820		4253.908	X70	9.525	10315
W - 383	Soldadura	3830		4266.230	X70	9.525	10315
W - 384	Soldadura	3840		4278.630	X70	9.525	10315
A - 309	Anomalía		3840.06.76	4285.389	X70	9.525	10315
W - 385	Soldadura	3850		4290.687	X70	9.525	10315
W - 386	Soldadura	3860		4296.674	X70	9.525	10315
W - 387	Soldadura	3870		4308.917	X70	9.525	10315
A - 310	Anomalía		3870.01.84	4310.753	X70	9.525	10315
W - 388	Soldadura	3880		4321.104	X70	9.525	10315
A - 311	Anomalía		3880.06.19	4327.299	X70	9.525	10315
A - 312	Anomalía		3880.07.32	4328.427	X70	9.525	10315
W - 389	Soldadura	3890		4333.502	X70	9.525	10315
W - 390	Soldadura	3900		4345.793	X70	9.525	10315
W - 391	Soldadura	3910		4358.008	X70	9.525	10315
W - 392	Soldadura	3920		4370.306	X70	9.525	10315
W - 393	Soldadura	3930		4382.292	X70	9.525	10315
W - 394	Soldadura	3940		4394.652	X70	9.525	10315
W - 395	Soldadura	3950		4406.872	X70	9.525	10315
W - 396	Soldadura	3960		4418.945	X70	9.525	10315
W - 397	Soldadura	3970		4431.383	X70	9.525	10315

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 398	Soldadura	3980		4439.214	X70	9.525	10315
W - 399	Soldadura	3990		4450.618	X70	9.525	10315
W - 400	Soldadura	4000		4462.930	X70	9.525	10315
W - 401	Soldadura	4010		4475.211	X70	9.525	10315
A - 316	Anomalía		4010.11.39	4486.598	X70	9.525	10315
A - 317	Anomalía		4010.11.89	4487.106	X70	9.525	10315
W - 402	Soldadura	4020		4487.545	X70	9.525	10315
W - 403	Soldadura	4030		4499.966	X70	9.525	10315
A - 319	Anomalía		4030.08.52	4508.482	X70	9.525	10315
A - 321	Anomalía		4030.10.75	4510.717	X70	9.525	10315
A - 323	Anomalía		4030.11.26	4511.225	X70	9.525	10315
A - 325	Anomalía		4030.11.54	4511.510	X70	9.525	10315
A - 326	Anomalía		4030.11.66	4511.627	X70	9.525	10315
A - 327	Anomalía		4030.11.90	4511.868	X70	9.525	10315
A - 328	Anomalía		4030.11.98	4511.949	X70	9.525	10315
W - 404	Soldadura	4040		4512.325	X70	9.525	10315
W - 405	Soldadura	4050		4524.601	X70	7.925	10315
W - 406	Soldadura	4060		4536.504	X70	7.925	8584
W - 407	Soldadura	4070		4548.805	X70	7.925	8584
W - 408	Soldadura	4080		4561.126	X70	7.925	8584
W - 409	Soldadura	4090		4573.636	X70	7.925	8584
W - 410	Soldadura	4100		4585.805	X70	7.925	8584
W - 411	Soldadura	4110		4598.076	X70	7.925	8584
W - 412	Soldadura	4120		4610.351	X70	7.925	8584
W - 413	Soldadura	4130		4622.701	X70	7.925	8584
W - 414	Soldadura	4140		4635.579	X70	7.925	8584
F - 14	Accesorio		4140.08.50	4644.075	X70	7.925	8584

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 415	Soldadura	4150		4648.451	X70	7.925	8584
F - 15	Accesorio		4150.01.08	4649.531	X70	7.925	8584
F - 16	Accesorio		4150.06.39	4654.842	X70	7.925	8584
W - 416	Soldadura	4160		4660.407	X70	7.925	8584
F - 17	Accesorio		4160.00.83	4661.235	X70	7.925	8584
W - 417	Soldadura	4170		4670.890	X70	7.925	8584
W - 418	Soldadura	4180		4683.681	X70	9.525	8584
W - 419	Soldadura	4190		4686.158	X70	7.925	8584
F - 18	Accesorio		4190.07.52	4693.681	X70	7.925	8584
W - 420	Soldadura	4200		4698.878	X70	7.925	8584
F - 19	Accesorio		4200.02.13	4701.009	X70	7.925	8584
F - 20	Accesorio		4200.11.01	4709.886	X70	7.925	8584
W - 421	Soldadura	4210		4711.408	X70	7.925	8584
F - 21	Accesorio		4210.05.40	4716.813	X70	7.925	8584
W - 422	Soldadura	4220		4723.023	X70	7.925	8584
W - 423	Soldadura	4230		4733.275	X70	7.925	8584
W - 424	Soldadura	4240		4739.259	X70	7.925	8584
W - 425	Soldadura	4250		4750.239	X70	7.925	8584
W - 426	Soldadura	4260		4762.213	X70	7.925	8584
W - 427	Soldadura	4270		4774.568	X70	7.925	8584
W - 428	Soldadura	4280		4786.478	X70	7.925	8584
W - 429	Soldadura	4290		4797.628	X70	7.925	8584
W - 430	Soldadura	4300		4802.957	X70	7.925	8584
W - 431	Soldadura	4310		4813.704	X70	7.925	8584
W - 432	Soldadura	4320		4824.164	X70	7.925	8584
W - 433	Soldadura	4330		4836.434	X70	7.925	8584
W - 434	Soldadura	4340		4846.625	X70	7.925	8584

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 435	Soldadura	4350		4854.778	X70	7.925	8584
W - 436	Soldadura	4360		4865.787	X70	7.925	8584
W - 437	Soldadura	4370		4878.835	X70	7.925	8584
W - 438	Soldadura	4380		4891.763	X70	7.925	8584
W - 439	Soldadura	4390		4904.042	X70	7.925	8584
W - 440	Soldadura	4400		4915.596	X70	7.925	8584
W - 441	Soldadura	4410		4927.874	X70	7.925	8584
W - 442	Soldadura	4420		4940.902	X70	7.925	8584
W - 443	Soldadura	4430		4953.881	X70	7.925	8584
W - 444	Soldadura	4440		4966.251	X70	7.925	8584
W - 445	Soldadura	4450		4979.132	X70	7.925	8584
W - 446	Soldadura	4460		4991.092	X70	7.925	8584
W - 447	Soldadura	4470		5002.995	X70	7.925	8584
W - 448	Soldadura	4480		5015.055	X70	7.925	8584
W - 449	Soldadura	4490		5027.549	X70	7.925	8584
W - 450	Soldadura	4500		5038.321	X70	7.925	8584
W - 451	Soldadura	4510		5050.975	X70	7.925	8584
W - 452	Soldadura	4520		5063.358	X70	7.925	8584
W - 453	Soldadura	4530		5073.914	X70	7.925	8584
A - 340	Anomalía		4530.07.39	5081.308	X70	7.925	8584
A - 341	Anomalía		4530.07.90	5081.814	X70	7.925	8584
W - 454	Soldadura	4540		5085.403	X70	7.925	8584
A - 346	Anomalía		4540.03.14	5088.547	X70	7.925	8584
W - 455	Soldadura	4550		5098.428	X70	7.925	8584
W - 456	Soldadura	4560		5110.742	X70	7.925	8584
W - 457	Soldadura	4570		5122.545	X70	7.925	8584
W - 458	Soldadura	4580		5135.474	X70	7.925	8584

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 880	Anomalía		61760.05.59	73009.437	X70	11.125	9039
W - 6177	Soldadura	61770		73016.118	X70	11.125	9039
W - 6178	Soldadura	61780		73028.454	X70	11.125	9039
W - 6179	Soldadura	61790		73040.812	X70	11.125	9039
W - 6180	Soldadura	61800		73053.181	X70	11.125	9039
A - 885	Anomalía		61800.04.72	73057.903	X70	11.125	9039
W - 6181	Soldadura	61810		73065.528	X70	11.125	9039
W - 6182	Soldadura	61820		73077.756	X70	11.125	9039
W - 6183	Soldadura	61830		73090.194	X70	11.125	9039
W - 6184	Soldadura	61840		73102.455	X70	11.125	9039
W - 6185	Soldadura	61850		73114.832	X70	11.125	9039
A - 886	Anomalía		61850.02.55	73117.380	X70	11.125	9039
W - 6186	Soldadura	61860		73127.045	X70	11.125	9039
W - 6187	Soldadura	61870		73139.290	X70	11.125	9039
A - 890	Anomalía		61870.06.91	73146.196	X70	11.125	9039
W - 6188	Soldadura	61880		73151.594	X70	11.125	9039
W - 6189	Soldadura	61890		73163.539	X70	11.125	9039
W - 6190	Soldadura	61900		73175.871	X70	11.125	9039
W - 6191	Soldadura	61910		73188.231	X70	11.125	9039
W - 6192	Soldadura	61920		73200.369	X70	11.125	9039
W - 6193	Soldadura	61930		73212.711	X70	11.125	9039
W - 6194	Soldadura	61940		73224.883	X70	11.125	9039
W - 6195	Soldadura	61950		73237.225	X70	11.125	9039
W - 6196	Soldadura	61960		73249.612	X70	11.125	9039
W - 6197	Soldadura	61970		73262.028	X70	11.125	9039
W - 6198	Soldadura	61980		73274.344	X70	11.125	9039
W - 6199	Soldadura	61990		73286.689	X70	11.125	9039



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6200	Soldadura	62000		73299.058	X70	11.125	9039
W - 6201	Soldadura	62010		73311.415	X70	11.125	9039
W - 6202	Soldadura	62020		73323.798	X70	11.125	9039
W - 6203	Soldadura	62030		73336.173	X70	11.125	9039
W - 6204	Soldadura	62040		73348.527	X70	11.125	9039
W - 6205	Soldadura	62050		73360.879	X70	11.125	9039
W - 6206	Soldadura	62060		73373.089	X70	11.125	9039
W - 6207	Soldadura	62070		73385.474	X70	11.125	9039
W - 6208	Soldadura	62080		73397.742	X70	11.125	9039
W - 6209	Soldadura	62090		73409.894	X70	11.125	9039
W - 6210	Soldadura	62100		73422.195	X70	11.125	9039
A - 895	Anomalía		62100.01.33	73423.529	X70	11.125	9039
W - 6211	Soldadura	62110		73434.504	X70	11.125	9039
W - 6212	Soldadura	62120		73446.797	X70	11.125	9039
W - 6213	Soldadura	62130		73459.028	X70	11.125	9039
W - 6214	Soldadura	62140		73471.268	X70	11.125	9039
W - 6215	Soldadura	62150		73483.724	X70	11.125	9039
W - 6216	Soldadura	62160		73495.571	X70	11.125	9039
W - 6217	Soldadura	62170		73507.620	X70	11.125	9039
W - 6218	Soldadura	62180		73519.774	X70	11.125	9039
W - 6219	Soldadura	62190		73532.119	X70	11.125	9039
W - 6220	Soldadura	62200		73544.367	X70	11.125	9039
W - 6221	Soldadura	62210		73556.764	X70	11.125	9039
W - 6222	Soldadura	62220		73568.966	X70	11.125	9039
W - 6223	Soldadura	62230		73581.250	X70	11.125	9039
W - 6224	Soldadura	62240		73593.574	X70	11.125	9039
W - 6225	Soldadura	62250		73605.931	X70	11.125	9039

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6226	Soldadura	62260		73618.303	X70	11.125	9039
W - 6227	Soldadura	62270		73630.711	X70	11.125	9039
W - 6228	Soldadura	62280		73643.122	X70	11.125	9039
W - 6229	Soldadura	62290		73655.502	X70	11.125	9039
W - 6230	Soldadura	62300		73667.653	X70	11.125	9039
A - 901	Anomalia		62300.03.88	73671.534	X70	11.125	9039
W - 6231	Soldadura	62310		73680.048	X70	11.125	9039
A - 904	Anomalia		62310.11.53	73691.580	X70	11.125	9039
W - 6232	Soldadura	62320		73692.296	X70	11.125	9039
W - 6233	Soldadura	62330		73704.668	X70	11.125	9039
W - 6234	Soldadura	62340		73717.053	X70	11.125	9039
W - 6235	Soldadura	62350		73729.403	X70	11.125	9039
W - 6236	Soldadura	62360		73741.768	X70	11.125	9039
W - 6237	Soldadura	62370		73754.049	X70	11.125	9039
A - 906	Anomalia		62370.09.04	73763.094	X70	11.125	9039
W - 6238	Soldadura	62380		73765.367	X70	11.125	9039
W - 6239	Soldadura	62390		73777.754	X70	11.125	9039
W - 6240	Soldadura	62400		73790.104	X70	11.125	9039
W - 6241	Soldadura	62410		73802.491	X70	11.125	9039
W - 6242	Soldadura	62420		73814.864	X70	11.125	9039
W - 6243	Soldadura	62430		73826.975	X70	11.125	9039
W - 6244	Soldadura	62440		73839.202	X70	11.125	9039
W - 6245	Soldadura	62450		73851.582	X70	11.125	9039
W - 6246	Soldadura	62460		73863.662	X70	11.125	9039
W - 6247	Soldadura	62470		73876.040	X70	11.125	9039
W - 6248	Soldadura	62480		73887.805	X70	11.125	9039
W - 6249	Soldadura	62490		73899.994	X70	11.125	9039

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 908	Anomalía		62490.00.44	73900.436	X70	11.125	9039
W - 6250	Soldadura	62500		73912.258	X70	11.125	9039
W - 6251	Soldadura	62510		73924.571	X70	11.125	9039
W - 6252	Soldadura	62520		73936.847	X70	11.125	9039
A - 909	Anomalía		62520.06.92	73943.766	X70	11.125	9039
W - 6253	Soldadura	62530		73948.961	X70	11.125	9039
A - 911	Anomalía		62530.09.88	73958.839	X70	11.125	9039
W - 6254	Soldadura	62540		73961.206	X70	11.125	9039
W - 6255	Soldadura	62550		73973.553	X70	11.125	9039
W - 6256	Soldadura	62560		73985.910	X70	11.125	9039
W - 6257	Soldadura	62570		73998.262	X70	11.125	9039
W - 6258	Soldadura	62580		74010.434	X70	11.125	9039
W - 6259	Soldadura	62590		74022.834	X70	11.125	9039
W - 6260	Soldadura	62600		74035.224	X70	11.125	9039
W - 6261	Soldadura	62610		74047.449	X70	11.125	9039
W - 6262	Soldadura	62620		74059.707	X70	11.125	9039
W - 6263	Soldadura	62630		74072.077	X70	11.125	9039
W - 6264	Soldadura	62640		74084.462	X70	11.125	9039
W - 6265	Soldadura	62650		74096.507	X70	11.125	9039
W - 6266	Soldadura	62660		74108.506	X70	11.125	9039
W - 6267	Soldadura	62670		74120.792	X70	11.125	9039
W - 6268	Soldadura	62680		74133.154	X70	11.125	9039
W - 6269	Soldadura	62690		74145.155	X70	11.125	9039
A - 913	Anomalía		62690.01.10	74146.250	X70	11.125	9039
W - 6270	Soldadura	62700		74157.523	X70	11.125	9039
W - 6271	Soldadura	62710		74169.928	X70	11.125	9039
W - 6272	Soldadura	62720		74182.293	X70	11.125	9039

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6273	Soldadura	62730		74194.622	X70	11.125	9039
A - 914	Anomalía		62730.08.18	74202.801	X70	11.125	9039
W - 6274	Soldadura	62740		74206.920	X70	11.125	9039
W - 6275	Soldadura	62750		74219.275	X70	11.125	9039
W - 6276	Soldadura	62760		74231.640	X70	11.125	9039
W - 6277	Soldadura	62770		74243.933	X70	11.125	9039
W - 6278	Soldadura	62780		74256.224	X70	11.125	9039
W - 6279	Soldadura	62790		74268.432	X70	11.125	9039
W - 6280	Soldadura	62800		74280.586	X70	11.125	9039
W - 6281	Soldadura	62810		74292.884	X70	11.125	9039
W - 6282	Soldadura	62820		74304.728	X70	11.125	9039
W - 6283	Soldadura	62830		74316.925	X70	11.125	9039
W - 6284	Soldadura	62840		74329.280	X70	11.125	9039
W - 6285	Soldadura	62850		74341.690	X70	11.125	9039
W - 6286	Soldadura	62860		74353.941	X70	11.125	9039
W - 6287	Soldadura	62870		74366.313	X70	11.125	9039
W - 6288	Soldadura	62880		74378.640	X70	11.125	9039
W - 6289	Soldadura	62890		74389.460	X70	11.125	9039
W - 6290	Soldadura	62900		74401.832	X70	11.125	9039
W - 6291	Soldadura	62910		74414.187	X70	11.125	9039
A - 923	Anomalía		62910.00.16	74414.344	X70	11.125	9039
W - 6292	Soldadura	62920		74426.166	X70	11.125	9039
W - 6293	Soldadura	62930		74438.490	X70	11.125	9039
W - 6294	Soldadura	62940		74450.743	X70	11.125	9039
W - 6295	Soldadura	62950		74463.145	X70	11.125	9039
W - 6296	Soldadura	62960		74475.525	X70	11.125	9039
W - 6297	Soldadura	62970		74487.842	X70	11.125	9039

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6298	Soldadura	62980		74499.993	X70	11.125	9039
W - 6299	Soldadura	62990		74512.325	X70	11.125	9039
W - 6300	Soldadura	63000		74524.641	X70	11.125	9039
W - 6301	Soldadura	63010		74537.004	X70	11.125	9039
W - 6302	Soldadura	63020		74549.406	X70	11.125	9039
W - 6303	Soldadura	63030		74561.794	X70	11.125	9039
W - 6304	Soldadura	63040		74574.146	X70	11.125	9039
W - 6305	Soldadura	63050		74586.529	X70	11.125	9039
W - 6306	Soldadura	63060		74598.202	X70	11.125	9039
W - 6307	Soldadura	63070		74610.542	X70	11.125	9039
W - 6308	Soldadura	63080		74621.824	X70	11.125	9039
W - 6309	Soldadura	63090		74634.174	X70	11.125	9039
W - 6310	Soldadura	63100		74645.810	X70	11.125	9039
NCA - 926	NCA		63100.001	74645.815	X70	11.125	9039
W - 6311	Soldadura	63110		74647.311	X70	11.125	9039
W - 6312	Soldadura	63120		74659.708	X70	11.125	9039
W - 6313	Soldadura	63130		74672.048	X70	11.125	9039
A - 930	Anomalía		63130.01.08	74673.127	X70	11.125	9039
W - 6314	Soldadura	63140		74684.400	X70	11.125	9039
W - 6315	Soldadura	63150		74696.640	X70	11.125	9039
W - 6316	Soldadura	63160		74708.979	X70	11.125	9039
W - 6317	Soldadura	63170		74721.397	X70	11.125	9039
W - 6318	Soldadura	63180		74733.739	X70	11.125	9039
W - 6319	Soldadura	63190		74745.634	X70	11.125	9039
W - 6320	Soldadura	63200		74757.979	X70	11.125	9039
W - 6321	Soldadura	63210		74770.305	X70	11.125	9039
W - 6322	Soldadura	63220		74782.490	X70	11.125	9039

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6323	Soldadura	63230		74794.880	X70	11.125	9039
W - 6324	Soldadura	63240		74807.143	X70	11.125	9039
A - 931	Anomalía		63240.02.49	74809.637	X70	11.125	9039
W - 6325	Soldadura	63250		74818.118	X70	11.125	9039
W - 6326	Soldadura	63260		74830.196	X70	11.125	9039
A - 932	Anomalía		63260.02.41	74832.604	X70	11.125	9039
A - 933	Anomalía		63260.02.46	74832.657	X70	11.125	9039
A - 934	Anomalía		63260.02.59	74832.784	X70	11.125	9039
W - 6327	Soldadura	63270		74842.507	X70	11.125	9039
W - 6328	Soldadura	63280		74854.923	X70	11.125	9039
W - 6329	Soldadura	63290		74867.333	X70	11.125	9039
W - 6330	Soldadura	63300		74879.736	X70	11.125	9039
W - 6331	Soldadura	63310		74892.154	X70	11.125	9039
W - 6332	Soldadura	63320		74904.529	X70	11.125	9039
W - 6333	Soldadura	63330		74916.891	X70	11.125	9039
W - 6334	Soldadura	63340		74929.299	X70	11.125	9039
W - 6335	Soldadura	63350		74941.702	X70	11.125	9039
A - 936	Anomalía		63350.05.91	74947.615	X70	11.125	9039
W - 6336	Soldadura	63360		74954.089	X70	11.125	9039
W - 6337	Soldadura	63370		74966.312	X70	11.125	9039
W - 6338	Soldadura	63380		74978.656	X70	11.125	9039
A - 938	Anomalía		63380.00.69	74979.342	X70	11.125	9039
A - 940	Anomalía		63380.12.17	74990.830	X70	11.125	9039
W - 6339	Soldadura	63390		74991.016	X70	11.125	9039
W - 6340	Soldadura	63400		75003.360	X70	11.125	9039
W - 6341	Soldadura	63410		75015.761	X70	11.125	9039
W - 6342	Soldadura	63420		75028.166	X70	11.125	9039

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6343	Soldadura	63430		75040.543	X70	11.125	9039
W - 6344	Soldadura	63440		75051.691	X70	11.125	9039
W - 6345	Soldadura	63450		75064.043	X70	11.125	9039
A - 942	Anomalía		63450.03.21	75067.251	X70	11.125	9039
W - 6346	Soldadura	63460		75076.063	X70	11.125	9039
W - 6347	Soldadura	63470		75088.410	X70	11.125	9039
W - 6348	Soldadura	63480		75100.706	X70	11.125	9039
W - 6349	Soldadura	63490		75109.169	X70	14.275	9039
W - 6350	Soldadura	63500		75121.064	X70	14.275	11597
W - 6351	Soldadura	63510		75133.408	X70	14.275	11597
W - 6352	Soldadura	63520		75145.806	X70	14.275	11597
W - 6353	Soldadura	63530		75158.199	X70	14.275	11597
W - 6354	Soldadura	63540		75170.462	X70	14.275	11597
W - 6355	Soldadura	63550		75182.819	X70	14.275	11597
W - 6356	Soldadura	63560		75195.067	X70	14.275	11597
W - 6357	Soldadura	63570		75207.406	X70	14.275	11597
W - 6358	Soldadura	63580		75219.794	X70	14.275	11597
W - 6359	Soldadura	63590		75232.184	X70	14.275	11597
M - 24	Marcador		63590.11.85	75244.038	X70	14.275	11597
W - 6360	Soldadura	63600		75244.490	X70	14.275	11597
W - 6361	Soldadura	63610		75256.824	X70	14.275	11597
W - 6362	Soldadura	63620		75269.128	X70	14.275	11597
W - 6363	Soldadura	63630		75281.475	X70	14.275	11597
W - 6364	Soldadura	63640		75293.695	X70	14.275	11597
W - 6365	Soldadura	63650		75305.895	X70	14.275	11597
W - 6366	Soldadura	63660		75318.257	X70	14.275	11597
W - 6367	Soldadura	63670		75330.522	X70	14.275	11597

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6368	Soldadura	63680		75342.867	X70	14.275	11597
W - 6369	Soldadura	63690		75355.237	X70	14.275	11597
W - 6370	Soldadura	63700		75367.566	X70	14.275	11597
W - 6371	Soldadura	63710		75379.905	X70	14.275	11597
W - 6372	Soldadura	63720		75392.288	X70	14.275	11597
W - 6373	Soldadura	63730		75404.510	X70	14.275	11597
W - 6374	Soldadura	63740		75416.862	X70	14.275	11597
W - 6375	Soldadura	63750		75429.219	X70	14.275	11597
W - 6376	Soldadura	63760		75441.602	X70	14.275	11597
W - 6377	Soldadura	63770		75453.872	X70	14.275	11597
W - 6378	Soldadura	63780		75466.252	X70	14.275	11597
W - 6379	Soldadura	63790		75478.607	X70	14.275	11597
W - 6380	Soldadura	63800		75490.962	X70	14.275	11597
W - 6381	Soldadura	63810		75503.334	X70	14.275	11597
A - 948	Anomalía		63810.11.27	75514.606	X70	14.275	11597
W - 6382	Soldadura	63820		75515.688	X70	14.275	11597
W - 6383	Soldadura	63830		75528.104	X70	14.275	11597
W - 6384	Soldadura	63840		75540.471	X70	14.275	11597
W - 6385	Soldadura	63850		75552.836	X70	14.275	11597
W - 6386	Soldadura	63860		75565.201	X70	14.275	11597
W - 6387	Soldadura	63870		75577.050	X70	14.275	11597
W - 6388	Soldadura	63880		75589.427	X70	14.275	11597
W - 6389	Soldadura	63890		75601.431	X70	14.275	11597
W - 6390	Soldadura	63900		75613.720	X70	14.275	11597
W - 6391	Soldadura	63910		75626.082	X70	14.275	11597
W - 6392	Soldadura	63920		75638.439	X70	14.275	11597
W - 6393	Soldadura	63930		75650.776	X70	14.275	11597



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6394	Soldadura	63940		75663.100	X70	14.275	11597
W - 6395	Soldadura	63950		75675.439	X70	14.275	11597
W - 6396	Soldadura	63960		75687.812	X70	14.275	11597
W - 6397	Soldadura	63970		75700.194	X70	14.275	11597
A - 951	Anomalía		63970.09.24	75709.437	X70	14.275	11597
W - 6398	Soldadura	63980		75712.409	X70	14.275	11597
W - 6399	Soldadura	63990		75724.774	X70	14.275	11597
W - 6400	Soldadura	64000		75737.138	X70	14.275	11597
W - 6401	Soldadura	64010		75749.455	X70	14.275	11597
W - 6402	Soldadura	64020		75761.847	X70	14.275	11597
W - 6403	Soldadura	64030		75774.172	X70	14.275	11597
W - 6404	Soldadura	64040		75786.524	X70	14.275	11597
W - 6405	Soldadura	64050		75798.804	X70	14.275	11597
W - 6406	Soldadura	64060		75811.167	X70	14.275	11597
W - 6407	Soldadura	64070		75823.552	X70	14.275	11597
W - 6408	Soldadura	64080		75835.932	X70	14.275	11597
W - 6409	Soldadura	64090		75848.299	X70	14.275	11597
W - 6410	Soldadura	64100		75860.659	X70	14.275	11597
W - 6411	Soldadura	64110		75873.003	X70	14.275	11597
W - 6412	Soldadura	64120		75885.258	X70	14.275	11597
W - 6413	Soldadura	64130		75897.646	X70	14.275	11597
W - 6414	Soldadura	64140		75910.029	X70	14.275	11597
W - 6415	Soldadura	64150		75922.386	X70	14.275	11597
W - 6416	Soldadura	64160		75934.628	X70	14.275	11597
W - 6417	Soldadura	64170		75946.122	X70	14.275	11597
W - 6418	Soldadura	64180		75958.459	X70	14.275	11597
A - 953	Anomalía		64180.0.888	75967.339	X70	14.275	11597

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6419	Soldadura	64190		75970.864	X70	14.275	11597
W - 6420	Soldadura	64200		75983.247	X70	14.275	11597
W - 6421	Soldadura	64210		75995.492	X70	14.275	11597
W - 6422	Soldadura	64220		76007.844	X70	14.275	11597
W - 6423	Soldadura	64230		76020.033	X70	14.275	11597
W - 6424	Soldadura	64240		76032.416	X70	14.275	11597
A - 954	Anomalía		64240.04.08	76036.498	X70	14.275	11597
W - 6425	Soldadura	64250		76044.796	X70	14.275	11597
W - 6426	Soldadura	64260		76057.189	X70	14.275	11597
W - 6427	Soldadura	64270		76069.441	X70	14.275	11597
W - 6428	Soldadura	64280		76081.778	X70	14.275	11597
W - 6429	Soldadura	64290		76094.087	X70	14.275	11597
W - 6430	Soldadura	64300		76106.431	X70	14.275	11597
A - 955	Anomalía		64300.03.98	76110.409	X70	14.275	11597
W - 6431	Soldadura	64310		76118.654	X70	14.275	11597
W - 6432	Soldadura	64320		76130.955	X70	14.275	11597
W - 6433	Soldadura	64330		76143.289	X70	14.275	11597
W - 6434	Soldadura	64340		76155.641	X70	14.275	11597
W - 6435	Soldadura	64350		76168.001	X70	14.275	11597
W - 6436	Soldadura	64360		76180.379	X70	14.275	11597
W - 6437	Soldadura	64370		76192.741	X70	14.275	11597
W - 6438	Soldadura	64380		76205.067	X70	14.275	11597
NCA - 956	NCA		64380.11.77	76216.833	X70	14.275	11597
W - 6439	Soldadura	64390		76216.843	X70	14.275	11597
W - 6440	Soldadura	64400		76228.903	X70	14.275	11597
W - 6441	Soldadura	64410		76241.110	X70	14.275	11597
W - 6442	Soldadura	64420		76253.442	X70	14.275	11597

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6443	Soldadura	64430		76265.829	X70	14.275	11597
W - 6444	Soldadura	64440		76278.222	X70	14.275	11597
W - 6445	Soldadura	64450		76290.444	X70	14.275	11597
W - 6446	Soldadura	64460		76302.791	X70	14.275	11597
W - 6447	Soldadura	64470		76315.164	X70	14.275	11597
W - 6448	Soldadura	64480		76327.516	X70	14.275	11597
W - 6449	Soldadura	64490		76339.870	X70	14.275	11597
W - 6450	Soldadura	64500		76352.194	X70	14.275	11597
W - 6451	Soldadura	64510		76364.582	X70	14.275	11597
W - 6452	Soldadura	64520		76376.865	X70	14.275	11597
W - 6453	Soldadura	64530		76389.212	X70	14.275	11597
W - 6454	Soldadura	64540		76401.516	X70	14.275	11597
W - 6455	Soldadura	64550		76413.865	X70	14.275	11597
W - 6456	Soldadura	64560		76426.261	X70	14.275	11597
W - 6457	Soldadura	64570		76438.402	X70	14.275	11597
W - 6458	Soldadura	64580		76450.746	X70	14.275	11597
W - 6459	Soldadura	64590		76463.007	X70	14.275	11597
W - 6460	Soldadura	64600		76475.384	X70	14.275	11597
W - 6461	Soldadura	64610		76487.731	X70	14.275	11597
W - 6462	Soldadura	64620		76500.109	X70	14.275	11597
W - 6463	Soldadura	64630		76512.514	X70	14.275	11597
W - 6464	Soldadura	64640		76523.662	X70	14.275	11597
W - 6465	Soldadura	64650		76536.029	X70	14.275	11597
W - 6466	Soldadura	64660		76548.328	X70	14.275	11597
W - 6467	Soldadura	64670		76560.703	X70	14.275	11597
W - 6468	Soldadura	64680		76572.999	X70	14.275	11597
W - 6469	Soldadura	64690		76585.300	X70	14.275	11597

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
MD - 161	Mech		64690.05.05	76590.347	X70	14.275	11597
W - 6470	Soldadura	64700		76597.637	X70	14.275	11597
W - 6471	Soldadura	64710		76609.974	X70	14.275	11597
W - 6472	Soldadura	64720		76622.336	X70	14.275	11597
W - 6473	Soldadura	64730		76634.678	X70	14.275	11597
W - 6474	Soldadura	64740		76646.964	X70	14.275	11597
W - 6475	Soldadura	64750		76659.346	X70	14.275	11597
W - 6476	Soldadura	64760		76671.749	X70	14.275	11597
W - 6477	Soldadura	64770		76683.893	X70	14.275	11597
W - 6478	Soldadura	64780		76696.273	X70	14.275	11597
W - 6479	Soldadura	64790		76708.676	X70	14.275	11597
W - 6480	Soldadura	64800		76720.728	X70	14.275	11597
W - 6481	Soldadura	64810		76733.156	X70	14.275	11597
W - 6482	Soldadura	64820		76745.495	X70	14.275	11597
W - 6483	Soldadura	64830		76757.863	X70	14.275	11597
W - 6484	Soldadura	64840		76770.278	X70	14.275	11597
W - 6485	Soldadura	64850		76782.656	X70	14.275	11597
W - 6486	Soldadura	64860		76794.835	X70	14.275	11597
W - 6487	Soldadura	64870		76807.235	X70	14.275	11597
W - 6488	Soldadura	64880		76819.641	X70	14.275	11597
W - 6489	Soldadura	64890		76832.003	X70	14.275	11597
W - 6490	Soldadura	64900		76844.299	X70	14.275	11597
W - 6491	Soldadura	64910		76856.471	X70	14.275	11597
W - 6492	Soldadura	64920		76868.899	X70	14.275	11597
W - 6493	Soldadura	64930		76881.124	X70	14.275	11597
W - 6494	Soldadura	64940		76892.587	X70	14.275	11597
W - 6495	Soldadura	64950		76904.637	X70	14.275	11597

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6496	Soldadura	64960		76916.989	X70	14.275	11597
W - 6497	Soldadura	64970		76929.341	X70	14.275	11597
W - 6498	Soldadura	64980		76941.667	X70	14.275	11597
W - 6499	Soldadura	64990		76954.068	X70	14.275	11597
W - 6500	Soldadura	65000		76966.458	X70	14.275	11597
W - 6501	Soldadura	65010		76978.759	X70	14.275	11597
W - 6502	Soldadura	65020		76991.108	X70	14.275	11597
W - 6503	Soldadura	65030		77003.085	X70	14.275	11597
W - 6504	Soldadura	65040		77015.462	X70	14.275	11597
W - 6505	Soldadura	65050		77027.461	X70	14.275	11597
W - 6506	Soldadura	65060		77039.828	X70	14.275	11597
W - 6507	Soldadura	65070		77052.213	X70	14.275	11597
W - 6508	Soldadura	65080		77064.565	X70	14.275	11597
W - 6509	Soldadura	65090		77076.925	X70	14.275	11597
W - 6510	Soldadura	65100		77089.274	X70	14.275	11597
W - 6511	Soldadura	65110		77101.687	X70	14.275	11597
W - 6512	Soldadura	65120		77114.085	X70	14.275	11597
W - 6513	Soldadura	65130		77126.069	X70	14.275	11597
W - 6514	Soldadura	65140		77138.449	X70	14.275	11597
W - 6515	Soldadura	65150		77150.791	X70	14.275	11597
W - 6516	Soldadura	65160		77162.805	X70	14.275	11597
W - 6517	Soldadura	65170		77175.243	X70	14.275	11597
W - 6518	Soldadura	65180		77187.618	X70	14.275	11597
W - 6519	Soldadura	65190		77199.980	X70	14.275	11597
W - 6520	Soldadura	65200		77212.342	X70	14.275	11597
W - 6521	Soldadura	65210		77224.306	X70	14.275	11597
W - 6522	Soldadura	65220		77236.650	X70	14.275	11597

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6523	Soldadura	65230		77248.901	X70	14.275	11597
W - 6524	Soldadura	65240		77261.301	X70	14.275	11597
W - 6525	Soldadura	65250		77273.762	X70	14.275	11597
W - 6526	Soldadura	65260		77286.226	X70	14.275	11597
W - 6527	Soldadura	65270		77298.464	X70	14.275	11597
W - 6528	Soldadura	65280		77310.808	X70	14.275	11597
W - 6529	Soldadura	65290		77323.163	X70	14.275	11597
W - 6530	Soldadura	65300		77335.527	X70	14.275	11597
W - 6531	Soldadura	65310		77347.928	X70	14.275	11597
W - 6532	Soldadura	65320		77360.323	X70	14.275	11597
W - 6533	Soldadura	65330		77372.700	X70	14.275	11597
W - 6534	Soldadura	65340		77385.034	X70	14.275	11597
W - 6535	Soldadura	65350		77386.277	X70	14.275	11597
A - 961	Anomalía		65350.06.95	77393.229	X70	14.275	11597
W - 6536	Soldadura	65360		77397.983	X70	14.275	11597
W - 6537	Soldadura	65370		77410.470	X70	14.275	11597
W - 6538	Soldadura	65380		77422.893	X70	14.275	11597
W - 6539	Soldadura	65390		77435.362	X70	14.275	11597
W - 6540	Soldadura	65400		77447.770	X70	14.275	11597
W - 6541	Soldadura	65410		77460.140	X70	14.275	11597
W - 6542	Soldadura	65420		77472.497	X70	14.275	11597
W - 6543	Soldadura	65430		77484.072	X70	14.275	11597
W - 6544	Soldadura	65440		77496.459	X70	14.275	11597
W - 6545	Soldadura	65450		77508.875	X70	14.275	11597
W - 6546	Soldadura	65460		77521.293	X70	14.275	11597
W - 6547	Soldadura	65470		77533.642	X70	14.275	11597
W - 6548	Soldadura	65480		77546.020	X70	14.275	11597

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6549	Soldadura	65490		77558.433	X70	14.275	11597
W - 6550	Soldadura	65500		77570.825	X70	14.275	11597
W - 6551	Soldadura	65510		77582.794	X70	14.275	11597
NCA - 963	NCA		65510.07.17	77589.962	X70	14.275	11597
W - 6552	Soldadura	65520		77595.192	X70	14.275	11597
W - 6553	Soldadura	65530		77607.544	X70	14.275	11597
W - 6554	Soldadura	65540		77619.926	X70	14.275	11597
W - 6555	Soldadura	65550		77632.293	X70	14.275	11597
W - 6556	Soldadura	65560		77644.648	X70	14.275	11597
W - 6557	Soldadura	65570		77656.944	X70	14.275	11597
W - 6558	Soldadura	65580		77669.314	X70	14.275	11597
W - 6559	Soldadura	65590		77681.648	X70	14.275	11597
W - 6560	Soldadura	65600		77693.949	X70	14.275	11597
W - 6561	Soldadura	65610		77706.322	X70	14.275	11597
W - 6562	Soldadura	65620		77717.409	X70	14.275	11597
W - 6563	Soldadura	65630		77729.745	X70	14.275	11597
W - 6564	Soldadura	65640		77741.991	X70	14.275	11597
W - 6565	Soldadura	65650		77754.358	X70	14.275	11597
W - 6566	Soldadura	65660		77766.454	X70	14.275	11597
W - 6567	Soldadura	65670		77778.745	X70	14.275	11597
W - 6568	Soldadura	65680		77791.153	X70	14.275	11597
W - 6569	Soldadura	65690		77803.576	X70	14.275	11597
NCA - 966	NCA		65690.04.03	77807.604	X70	14.275	11597
W - 6570	Soldadura	65700		77815.989	X70	14.275	11597
W - 6571	Soldadura	65710		77828.369	X70	14.275	11597
W - 6572	Soldadura	65720		77840.462	X70	14.275	11597
W - 6573	Soldadura	65730		77852.842	X70	14.275	11597

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6574	Soldadura	65740		77865.176	X70	14.275	11597
W - 6575	Soldadura	65750		77877.558	X70	14.275	11597
W - 6576	Soldadura	65760		77889.941	X70	14.275	11597
W - 6577	Soldadura	65770		77902.305	X70	14.275	11597
W - 6578	Soldadura	65780		77914.304	X70	14.275	11597
W - 6579	Soldadura	65790		77926.603	X70	14.275	11597
W - 6580	Soldadura	65800		77938.942	X70	14.275	11597
W - 6581	Soldadura	65810		77951.335	X70	14.275	11597
W - 6582	Soldadura	65820		77963.601	X70	14.275	11597
W - 6583	Soldadura	65830		77975.965	X70	14.275	11597
A - 968	Anomalía		65830.09.81	77985.775	X70	14.275	11597
A - 969	Anomalía		65830.10.38	77986.344	X70	14.275	11597
W - 6584	Soldadura	65840		77988.307	X70	14.275	11597
W - 6585	Soldadura	65850		78000.593	X70	14.275	11597
W - 6586	Soldadura	65860		78012.976	X70	14.275	11597
W - 6587	Soldadura	65870		78025.414	X70	14.275	11597
W - 6588	Soldadura	65880		78037.764	X70	14.275	11597
W - 6589	Soldadura	65890		78050.039	X70	14.275	11597
W - 6590	Soldadura	65900		78062.374	X70	14.275	11597
W - 6591	Soldadura	65910		78074.761	X70	14.275	11597
W - 6592	Soldadura	65920		78087.146	X70	14.275	11597
W - 6593	Soldadura	65930		78088.625	X70	14.275	11597
W - 6594	Soldadura	65940		78098.988	X70	14.275	11597
W - 6595	Soldadura	65950		78111.383	X70	14.275	11597
W - 6596	Soldadura	65960		78123.537	X70	14.275	11597
W - 6597	Soldadura	65970		78135.864	X70	14.275	11597
W - 6598	Soldadura	65980		78148.195	X70	14.275	11597



Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6599	Soldadura	65990		78160.542	X70	14.275	11597
W - 6600	Soldadura	66000		78172.724	X70	14.275	11597
W - 6601	Soldadura	66010		78185.099	X70	14.275	11597
W - 6602	Soldadura	66020		78197.514	X70	14.275	11597
W - 6603	Soldadura	66030		78209.940	X70	14.275	11597
W - 6604	Soldadura	66040		78222.234	X70	14.275	11597
W - 6605	Soldadura	66050		78234.606	X70	14.275	11597
W - 6606	Soldadura	66060		78246.958	X70	14.275	11597
W - 6607	Soldadura	66070		78259.313	X70	14.275	11597
W - 6608	Soldadura	66080		78271.665	X70	14.275	11597
W - 6609	Soldadura	66090		78284.057	X70	14.275	11597
W - 6610	Soldadura	66100		78296.389	X70	14.275	11597
W - 6611	Soldadura	66110		78308.792	X70	14.275	11597
W - 6612	Soldadura	66120		78320.900	X70	14.275	11597
W - 6613	Soldadura	66130		78333.257	X70	14.275	11597
W - 6614	Soldadura	66140		78345.642	X70	14.275	11597
W - 6615	Soldadura	66150		78358.002	X70	14.275	11597
W - 6616	Soldadura	66160		78370.379	X70	14.275	11597
W - 6617	Soldadura	66170		78382.785	X70	14.275	11597
W - 6618	Soldadura	66180		78395.162	X70	14.275	11597
W - 6619	Soldadura	66190		78407.506	X70	14.275	11597
W - 6620	Soldadura	66200		78419.879	X70	14.275	11597
W - 6621	Soldadura	66210		78432.221	X70	14.275	11597
W - 6622	Soldadura	66220		78444.613	X70	14.275	11597
W - 6623	Soldadura	66230		78457.001	X70	14.275	11597
W - 6624	Soldadura	66240		78469.353	X70	14.275	11597
W - 6625	Soldadura	66250		78481.530	X70	14.275	11597

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
A - 974	Anomalía		66250.11.25	78492.779	X70	14.275	11597
W - 6626	Soldadura	66260		78493.490	X70	14.275	11597
W - 6627	Soldadura	66270		78505.873	X70	14.275	11597
W - 6628	Soldadura	66280		78518.238	X70	14.275	11597
W - 6629	Soldadura	66290		78530.333	X70	14.275	11597
W - 6630	Soldadura	66300		78542.675	X70	14.275	11597
W - 6631	Soldadura	66310		78544.679	X70	14.275	11597
W - 6632	Soldadura	66320		78555.499	X70	14.275	11597
W - 6633	Soldadura	66330		78567.897	X70	14.275	11597
W - 6634	Soldadura	66340		78580.295	X70	14.275	11597
W - 6635	Soldadura	66350		78592.444	X70	14.275	11597
W - 6636	Soldadura	66360		78604.847	X70	14.275	11597
W - 6637	Soldadura	66370		78617.150	X70	14.275	11597
W - 6638	Soldadura	66380		78629.497	X70	14.275	11597
W - 6639	Soldadura	66390		78641.387	X70	14.275	11597
W - 6640	Soldadura	66400		78653.759	X70	14.275	11597
W - 6641	Soldadura	66410		78666.155	X70	14.275	11597
W - 6642	Soldadura	66420		78678.496	X70	14.275	11597
W - 6643	Soldadura	66430		78690.815	X70	14.275	11597
W - 6644	Soldadura	66440		78702.626	X70	14.275	11597
W - 6645	Soldadura	66450		78714.747	X70	14.275	11597
W - 6646	Soldadura	66460		78727.104	X70	14.275	11597
W - 6647	Soldadura	66470		78739.474	X70	14.275	11597
W - 6648	Soldadura	66480		78751.857	X70	14.275	11597
W - 6649	Soldadura	66490		78764.173	X70	14.275	11597
W - 6650	Soldadura	66500		78776.419	X70	14.275	11597
W - 6651	Soldadura	66510		78788.778	X70	14.275	11597

Descripción/Ubicación		Características del Caño					
Item	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6652	Soldadura	66520		78801.069	X70	14.275	11597
W - 6653	Soldadura	66530		78813.462	X70	14.275	11597
W - 6654	Soldadura	66540		78825.872	X70	14.275	11597
A - 975	Anomalía		66540.00.65	78826.525	X70	14.275	11597
W - 6655	Soldadura	66550		78837.666	X70	14.275	11597
W - 6656	Soldadura	66560		78848.956	X70	14.275	11597
W - 6657	Soldadura	66570		78861.308	X70	14.275	11597
W - 6658	Soldadura	66580		78873.683	X70	14.275	11597
W - 6659	Soldadura	66590		78886.080	X70	14.275	11597
W - 6660	Soldadura	66600		78898.481	X70	14.275	11597
W - 6661	Soldadura	66610		78910.475	X70	14.275	11597
W - 6662	Soldadura	66620		78922.695	X70	14.275	11597
W - 6663	Soldadura	66630		78935.064	X70	14.275	11597
W - 6664	Soldadura	66640		78947.366	X70	14.275	11597
W - 6665	Soldadura	66650		78959.763	X70	14.275	11597
W - 6666	Soldadura	66660		78971.945	X70	14.275	11597
W - 6667	Soldadura	66670		78984.330	X70	14.275	11597
W - 6668	Soldadura	66680		78996.220	X70	14.275	11597
A - 976	Anomalía		66680.10.29	79006.510	X70	14.275	11597
W - 6669	Soldadura	66690		79008.613	X70	14.275	11597
W - 6670	Soldadura	66700		79020.975	X70	14.275	11597
W - 6671	Soldadura	66710		79033.213	X70	14.275	11597
W - 6672	Soldadura	66720		79045.585	X70	14.275	11597
W - 6673	Soldadura	66730		79057.734	X70	14.275	11597
W - 6674	Soldadura	66740		79070.053	X70	14.275	11597
W - 6675	Soldadura	66750		79082.303	X70	14.275	11597
W - 6676	Soldadura	66760		79094.665	X70	14.275	11597

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6677	Soldadura	66770		79107.050	X70	14.275	11597
W - 6678	Soldadura	66780		79119.476	X70	14.275	11597
W - 6679	Soldadura	66790		79131.782	X70	14.275	11597
W - 6680	Soldadura	66800		79144.129	X70	14.275	11597
W - 6681	Soldadura	66810		79156.423	X70	14.275	11597
W - 6682	Soldadura	66820		79168.638	X70	14.275	11597
W - 6683	Soldadura	66830		79181.038	X70	14.275	11597
W - 6684	Soldadura	66840		79193.405	X70	14.275	11597
W - 6685	Soldadura	66850		79205.364	X70	14.275	11597
W - 6686	Soldadura	66860		79217.738	X70	14.275	11597
W - 6687	Soldadura	66870		79230.108	X70	14.275	11597
W - 6688	Soldadura	66880		79242.519	X70	14.275	11597
W - 6689	Soldadura	66890		79254.718	X70	14.275	11597
W - 6690	Soldadura	66900		79267.121	X70	14.275	11597
W - 6691	Soldadura	66910		79279.471	X70	14.275	11597
W - 6692	Soldadura	66920		79291.800	X70	14.275	11597
W - 6693	Soldadura	66930		79304.116	X70	20.625	11597
W - 6694	Soldadura	66940		79316.379	X70	20.625	16754
W - 6695	Soldadura	66950		79328.742	X70	20.625	16754
W - 6696	Soldadura	66960		79341.086	X70	20.625	16754
W - 6697	Soldadura	66970		79352.755	X70	20.625	16754
W - 6698	Soldadura	66980		79365.117	X70	20.625	16754
W - 6699	Soldadura	66990		79377.477	X70	20.625	16754
W - 6700	Soldadura	67000		79389.600	X70	20.625	16754
W - 6701	Soldadura	67010		79401.419	X70	20.625	16754
W - 6702	Soldadura	67020		79413.108	X70	20.625	16754
W - 6703	Soldadura	67030		79425.401	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6704	Soldadura	67040		79437.451	X70	20.625	16754
W - 6705	Soldadura	67050		79449.572	X70	20.625	16754
W - 6706	Soldadura	67060		79461.733	X70	20.625	16754
W - 6707	Soldadura	67070		79474.103	X70	20.625	16754
W - 6708	Soldadura	67080		79486.536	X70	20.625	16754
W - 6709	Soldadura	67090		79498.967	X70	20.625	16754
W - 6710	Soldadura	67100		79511.167	X70	20.625	16754
W - 6711	Soldadura	67110		79522.831	X70	20.625	16754
W - 6712	Soldadura	67120		79535.205	X70	20.625	16754
W - 6713	Soldadura	67130		79547.611	X70	20.625	16754
W - 6714	Soldadura	67140		79559.998	X70	20.625	16754
W - 6715	Soldadura	67150		79569.564	X70	20.625	16754
W - 6716	Soldadura	67160		79581.941	X70	20.625	16754
W - 6717	Soldadura	67170		79594.212	X70	20.625	16754
W - 6718	Soldadura	67180		79606.610	X70	20.625	16754
W - 6719	Soldadura	67190		79616.419	X70	20.625	16754
W - 6720	Soldadura	67200		79628.812	X70	20.625	16754
W - 6721	Soldadura	67210		79641.202	X70	20.625	16754
W - 6722	Soldadura	67220		79653.351	X70	20.625	16754
W - 6723	Soldadura	67230		79665.711	X70	20.625	16754
W - 6724	Soldadura	67240		79677.903	X70	20.625	16754
W - 6725	Soldadura	67250		79690.267	X70	20.625	16754
W - 6726	Soldadura	67260		79702.416	X70	20.625	16754
W - 6727	Soldadura	67270		79714.753	X70	20.625	16754
W - 6728	Soldadura	67280		79727.130	X70	20.625	16754
W - 6729	Soldadura	67290		79739.515	X70	20.625	16754
W - 6730	Soldadura	67300		79750.128	X70	20.625	16754

Descripción/Ubicación		Características del Caño					
Item	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6731	Soldadura	67310		79762.193	X70	20.625	16754
W - 6732	Soldadura	67320		79774.572	X70	20.625	16754
W - 6733	Soldadura	67330		79786.909	X70	20.625	16754
W - 6734	Soldadura	67340		79797.209	X70	20.625	16754
W - 6735	Soldadura	67350		79809.579	X70	20.625	16754
W - 6736	Soldadura	67360		79821.789	X70	20.625	16754
W - 6737	Soldadura	67370		79833.699	X70	20.625	16754
W - 6738	Soldadura	67380		79846.035	X70	20.625	16754
W - 6739	Soldadura	67390		79858.438	X70	20.625	16754
W - 6740	Soldadura	67400		79870.846	X70	20.625	16754
W - 6741	Soldadura	67410		79883.213	X70	20.625	16754
W - 6742	Soldadura	67420		79895.499	X70	20.625	16754
W - 6743	Soldadura	67430		79907.595	X70	20.625	16754
W - 6744	Soldadura	67440		79919.906	X70	20.625	16754
W - 6745	Soldadura	67450		79932.256	X70	20.625	16754
W - 6746	Soldadura	67460		79944.260	X70	20.625	16754
W - 6747	Soldadura	67470		79956.630	X70	20.625	16754
W - 6748	Soldadura	67480		79968.974	X70	20.625	16754
W - 6749	Soldadura	67490		79980.302	X70	20.625	16754
W - 6750	Soldadura	67500		79992.685	X70	20.625	16754
W - 6751	Soldadura	67510		80004.839	X70	20.625	16754
W - 6752	Soldadura	67520		80017.287	X70	20.625	16754
W - 6753	Soldadura	67530		80029.091	X70	20.625	16754
W - 6754	Soldadura	67540		80041.415	X70	20.625	16754
W - 6755	Soldadura	67550		80053.625	X70	20.625	16754
W - 6756	Soldadura	67560		80065.971	X70	20.625	16754
W - 6757	Soldadura	67570		80078.344	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6758	Soldadura	67580		80090.696	X70	20.625	16754
A - 982	Anomalía		67580.07.79	80098.481	X70	20.625	16754
W - 6759	Soldadura	67590		80103.073	X70	20.625	16754
W - 6760	Soldadura	67600		80115.105	X70	20.625	16754
W - 6761	Soldadura	67610		80126.558	X70	20.625	16754
W - 6762	Soldadura	67620		80138.275	X70	20.625	16754
W - 6763	Soldadura	67630		80150.703	X70	20.625	16754
W - 6764	Soldadura	67640		80163.149	X70	20.625	16754
W - 6765	Soldadura	67650		80165.387	X70	20.625	16754
W - 6766	Soldadura	67660		80177.729	X70	20.625	16754
W - 6767	Soldadura	67670		80188.646	X70	20.625	16754
W - 6768	Soldadura	67680		80200.929	X70	20.625	16754
W - 6769	Soldadura	67690		80212.799	X70	20.625	16754
W - 6770	Soldadura	67700		80223.733	X70	20.625	16754
W - 6771	Soldadura	67710		80235.986	X70	20.625	16754
W - 6772	Soldadura	67720		80248.331	X70	20.625	16754
NCA - 983	NCA		67720.0.01	80248.343	X70	20.625	16754
W - 6773	Soldadura	67730		80260.347	X70	20.625	16754
W - 6774	Soldadura	67740		80272.651	X70	20.625	16754
W - 6775	Soldadura	67750		80285.001	X70	20.625	16754
W - 6776	Soldadura	67760		80297.383	X70	20.625	16754
W - 6777	Soldadura	67770		80309.776	X70	20.625	16754
W - 6778	Soldadura	67780		80322.179	X70	20.625	16754
W - 6779	Soldadura	67790		80334.551	X70	20.625	16754
W - 6780	Soldadura	67800		80346.189	X70	20.625	16754
W - 6781	Soldadura	67810		80358.201	X70	20.625	16754
W - 6782	Soldadura	67820		80370.578	X70	20.625	16754

Descripción/Ubicación		Características del Caño					
Item	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6783	Soldadura	67830		80382.707	X70	20.625	16754
W - 6784	Soldadura	67840		80395.087	X70	20.625	16754
W - 6785	Soldadura	67850		80407.058	X70	20.625	16754
W - 6786	Soldadura	67860		80419.418	X70	20.625	16754
W - 6787	Soldadura	67870		80431.775	X70	20.625	16754
W - 6788	Soldadura	67880		80444.000	X70	20.625	16754
W - 6789	Soldadura	67890		80456.375	X70	20.625	16754
W - 6790	Soldadura	67900		80468.158	X70	20.625	16754
W - 6791	Soldadura	67910		80480.512	X70	20.625	16754
W - 6792	Soldadura	67920		80492.719	X70	20.625	16754
W - 6793	Soldadura	67930		80505.089	X70	20.625	16754
W - 6794	Soldadura	67940		80517.462	X70	20.625	16754
W - 6795	Soldadura	67950		80529.402	X70	20.625	16754
W - 6796	Soldadura	67960		80541.848	X70	20.625	16754
W - 6797	Soldadura	67970		80554.210	X70	20.625	16754
W - 6798	Soldadura	67980		80566.575	X70	20.625	16754
W - 6799	Soldadura	67990		80578.785	X70	20.625	16754
W - 6800	Soldadura	68000		80591.096	X70	20.625	16754
W - 6801	Soldadura	68010		80603.474	X70	20.625	16754
W - 6802	Soldadura	68020		80615.818	X70	20.625	16754
W - 6803	Soldadura	68030		80628.208	X70	20.625	16754
W - 6804	Soldadura	68040		80640.550	X70	20.625	16754
W - 6805	Soldadura	68050		80652.089	X70	20.625	16754
W - 6806	Soldadura	68060		80664.495	X70	20.625	16754
W - 6807	Soldadura	68070		80676.643	X70	20.625	16754
W - 6808	Soldadura	68080		80688.807	X70	20.625	16754
W - 6809	Soldadura	68090		80701.192	X70	20.625	16754



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6810	Soldadura	68100		80713.257	X70	20.625	16754
W - 6811	Soldadura	68110		80725.620	X70	20.625	16754
W - 6812	Soldadura	68120		80737.997	X70	20.625	16754
W - 6813	Soldadura	68130		80749.966	X70	20.625	16754
W - 6814	Soldadura	68140		80762.366	X70	20.625	16754
W - 6815	Soldadura	68150		80774.746	X70	20.625	16754
W - 6816	Soldadura	68160		80784.659	X70	20.625	16754
W - 6817	Soldadura	68170		80797.016	X70	20.625	16754
W - 6818	Soldadura	68180		80809.145	X70	20.625	16754
W - 6819	Soldadura	68190		80821.469	X70	20.625	16754
W - 6820	Soldadura	68200		80833.867	X70	20.625	16754
W - 6821	Soldadura	68210		80846.249	X70	20.625	16754
A - 984	Anomalía		68210.06.51	80852.759	X70	20.625	16754
W - 6822	Soldadura	68220		80857.529	X70	20.625	16754
W - 6823	Soldadura	68230		80869.633	X70	20.625	16754
W - 6824	Soldadura	68240		80882.002	X70	20.625	16754
W - 6825	Soldadura	68250		80894.387	X70	20.625	16754
W - 6826	Soldadura	68260		80906.790	X70	20.625	16754
W - 6827	Soldadura	68270		80919.170	X70	20.625	16754
W - 6828	Soldadura	68280		80931.365	X70	20.625	16754
W - 6829	Soldadura	68290		80943.717	X70	20.625	16754
W - 6830	Soldadura	68300		80956.087	X70	20.625	16754
W - 6831	Soldadura	68310		80968.472	X70	20.625	16754
W - 6832	Soldadura	68320		80977.092	X70	20.625	16754
W - 6833	Soldadura	68330		80984.136	X70	20.625	16754
W - 6834	Soldadura	68340		80995.957	X70	20.625	16754
W - 6835	Soldadura	68350		81008.377	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6836	Soldadura	68360		81019.564	X70	20.625	16754
W - 6837	Soldadura	68370		81030.745	X70	20.625	16754
W - 6838	Soldadura	68380		81043.089	X70	20.625	16754
W - 6839	Soldadura	68390		81055.487	X70	20.625	16754
W - 6840	Soldadura	68400		81067.707	X70	20.625	16754
W - 6841	Soldadura	68410		81072.576	X70	20.625	16754
W - 6842	Soldadura	68420		81084.054	X70	20.625	16754
W - 6843	Soldadura	68430		81094.633	X70	20.625	16754
W - 6844	Soldadura	68440		81103.856	X70	20.625	16754
W - 6845	Soldadura	68450		81116.228	X70	20.625	16754
W - 6846	Soldadura	68460		81128.225	X70	20.625	16754
W - 6847	Soldadura	68470		81139.853	X70	20.625	16754
W - 6848	Soldadura	68480		81151.664	X70	20.625	16754
W - 6849	Soldadura	68490		81164.013	X70	20.625	16754
W - 6850	Soldadura	68500		81176.381	X70	20.625	16754
W - 6851	Soldadura	68510		81188.161	X70	20.625	16754
W - 6852	Soldadura	68520		81200.516	X70	20.625	16754
W - 6853	Soldadura	68530		81212.916	X70	20.625	16754
M - 25	Marcador		68530.09.94	81222.853	X70	20.625	16754
W - 6854	Soldadura	68540		81225.146	X70	20.625	16754
W - 6855	Soldadura	68550		81237.376	X70	20.625	16754
W - 6856	Soldadura	68560		81249.210	X70	20.625	16754
W - 6857	Soldadura	68570		81261.344	X70	20.625	16754
W - 6858	Soldadura	68580		81273.637	X70	20.625	16754
W - 6859	Soldadura	68590		81285.763	X70	20.625	16754
W - 6860	Soldadura	68600		81295.931	X70	20.625	16754
W - 6861	Soldadura	68610		81308.194	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6862	Soldadura	68620		81318.341	X70	20.625	16754
W - 6863	Soldadura	68630		81330.610	X70	20.625	16754
W - 6864	Soldadura	68640		81343.119	X70	20.625	16754
W - 6865	Soldadura	68650		81355.540	X70	20.625	16754
W - 6866	Soldadura	68660		81367.968	X70	20.625	16754
W - 6867	Soldadura	68670		81378.666	X70	20.625	16754
W - 6868	Soldadura	68680		81390.655	X70	20.625	16754
W - 6869	Soldadura	68690		81403.043	X70	20.625	16754
W - 6870	Soldadura	68700		81415.481	X70	20.625	16754
W - 6871	Soldadura	68710		81427.211	X70	20.625	16754
W - 6872	Soldadura	68720		81439.542	X70	20.625	16754
W - 6873	Soldadura	68730		81451.798	X70	20.625	16754
W - 6874	Soldadura	68740		81463.754	X70	20.625	16754
W - 6875	Soldadura	68750		81476.111	X70	20.625	16754
W - 6876	Soldadura	68760		81488.516	X70	20.625	16754
W - 6877	Soldadura	68770		81500.477	X70	20.625	16754
W - 6878	Soldadura	68780		81512.855	X70	20.625	16754
W - 6879	Soldadura	68790		81525.237	X70	20.625	16754
W - 6880	Soldadura	68800		81536.842	X70	20.625	16754
W - 6881	Soldadura	68810		81549.166	X70	20.625	16754
W - 6882	Soldadura	68820		81561.536	X70	20.625	16754
W - 6883	Soldadura	68830		81573.395	X70	20.625	16754
W - 6884	Soldadura	68840		81585.796	X70	20.625	16754
W - 6885	Soldadura	68850		81597.637	X70	20.625	16754
W - 6886	Soldadura	68860		81610.020	X70	20.625	16754
W - 6887	Soldadura	68870		81622.410	X70	20.625	16754
W - 6888	Soldadura	68880		81634.612	X70	20.625	16754

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6889	Soldadura	68890		81646.931	X70	20.625	16754
W - 6890	Soldadura	68900		81659.324	X70	20.625	16754
W - 6891	Soldadura	68910		81671.650	X70	20.625	16754
W - 6892	Soldadura	68920		81684.015	X70	20.625	16754
W - 6893	Soldadura	68930		81696.331	X70	20.625	16754
W - 6894	Soldadura	68940		81708.699	X70	20.625	16754
W - 6895	Soldadura	68950		81721.081	X70	20.625	16754
W - 6896	Soldadura	68960		81733.489	X70	20.625	16754
W - 6897	Soldadura	68970		81745.783	X70	20.625	16754
W - 6898	Soldadura	68980		81757.769	X70	20.625	16754
W - 6899	Soldadura	68990		81770.139	X70	20.625	16754
W - 6900	Soldadura	69000		81782.493	X70	20.625	16754
W - 6901	Soldadura	69010		81794.591	X70	20.625	16754
W - 6902	Soldadura	69020		81806.887	X70	20.625	16754
W - 6903	Soldadura	69030		81818.102	X70	20.625	16754
W - 6904	Soldadura	69040		81830.464	X70	20.625	16754
W - 6905	Soldadura	69050		81842.783	X70	20.625	16754
W - 6906	Soldadura	69060		81854.817	X70	20.625	16754
W - 6907	Soldadura	69070		81866.847	X70	20.625	16754
W - 6908	Soldadura	69080		81879.313	X70	20.625	16754
W - 6909	Soldadura	69090		81891.375	X70	20.625	16754
W - 6910	Soldadura	69100		81903.689	X70	20.625	16754
W - 6911	Soldadura	69110		81915.991	X70	20.625	16754
W - 6912	Soldadura	69120		81928.294	X70	20.625	16754
W - 6913	Soldadura	69130		81933.837	X70	20.625	16754
W - 6914	Soldadura	69140		81946.173	X70	20.625	16754
W - 6915	Soldadura	69150		81958.261	X70	20.625	16754

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6916	Soldadura	69160		81970.662	X70	20.625	16754
W - 6917	Soldadura	69170		81983.042	X70	20.625	16754
W - 6918	Soldadura	69180		81995.424	X70	20.625	16754
W - 6919	Soldadura	69190		82006.653	X70	20.625	16754
W - 6920	Soldadura	69200		82018.985	X70	20.625	16754
W - 6921	Soldadura	69210		82031.368	X70	20.625	16754
W - 6922	Soldadura	69220		82043.836	X70	20.625	16754
W - 6923	Soldadura	69230		82055.429	X70	20.625	16754
W - 6924	Soldadura	69240		82067.682	X70	20.625	16754
W - 6925	Soldadura	69250		82080.064	X70	20.625	16754
W - 6926	Soldadura	69260		82092.465	X70	20.625	16754
W - 6927	Soldadura	69270		82104.052	X70	20.625	16754
W - 6928	Soldadura	69280		82116.425	X70	20.625	16754
W - 6929	Soldadura	69290		82128.190	X70	20.625	16754
W - 6930	Soldadura	69300		82140.562	X70	20.625	16754
W - 6931	Soldadura	69310		82152.940	X70	20.625	16754
W - 6932	Soldadura	69320		82165.345	X70	20.625	16754
W - 6933	Soldadura	69330		82177.717	X70	20.625	16754
W - 6934	Soldadura	69340		82189.290	X70	20.625	16754
W - 6935	Soldadura	69350		82201.654	X70	20.625	16754
W - 6936	Soldadura	69360		82214.022	X70	20.625	16754
W - 6937	Soldadura	69370		82225.772	X70	20.625	16754
W - 6938	Soldadura	69380		82238.030	X70	20.625	16754
W - 6939	Soldadura	69390		82250.415	X70	20.625	16754
W - 6940	Soldadura	69400		82262.467	X70	20.625	16754
W - 6941	Soldadura	69410		82274.804	X70	20.625	16754
W - 6942	Soldadura	69420		82287.146	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6943	Soldadura	69430		82298.228	X70	20.625	16754
W - 6944	Soldadura	69440		82310.646	X70	20.625	16754
W - 6945	Soldadura	69450		82323.056	X70	20.625	16754
W - 6946	Soldadura	69460		82334.814	X70	20.625	16754
W - 6947	Soldadura	69470		82347.176	X70	20.625	16754
W - 6948	Soldadura	69480		82359.553	X70	20.625	16754
W - 6949	Soldadura	69490		82371.405	X70	20.625	16754
W - 6950	Soldadura	69500		82372.881	X70	20.625	16754
W - 6951	Soldadura	69510		82383.211	X70	20.625	16754
W - 6952	Soldadura	69520		82395.598	X70	20.625	16754
W - 6953	Soldadura	69530		82407.511	X70	20.625	16754
W - 6954	Soldadura	69540		82419.871	X70	20.625	16754
W - 6955	Soldadura	69550		82432.238	X70	20.625	16754
W - 6956	Soldadura	69560		82444.598	X70	20.625	16754
W - 6957	Soldadura	69570		82456.980	X70	20.625	16754
W - 6958	Soldadura	69580		82469.391	X70	20.625	16754
W - 6959	Soldadura	69590		82481.796	X70	20.625	16754
W - 6960	Soldadura	69600		82494.029	X70	20.625	16754
W - 6961	Soldadura	69610		82506.383	X70	20.625	16754
W - 6962	Soldadura	69620		82518.728	X70	20.625	16754
W - 6963	Soldadura	69630		82530.688	X70	20.625	16754
W - 6964	Soldadura	69640		82542.807	X70	20.625	16754
W - 6965	Soldadura	69650		82553.566	X70	20.625	16754
W - 6966	Soldadura	69660		82565.357	X70	20.625	16754
W - 6967	Soldadura	69670		82577.709	X70	20.625	16754
W - 6968	Soldadura	69680		82590.010	X70	20.625	16754
W - 6969	Soldadura	69690		82602.065	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6970	Soldadura	69700		82614.336	X70	20.625	16754
W - 6971	Soldadura	69710		82626.670	X70	20.625	16754
W - 6972	Soldadura	69720		82639.027	X70	20.625	16754
W - 6973	Soldadura	69730		82651.316	X70	20.625	16754
W - 6974	Soldadura	69740		82663.726	X70	20.625	16754
W - 6975	Soldadura	69750		82676.159	X70	20.625	16754
W - 6976	Soldadura	69760		82683.114	X70	26.975	16754
W - 6977	Soldadura	69770		82685.903	X70	20.625	21912
W - 6978	Soldadura	69780		82698.351	X70	20.625	16754
W - 6979	Soldadura	69790		82710.592	X70	20.625	16754
W - 6980	Soldadura	69800		82714.579	X70	20.625	16754
W - 6981	Soldadura	69810		82726.868	X70	20.625	16754
W - 6982	Soldadura	69820		82739.200	X70	20.625	16754
A - 985	Anomalía		69820.00.27	82739.466	X70	20.625	16754
W - 6983	Soldadura	69830		82743.215	X70	20.625	16754
W - 6984	Soldadura	69840		82755.534	X70	20.625	16754
W - 6985	Soldadura	69850		82767.902	X70	20.625	16754
W - 6986	Soldadura	69860		82778.821	X70	20.625	16754
W - 6987	Soldadura	69870		82790.086	X70	20.625	16754
W - 6988	Soldadura	69880		82801.023	X70	20.625	16754
W - 6989	Soldadura	69890		82812.920	X70	20.625	16754
W - 6990	Soldadura	69900		82824.975	X70	20.625	16754
W - 6991	Soldadura	69910		82836.906	X70	20.625	16754
W - 6992	Soldadura	69920		82849.182	X70	20.625	16754
W - 6993	Soldadura	69930		82861.572	X70	20.625	16754
W - 6994	Soldadura	69940		82873.779	X70	20.625	16754
W - 6995	Soldadura	69950		82886.166	X70	20.625	16754

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 6996	Soldadura	69960		82898.447	X70	20.625	16754
W - 6997	Soldadura	69970		82910.799	X70	20.625	16754
W - 6998	Soldadura	69980		82923.118	X70	20.625	16754
W - 6999	Soldadura	69990		82935.392	X70	20.625	16754
W - 7000	Soldadura	70000		82947.772	X70	20.625	16754
W - 7001	Soldadura	70010		82960.139	X70	20.625	16754
W - 7002	Soldadura	70020		82967.952	X70	20.625	16754
W - 7003	Soldadura	70030		82980.327	X70	20.625	16754
W - 7004	Soldadura	70040		82992.267	X70	20.625	16754
W - 7005	Soldadura	70050		83004.670	X70	20.625	16754
W - 7006	Soldadura	70060		83017.027	X70	20.625	16754
W - 7007	Soldadura	70070		83028.777	X70	20.625	16754
W - 7008	Soldadura	70080		83041.137	X70	20.625	16754
W - 7009	Soldadura	70090		83053.486	X70	20.625	16754
W - 7010	Soldadura	70100		83065.765	X70	20.625	16754
W - 7011	Soldadura	70110		83078.190	X70	20.625	16754
W - 7012	Soldadura	70120		83090.626	X70	20.625	16754
W - 7013	Soldadura	70130		83102.976	X70	20.625	16754
W - 7014	Soldadura	70140		83115.267	X70	20.625	16754
W - 7015	Soldadura	70150		83127.271	X70	20.625	16754
W - 7016	Soldadura	70160		83139.671	X70	20.625	16754
W - 7017	Soldadura	70170		83151.533	X70	20.625	16754
W - 7018	Soldadura	70180		83163.921	X70	20.625	16754
W - 7019	Soldadura	70190		83176.278	X70	20.625	16754
W - 7020	Soldadura	70200		83188.482	X70	20.625	16754
W - 7021	Soldadura	70210		83200.834	X70	20.625	16754
W - 7022	Soldadura	70220		83213.255	X70	20.625	16754



Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7023	Soldadura	70230		83225.165	X70	20.625	16754
W - 7024	Soldadura	70240		83237.283	X70	20.625	16754
W - 7025	Soldadura	70250		83249.701	X70	20.625	16754
W - 7026	Soldadura	70260		83262.056	X70	20.625	16754
W - 7027	Soldadura	70270		83274.428	X70	20.625	16754
W - 7028	Soldadura	70280		83286.798	X70	20.625	16754
W - 7029	Soldadura	70290		83299.115	X70	20.625	16754
W - 7030	Soldadura	70300		83301.103	X70	20.625	16754
W - 7031	Soldadura	70310		83313.260	X70	20.625	16754
W - 7032	Soldadura	70320		83325.160	X70	20.625	16754
W - 7033	Soldadura	70330		83337.509	X70	20.625	16754
W - 7034	Soldadura	70340		83349.859	X70	20.625	16754
W - 7035	Soldadura	70350		83361.169	X70	20.625	16754
W - 7036	Soldadura	70360		83373.402	X70	20.625	16754
W - 7037	Soldadura	70370		83385.668	X70	20.625	16754
W - 7038	Soldadura	70380		83398.058	X70	20.625	16754
W - 7039	Soldadura	70390		83410.024	X70	20.625	16754
W - 7040	Soldadura	70400		83422.386	X70	20.625	16754
W - 7041	Soldadura	70410		83434.763	X70	20.625	16754
W - 7042	Soldadura	70420		83446.750	X70	20.625	16754
W - 7043	Soldadura	70430		83459.124	X70	20.625	16754
W - 7044	Soldadura	70440		83471.479	X70	20.625	16754
W - 7045	Soldadura	70450		83483.823	X70	20.625	16754
W - 7046	Soldadura	70460		83496.193	X70	20.625	16754
W - 7047	Soldadura	70470		83508.593	X70	20.625	16754
W - 7048	Soldadura	70480		83520.514	X70	20.625	16754
W - 7049	Soldadura	70490		83532.889	X70	20.625	16754

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7050	Soldadura	70500		83544.651	X70	20.625	16754
W - 7051	Soldadura	70510		83557.013	X70	20.625	16754
W - 7052	Soldadura	70520		83568.964	X70	20.625	16754
W - 7053	Soldadura	70530		83581.331	X70	20.625	16754
W - 7054	Soldadura	70540		83593.732	X70	20.625	16754
W - 7055	Soldadura	70550		83606.076	X70	20.625	16754
W - 7056	Soldadura	70560		83618.464	X70	20.625	16754
W - 7057	Soldadura	70570		83630.780	X70	20.625	16754
W - 7058	Soldadura	70580		83642.477	X70	20.625	16754
W - 7059	Soldadura	70590		83654.831	X70	20.625	16754
W - 7060	Soldadura	70600		83667.224	X70	20.625	16754
W - 7061	Soldadura	70610		83679.624	X70	20.625	16754
W - 7062	Soldadura	70620		83691.981	X70	20.625	16754
W - 7063	Soldadura	70630		83703.742	X70	20.625	16754
W - 7064	Soldadura	70640		83716.071	X70	20.625	16754
W - 7065	Soldadura	70650		83728.443	X70	20.625	16754
W - 7066	Soldadura	70660		83740.843	X70	20.625	16754
W - 7067	Soldadura	70670		83753.231	X70	20.625	16754
W - 7068	Soldadura	70680		83765.570	X70	20.625	16754
W - 7069	Soldadura	70690		83777.938	X70	20.625	16754
W - 7070	Soldadura	70700		83790.343	X70	20.625	16754
W - 7071	Soldadura	70710		83802.708	X70	20.625	16754
W - 7072	Soldadura	70720		83814.902	X70	20.625	16754
W - 7073	Soldadura	70730		83827.295	X70	20.625	16754
W - 7074	Soldadura	70740		83839.677	X70	20.625	16754
W - 7075	Soldadura	70750		83852.017	X70	20.625	16754
W - 7076	Soldadura	70760		83863.637	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7077	Soldadura	70770		83873.185	X70	20.625	16754
W - 7078	Soldadura	70780		83876.627	X70	20.625	16754
W - 7079	Soldadura	70790		83889.014	X70	20.625	16754
W - 7080	Soldadura	70800		83901.412	X70	20.625	16754
W - 7081	Soldadura	70810		83913.784	X70	20.625	16754
W - 7082	Soldadura	70820		83926.083	X70	20.625	16754
W - 7083	Soldadura	70830		83938.410	X70	20.625	16754
W - 7084	Soldadura	70840		83950.749	X70	20.625	16754
W - 7085	Soldadura	70850		83963.099	X70	20.625	16754
W - 7086	Soldadura	70860		83975.296	X70	20.625	16754
W - 7087	Soldadura	70870		83987.670	X70	20.625	16754
W - 7088	Soldadura	70880		84000.030	X70	20.625	16754
W - 7089	Soldadura	70890		84012.408	X70	20.625	16754
W - 7090	Soldadura	70900		84024.795	X70	20.625	16754
W - 7091	Soldadura	70910		84037.200	X70	20.625	16754
W - 7092	Soldadura	70920		84049.217	X70	20.625	16754
W - 7093	Soldadura	70930		84061.584	X70	20.625	16754
W - 7094	Soldadura	70940		84073.931	X70	20.625	16754
W - 7095	Soldadura	70950		84085.979	X70	20.625	16754
W - 7096	Soldadura	70960		84098.343	X70	20.625	16754
W - 7097	Soldadura	70970		84110.728	X70	20.625	16754
W - 7098	Soldadura	70980		84122.829	X70	20.625	16754
W - 7099	Soldadura	70990		84135.295	X70	20.625	16754
W - 7100	Soldadura	71000		84147.698	X70	20.625	16754
W - 7101	Soldadura	71010		84160.050	X70	20.625	16754
W - 7102	Soldadura	71020		84171.005	X70	20.625	16754
W - 7103	Soldadura	71030		84183.403	X70	20.625	16754

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7104	Soldadura	71040		84195.879	X70	20.625	16754
W - 7105	Soldadura	71050		84207.934	X70	20.625	16754
W - 7106	Soldadura	71060		84219.567	X70	20.625	16754
W - 7107	Soldadura	71070		84231.914	X70	20.625	16754
W - 7108	Soldadura	71080		84243.855	X70	20.625	16754
W - 7109	Soldadura	71090		84255.790	X70	20.625	16754
W - 7110	Soldadura	71100		84268.170	X70	20.625	16754
W - 7111	Soldadura	71110		84280.136	X70	20.625	16754
W - 7112	Soldadura	71120		84292.087	X70	20.625	16754
W - 7113	Soldadura	71130		84304.464	X70	20.625	16754
W - 7114	Soldadura	71140		84316.435	X70	20.625	16754
W - 7115	Soldadura	71150		84328.800	X70	20.625	16754
W - 7116	Soldadura	71160		84341.195	X70	15.875	16754
W - 7117	Soldadura	71170		84353.578	X70	15.875	12893
W - 7118	Soldadura	71180		84365.760	X70	15.875	12893
W - 7119	Soldadura	71190		84378.129	X70	15.875	12893
W - 7120	Soldadura	71200		84390.461	X70	15.875	12893
W - 7121	Soldadura	71210		84402.869	X70	15.875	12893
W - 7122	Soldadura	71220		84415.094	X70	15.875	12893
W - 7123	Soldadura	71230		84427.355	X70	15.875	12893
W - 7124	Soldadura	71240		84439.684	X70	15.875	12893
W - 7125	Soldadura	71250		84452.061	X70	15.875	12893
W - 7126	Soldadura	71260		84464.373	X70	15.875	12893
W - 7127	Soldadura	71270		84476.793	X70	15.875	12893
W - 7128	Soldadura	71280		84489.178	X70	15.875	12893
W - 7129	Soldadura	71290		84501.579	X70	15.875	12893
W - 7130	Soldadura	71300		84510.773	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7131	Soldadura	71310		84512.592	X70	15.875	12893
W - 7132	Soldadura	71320		84524.304	X70	15.875	12893
W - 7133	Soldadura	71330		84536.364	X70	15.875	12893
W - 7134	Soldadura	71340		84548.769	X70	15.875	12893
W - 7135	Soldadura	71350		84560.745	X70	15.875	12893
W - 7136	Soldadura	71360		84573.123	X70	15.875	12893
W - 7137	Soldadura	71370		84585.459	X70	15.875	12893
W - 7138	Soldadura	71380		84597.644	X70	15.875	12893
W - 7139	Soldadura	71390		84609.998	X70	15.875	12893
W - 7140	Soldadura	71400		84622.198	X70	15.875	12893
W - 7141	Soldadura	71410		84634.418	X70	15.875	12893
W - 7142	Soldadura	71420		84646.783	X70	15.875	12893
W - 7143	Soldadura	71430		84659.196	X70	15.875	12893
W - 7144	Soldadura	71440		84671.568	X70	15.875	12893
W - 7145	Soldadura	71450		84683.785	X70	15.875	12893
W - 7146	Soldadura	71460		84696.094	X70	15.875	12893
W - 7147	Soldadura	71470		84708.477	X70	15.875	12893
W - 7148	Soldadura	71480		84720.902	X70	15.875	12893
W - 7149	Soldadura	71490		84733.295	X70	15.875	12893
W - 7150	Soldadura	71500		84745.657	X70	15.875	12893
W - 7151	Soldadura	71510		84757.471	X70	15.875	12893
W - 7152	Soldadura	71520		84769.823	X70	15.875	12893
W - 7153	Soldadura	71530		84782.198	X70	15.875	12893
W - 7154	Soldadura	71540		84794.608	X70	15.875	12893
W - 7155	Soldadura	71550		84806.991	X70	15.875	12893
W - 7156	Soldadura	71560		84819.147	X70	15.875	12893
W - 7157	Soldadura	71570		84831.517	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7158	Soldadura	71580		84843.851	X70	15.875	12893
W - 7159	Soldadura	71590		84856.257	X70	15.875	12893
W - 7160	Soldadura	71600		84868.657	X70	15.875	12893
W - 7161	Soldadura	71610		84881.022	X70	15.875	12893
W - 7162	Soldadura	71620		84893.351	X70	15.875	12893
W - 7163	Soldadura	71630		84905.281	X70	15.875	12893
W - 7164	Soldadura	71640		84917.669	X70	15.875	12893
W - 7165	Soldadura	71650		84930.036	X70	15.875	12893
W - 7166	Soldadura	71660		84941.537	X70	15.875	12893
W - 7167	Soldadura	71670		84953.920	X70	15.875	12893
W - 7168	Soldadura	71680		84966.279	X70	15.875	12893
W - 7169	Soldadura	71690		84978.141	X70	15.875	12893
W - 7170	Soldadura	71700		84990.389	X70	15.875	12893
W - 7171	Soldadura	71710		85002.832	X70	15.875	12893
W - 7172	Soldadura	71720		85015.184	X70	15.875	12893
W - 7173	Soldadura	71730		85027.572	X70	15.875	12893
W - 7174	Soldadura	71740		85039.733	X70	15.875	12893
W - 7175	Soldadura	71750		85052.111	X70	15.875	12893
A - 986	Anomalía		71750.0.777	85059.878	X70	15.875	12893
W - 7176	Soldadura	71760		85064.509	X70	15.875	12893
A - 987	Anomalía		71760.01.89	85066.401	X70	15.875	12893
W - 7177	Soldadura	71770		85076.934	X70	15.875	12893
W - 7178	Soldadura	71780		85089.312	X70	15.875	12893
W - 7179	Soldadura	71790		85101.722	X70	15.875	12893
W - 7180	Soldadura	71800		85113.917	X70	15.875	12893
W - 7181	Soldadura	71810		85126.294	X70	15.875	12893
W - 7182	Soldadura	71820		85138.702	X70	15.875	12893

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7183	Soldadura	71830		85151.151	X70	15.875	12893
W - 7184	Soldadura	71840		85163.536	X70	15.875	12893
W - 7185	Soldadura	71850		85174.059	X70	15.875	12893
W - 7186	Soldadura	71860		85186.423	X70	15.875	12893
W - 7187	Soldadura	71870		85198.809	X70	15.875	12893
W - 7188	Soldadura	71880		85211.163	X70	15.875	12893
W - 7189	Soldadura	71890		85222.644	X70	15.875	12893
W - 7190	Soldadura	71900		85234.612	X70	15.875	12893
W - 7191	Soldadura	71910		85246.977	X70	15.875	12893
W - 7192	Soldadura	71920		85259.357	X70	15.875	12893
W - 7193	Soldadura	71930		85271.714	X70	15.875	12893
W - 7194	Soldadura	71940		85284.081	X70	15.875	12893
W - 7195	Soldadura	71950		85296.342	X70	15.875	12893
W - 7196	Soldadura	71960		85308.717	X70	15.875	12893
W - 7197	Soldadura	71970		85321.043	X70	15.875	12893
W - 7198	Soldadura	71980		85333.393	X70	15.875	12893
W - 7199	Soldadura	71990		85345.707	X70	15.875	12893
A - 989	Anomalía		71990.03.40	85349.105	X70	15.875	12893
W - 7200	Soldadura	72000		85357.873	X70	15.875	12893
W - 7201	Soldadura	72010		85370.210	X70	15.875	12893
W - 7202	Soldadura	72020		85382.583	X70	15.875	12893
W - 7203	Soldadura	72030		85395.013	X70	15.875	12893
W - 7204	Soldadura	72040		85407.056	X70	15.875	12893
W - 7205	Soldadura	72050		85419.341	X70	15.875	12893
W - 7206	Soldadura	72060		85431.719	X70	15.875	12893
W - 7207	Soldadura	72070		85434.228	X70	15.875	12893
W - 7208	Soldadura	72080		85444.874	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7209	Soldadura	72090		85456.809	X70	15.875	12893
W - 7210	Soldadura	72100		85469.082	X70	15.875	12893
W - 7211	Soldadura	72110		85481.386	X70	15.875	12893
W - 7212	Soldadura	72120		85493.657	X70	15.875	12893
W - 7213	Soldadura	72130		85505.788	X70	15.875	12893
W - 7214	Soldadura	72140		85518.102	X70	15.875	12893
W - 7215	Soldadura	72150		85530.398	X70	15.875	12893
W - 7216	Soldadura	72160		85542.831	X70	15.875	12893
W - 7217	Soldadura	72170		85555.198	X70	15.875	12893
W - 7218	Soldadura	72180		85567.599	X70	15.875	12893
W - 7219	Soldadura	72190		85580.027	X70	15.875	12893
W - 7220	Soldadura	72200		85592.369	X70	15.875	12893
W - 7221	Soldadura	72210		85604.662	X70	15.875	12893
W - 7222	Soldadura	72220		85617.070	X70	15.875	12893
W - 7223	Soldadura	72230		85629.483	X70	15.875	12893
W - 7224	Soldadura	72240		85641.746	X70	15.875	12893
W - 7225	Soldadura	72250		85654.129	X70	15.875	12893
W - 7226	Soldadura	72260		85666.494	X70	15.875	12893
W - 7227	Soldadura	72270		85678.848	X70	15.875	12893
W - 7228	Soldadura	72280		85691.215	X70	15.875	12893
W - 7229	Soldadura	72290		85703.646	X70	15.875	12893
W - 7230	Soldadura	72300		85715.897	X70	15.875	12893
W - 7231	Soldadura	72310		85728.165	X70	15.875	12893
W - 7232	Soldadura	72320		85740.349	X70	15.875	12893
W - 7233	Soldadura	72330		85751.916	X70	15.875	12893
W - 7234	Soldadura	72340		85764.266	X70	15.875	12893
W - 7235	Soldadura	72350		85776.359	X70	15.875	12893



Descripción/Ubicación		Características del Caño					
Item	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7236	Soldadura	72360		85788.129	X70	15.875	12893
W - 7237	Soldadura	72370		85800.428	X70	15.875	12893
W - 7238	Soldadura	72380		85812.460	X70	15.875	12893
W - 7239	Soldadura	72390		85822.236	X70	15.875	12893
W - 7240	Soldadura	72400		85834.598	X70	15.875	12893
W - 7241	Soldadura	72410		85846.841	X70	15.875	12893
W - 7242	Soldadura	72420		85859.219	X70	15.875	12893
W - 7243	Soldadura	72430		85871.492	X70	15.875	12893
W - 7244	Soldadura	72440		85883.847	X70	15.875	12893
W - 7245	Soldadura	72450		85895.787	X70	15.875	12893
W - 7246	Soldadura	72460		85907.720	X70	15.875	12893
A - 990	Anomalía		72460.11.94	85919.658	X70	15.875	12893
W - 7247	Soldadura	72470		85920.014	X70	15.875	12893
W - 7248	Soldadura	72480		85932.399	X70	15.875	12893
W - 7249	Soldadura	72490		85944.680	X70	15.875	12893
W - 7250	Soldadura	72500		85956.282	X70	15.875	12893
W - 7251	Soldadura	72510		85968.599	X70	15.875	12893
W - 7252	Soldadura	72520		85980.986	X70	15.875	12893
W - 7253	Soldadura	72530		85993.112	X70	15.875	12893
W - 7254	Soldadura	72540		86005.434	X70	15.875	12893
W - 7255	Soldadura	72550		86017.842	X70	15.875	12893
W - 7256	Soldadura	72560		86030.217	X70	15.875	12893
W - 7257	Soldadura	72570		86042.147	X70	15.875	12893
W - 7258	Soldadura	72580		86054.522	X70	15.875	12893
W - 7259	Soldadura	72590		86066.912	X70	15.875	12893
W - 7260	Soldadura	72600		86079.327	X70	15.875	12893
W - 7261	Soldadura	72610		86090.813	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7262	Soldadura	72620		86103.198	X70	15.875	12893
W - 7263	Soldadura	72630		86115.134	X70	15.875	12893
W - 7264	Soldadura	72640		86127.336	X70	15.875	12893
W - 7265	Soldadura	72650		86139.716	X70	15.875	12893
W - 7266	Soldadura	72660		86152.017	X70	15.875	12893
W - 7267	Soldadura	72670		86164.390	X70	15.875	12893
W - 7268	Soldadura	72680		86176.759	X70	15.875	12893
W - 7269	Soldadura	72690		86189.116	X70	15.875	12893
W - 7270	Soldadura	72700		86201.458	X70	15.875	12893
W - 7271	Soldadura	72710		86213.828	X70	15.875	12893
M - 26	Marcador		72710.11.26	86225.093	X70	15.875	12893
W - 7272	Soldadura	72720		86225.804	X70	15.875	12893
W - 7273	Soldadura	72730		86238.171	X70	15.875	12893
W - 7274	Soldadura	72740		86250.506	X70	15.875	12893
W - 7275	Soldadura	72750		86262.550	X70	15.875	12893
W - 7276	Soldadura	72760		86274.869	X70	15.875	12893
W - 7277	Soldadura	72770		86287.191	X70	15.875	12893
W - 7278	Soldadura	72780		86299.535	X70	15.875	12893
W - 7279	Soldadura	72790		86311.890	X70	15.875	12893
W - 7280	Soldadura	72800		86323.594	X70	15.875	12893
W - 7281	Soldadura	72810		86335.799	X70	15.875	12893
W - 7282	Soldadura	72820		86348.019	X70	15.875	12893
W - 7283	Soldadura	72830		86360.302	X70	15.875	12893
W - 7284	Soldadura	72840		86372.723	X70	15.875	12893
W - 7285	Soldadura	72850		86385.138	X70	15.875	12893
W - 7286	Soldadura	72860		86397.516	X70	15.875	12893
W - 7287	Soldadura	72870		86409.941	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7288	Soldadura	72880		86421.712	X70	15.875	12893
W - 7289	Soldadura	72890		86434.102	X70	15.875	12893
W - 7290	Soldadura	72900		86446.396	X70	15.875	12893
W - 7291	Soldadura	72910		86458.786	X70	15.875	12893
W - 7292	Soldadura	72920		86471.051	X70	15.875	12893
W - 7293	Soldadura	72930		86483.429	X70	15.875	12893
W - 7294	Soldadura	72940		86495.811	X70	15.875	12893
W - 7295	Soldadura	72950		86508.064	X70	15.875	12893
W - 7296	Soldadura	72960		86520.099	X70	15.875	12893
W - 7297	Soldadura	72970		86532.436	X70	15.875	12893
W - 7298	Soldadura	72980		86544.722	X70	15.875	12893
W - 7299	Soldadura	72990		86557.074	X70	15.875	12893
W - 7300	Soldadura	73000		86569.288	X70	15.875	12893
W - 7301	Soldadura	73010		86581.648	X70	15.875	12893
W - 7302	Soldadura	73020		86593.937	X70	15.875	12893
W - 7303	Soldadura	73030		86606.362	X70	15.875	12893
W - 7304	Soldadura	73040		86618.605	X70	15.875	12893
W - 7305	Soldadura	73050		86630.906	X70	15.875	12893
W - 7306	Soldadura	73060		86643.202	X70	15.875	12893
W - 7307	Soldadura	73070		86655.366	X70	15.875	12893
W - 7308	Soldadura	73080		86667.751	X70	15.875	12893
W - 7309	Soldadura	73090		86680.063	X70	15.875	12893
W - 7310	Soldadura	73100		86692.331	X70	15.875	12893
W - 7311	Soldadura	73110		86704.724	X70	15.875	12893
W - 7312	Soldadura	73120		86717.071	X70	15.875	12893
W - 7313	Soldadura	73130		86729.075	X70	15.875	12893
W - 7314	Soldadura	73140		86741.351	X70	15.875	12893

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7315	Soldadura	73150		86753.720	X70	15.875	12893
W - 7316	Soldadura	73160		86765.968	X70	15.875	12893
W - 7317	Soldadura	73170		86778.353	X70	15.875	12893
W - 7318	Soldadura	73180		86790.629	X70	15.875	12893
W - 7319	Soldadura	73190		86803.006	X70	15.875	12893
W - 7320	Soldadura	73200		86815.412	X70	15.875	12893
W - 7321	Soldadura	73210		86827.761	X70	15.875	12893
W - 7322	Soldadura	73220		86840.093	X70	15.875	12893
W - 7323	Soldadura	73230		86852.399	X70	15.875	12893
W - 7324	Soldadura	73240		86864.347	X70	15.875	12893
W - 7325	Soldadura	73250		86875.983	X70	15.875	12893
W - 7326	Soldadura	73260		86888.079	X70	15.875	12893
W - 7327	Soldadura	73270		86900.055	X70	15.875	12893
W - 7328	Soldadura	73280		86912.402	X70	15.875	12893
W - 7329	Soldadura	73290		86924.512	X70	15.875	12893
W - 7330	Soldadura	73300		86936.895	X70	15.875	12893
W - 7331	Soldadura	73310		86949.250	X70	15.875	12893
W - 7332	Soldadura	73320		86961.566	X70	15.875	12893
W - 7333	Soldadura	73330		86973.979	X70	15.875	12893
W - 7334	Soldadura	73340		86986.448	X70	15.875	12893
W - 7335	Soldadura	73350		86997.395	X70	15.875	12893
W - 7336	Soldadura	73360		87009.742	X70	15.875	12893
W - 7337	Soldadura	73370		87022.051	X70	15.875	12893
W - 7338	Soldadura	73380		87033.931	X70	15.875	12893
W - 7339	Soldadura	73390		87046.298	X70	15.875	12893
W - 7340	Soldadura	73400		87058.584	X70	15.875	12893
W - 7341	Soldadura	73410		87070.903	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7342	Soldadura	73420		87082.765	X70	15.875	12893
W - 7343	Soldadura	73430		87095.140	X70	15.875	12893
W - 7344	Soldadura	73440		87107.517	X70	15.875	12893
W - 7345	Soldadura	73450		87119.882	X70	15.875	12893
W - 7346	Soldadura	73460		87132.325	X70	15.875	12893
W - 7347	Soldadura	73470		87144.738	X70	15.875	12893
W - 7348	Soldadura	73480		87157.113	X70	15.875	12893
W - 7349	Soldadura	73490		87169.508	X70	15.875	12893
W - 7350	Soldadura	73500		87181.855	X70	15.875	12893
W - 7351	Soldadura	73510		87194.245	X70	15.875	12893
W - 7352	Soldadura	73520		87206.653	X70	15.875	12893
W - 7353	Soldadura	73530		87219.066	X70	15.875	12893
W - 7354	Soldadura	73540		87231.395	X70	15.875	12893
W - 7355	Soldadura	73550		87243.747	X70	15.875	12893
W - 7356	Soldadura	73560		87255.988	X70	15.875	12893
W - 7357	Soldadura	73570		87268.243	X70	15.875	12893
W - 7358	Soldadura	73580		87280.610	X70	15.875	12893
W - 7359	Soldadura	73590		87292.978	X70	15.875	12893
W - 7360	Soldadura	73600		87305.309	X70	15.875	12893
W - 7361	Soldadura	73610		87317.494	X70	15.875	12893
W - 7362	Soldadura	73620		87329.800	X70	15.875	12893
W - 7363	Soldadura	73630		87342.144	X70	15.875	12893
W - 7364	Soldadura	73640		87354.499	X70	15.875	12893
W - 7365	Soldadura	73650		87366.838	X70	15.875	12893
W - 7366	Soldadura	73660		87378.629	X70	15.875	12893
W - 7367	Soldadura	73670		87391.070	X70	15.875	12893
W - 7368	Soldadura	73680		87403.422	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7369	Soldadura	73690		87412.792	X70	15.875	12893
W - 7370	Soldadura	73700		87425.238	X70	15.875	12893
W - 7371	Soldadura	73710		87433.399	X70	15.875	12893
W - 7372	Soldadura	73720		87445.804	X70	15.875	12893
W - 7373	Soldadura	73730		87458.151	X70	15.875	12893
W - 7374	Soldadura	73740		87470.320	X70	15.875	12893
W - 7375	Soldadura	73750		87482.647	X70	15.875	12893
W - 7376	Soldadura	73760		87495.004	X70	15.875	12893
NCA - 998	NCA		73760.10.22	87505.228	X70	15.875	12893
W - 7377	Soldadura	73770		87507.473	X70	15.875	12893
W - 7378	Soldadura	73780		87519.934	X70	15.875	12893
W - 7379	Soldadura	73790		87532.309	X70	15.875	12893
W - 7380	Soldadura	73800		87544.641	X70	15.875	12893
W - 7381	Soldadura	73810		87556.983	X70	15.875	12893
W - 7382	Soldadura	73820		87569.286	X70	15.875	12893
W - 7383	Soldadura	73830		87581.583	X70	15.875	12893
W - 7384	Soldadura	73840		87593.818	X70	15.875	12893
W - 7385	Soldadura	73850		87606.180	X70	15.875	12893
W - 7386	Soldadura	73860		87618.585	X70	15.875	12893
W - 7387	Soldadura	73870		87630.955	X70	15.875	12893
W - 7388	Soldadura	73880		87642.949	X70	15.875	12893
W - 7389	Soldadura	73890		87655.344	X70	15.875	12893
NCA - 1000	NCA		73890.02.55	87657.892	X70	15.875	12893
W - 7390	Soldadura	73900		87667.810	X70	15.875	12893
W - 7391	Soldadura	73910		87680.107	X70	15.875	12893
W - 7392	Soldadura	73920		87692.514	X70	15.875	12893
W - 7393	Soldadura	73930		87704.869	X70	15.875	12893

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7394	Soldadura	73940		87717.208	X70	15.875	12893
W - 7395	Soldadura	73950		87729.604	X70	15.875	12893
W - 7396	Soldadura	73960		87741.907	X70	15.875	12893
A - 1001	Anomalía		73960.00.20	87742.108	X70	15.875	12893
W - 7397	Soldadura	73970		87754.165	X70	15.875	12893
W - 7398	Soldadura	73980		87766.401	X70	15.875	12893
W - 7399	Soldadura	73990		87778.709	X70	15.875	12893
W - 7400	Soldadura	74000		87790.853	X70	15.875	12893
W - 7401	Soldadura	74010		87803.241	X70	15.875	12893
W - 7402	Soldadura	74020		87815.611	X70	15.875	12893
W - 7403	Soldadura	74030		87827.973	X70	15.875	12893
W - 7404	Soldadura	74040		87840.337	X70	15.875	12893
W - 7405	Soldadura	74050		87852.692	X70	15.875	12893
W - 7406	Soldadura	74060		87865.016	X70	15.875	12893
W - 7407	Soldadura	74070		87877.363	X70	15.875	12893
W - 7408	Soldadura	74080		87889.758	X70	15.875	12893
W - 7409	Soldadura	74090		87902.161	X70	15.875	12893
W - 7410	Soldadura	74100		87914.508	X70	15.875	12893
W - 7411	Soldadura	74110		87926.883	X70	15.875	12893
W - 7412	Soldadura	74120		87939.400	X70	15.875	12893
W - 7413	Soldadura	74130		87951.770	X70	15.875	12893
W - 7414	Soldadura	74140		87964.127	X70	15.875	12893
W - 7415	Soldadura	74150		87976.512	X70	15.875	12893
W - 7416	Soldadura	74160		87988.760	X70	15.875	12893
W - 7417	Soldadura	74170		88001.086	X70	15.875	12893
NCA - 1004	NCA		74170.04.81	88005.895	X70	15.875	12893
W - 7418	Soldadura	74180		88013.474	X70	15.875	12893

Item	Descripción/Ubicación			Características del Caño			
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7419	Soldadura	74190		88025.829	X70	15.875	12893
W - 7420	Soldadura	74200		88038.252	X70	15.875	12893
W - 7421	Soldadura	74210		88050.225	X70	15.875	12893
W - 7422	Soldadura	74220		88062.674	X70	15.875	12893
W - 7423	Soldadura	74230		88075.059	X70	15.875	12893
W - 7424	Soldadura	74240		88087.449	X70	15.875	12893
W - 7425	Soldadura	74250		88099.819	X70	15.875	12893
W - 7426	Soldadura	74260		88112.211	X70	15.875	12893
W - 7427	Soldadura	74270		88124.520	X70	15.875	12893
W - 7428	Soldadura	74280		88136.860	X70	15.875	12893
W - 7429	Soldadura	74290		88149.280	X70	15.875	12893
W - 7430	Soldadura	74300		88161.655	X70	15.875	12893
W - 7431	Soldadura	74310		88173.987	X70	15.875	12893
W - 7432	Soldadura	74320		88186.405	X70	15.875	12893
W - 7433	Soldadura	74330		88198.833	X70	15.875	12893
W - 7434	Soldadura	74340		88211.218	X70	15.875	12893
W - 7435	Soldadura	74350		88223.598	X70	15.875	12893
W - 7436	Soldadura	74360		88235.782	X70	15.875	12893
W - 7437	Soldadura	74370		88247.873	X70	15.875	12893
W - 7438	Soldadura	74380		88260.217	X70	15.875	12893
W - 7439	Soldadura	74390		88272.620	X70	15.875	12893
W - 7440	Soldadura	74400		88284.947	X70	15.875	12893
W - 7441	Soldadura	74410		88297.281	X70	15.875	12893
W - 7442	Soldadura	74420		88309.605	X70	15.875	12893
W - 7443	Soldadura	74430		88322.003	X70	15.875	12893
W - 7444	Soldadura	74440		88334.403	X70	15.875	12893
W - 7445	Soldadura	74450		88346.737	X70	15.875	12893



Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7446	Soldadura	74460		88359.120	X70	15.875	12893
W - 7447	Soldadura	74470		88371.454	X70	15.875	12893
W - 7448	Soldadura	74480		88383.882	X70	15.875	12893
W - 7449	Soldadura	74490		88396.290	X70	15.875	12893
W - 7450	Soldadura	74500		88408.718	X70	15.875	12893
W - 7451	Soldadura	74510		88421.096	X70	15.875	12893
W - 7452	Soldadura	74520		88433.305	X70	15.875	12893
W - 7453	Soldadura	74530		88445.736	X70	15.875	12893
W - 7454	Soldadura	74540		88458.167	X70	15.875	12893
W - 7455	Soldadura	74550		88470.499	X70	15.875	12893
W - 7456	Soldadura	74560		88482.853	X70	15.875	12893
W - 7457	Soldadura	74570		88495.218	X70	15.875	12893
A - 1006	Anomalía		74570.0.777	88502.990	X70	15.875	12893
W - 7458	Soldadura	74580		88507.524	X70	15.875	12893
W - 7459	Soldadura	74590		88519.902	X70	15.875	12893
W - 7460	Soldadura	74600		88530.552	X70	15.875	12893
W - 7461	Soldadura	74610		88542.861	X70	15.875	12893
W - 7462	Soldadura	74620		88554.832	X70	15.875	12893
W - 7463	Soldadura	74630		88567.209	X70	15.875	12893
W - 7464	Soldadura	74640		88579.551	X70	15.875	12893
W - 7465	Soldadura	74650		88590.095	X70	15.875	12893
W - 7466	Soldadura	74660		88602.475	X70	15.875	12893
W - 7467	Soldadura	74670		88614.882	X70	15.875	12893
W - 7468	Soldadura	74680		88627.260	X70	15.875	12893
W - 7469	Soldadura	74690		88639.693	X70	15.875	12893
W - 7470	Soldadura	74700		88651.702	X70	15.875	12893
W - 7471	Soldadura	74710		88663.976	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7472	Soldadura	74720		88676.274	X70	15.875	12893
W - 7473	Soldadura	74730		88688.647	X70	15.875	12893
W - 7474	Soldadura	74740		88701.060	X70	15.875	12893
W - 7475	Soldadura	74750		88713.493	X70	15.875	12893
W - 7476	Soldadura	74760		88725.487	X70	15.875	12893
W - 7477	Soldadura	74770		88737.813	X70	15.875	12893
NCA - 1007	NCA		74770.10.61	88748.423	X70	15.875	12893
W - 7478	Soldadura	74780		88750.193	X70	15.875	12893
W - 7479	Soldadura	74790		88762.533	X70	15.875	12893
W - 7480	Soldadura	74800		88774.961	X70	15.875	12893
W - 7481	Soldadura	74810		88787.323	X70	15.875	12893
W - 7482	Soldadura	74820		88799.698	X70	15.875	12893
W - 7483	Soldadura	74830		88812.037	X70	15.875	12893
W - 7484	Soldadura	74840		88824.392	X70	15.875	12893
W - 7485	Soldadura	74850		88836.838	X70	15.875	12893
W - 7486	Soldadura	74860		88849.307	X70	15.875	12893
W - 7487	Soldadura	74870		88861.679	X70	15.875	12893
W - 7488	Soldadura	74880		88873.912	X70	15.875	12893
W - 7489	Soldadura	74890		88886.294	X70	15.875	12893
W - 7490	Soldadura	74900		88898.252	X70	15.875	12893
W - 7491	Soldadura	74910		88910.671	X70	15.875	12893
W - 7492	Soldadura	74920		88923.000	X70	15.875	12893
W - 7493	Soldadura	74930		88934.379	X70	15.875	12893
W - 7494	Soldadura	74940		88946.645	X70	15.875	12893
W - 7495	Soldadura	74950		88951.671	X70	15.875	12893
W - 7496	Soldadura	74960		88964.105	X70	15.875	12893
W - 7497	Soldadura	74970		88976.609	X70	15.875	12893

Item	Descripción/Ubicación				Características del Caño		
	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
W - 7498	Soldadura	74980		88988.885	X70	15.875	12893
W - 7499	Soldadura	74990		88997.490	X70	15.875	12893
W - 7500	Soldadura	75000		89009.741	X70	15.875	12893
W - 7501	Soldadura	75010		89022.248	X70	15.875	12893
W - 7502	Soldadura	75020		89034.602	X70	15.875	12893
W - 7503	Soldadura	75030		89046.883	X70	15.875	12893
W - 7504	Soldadura	75040		89057.627	X70	15.875	12893
M - 27	Marcador		75040.12.24	89069.865	X70	15.875	12893
W - 7505	Soldadura	75050		89070.050	X70	15.875	12893
F - 33	Accesorio		75050.00.82	89070.868	X70	15.875	12893
W - 7506	Soldadura	75060		89078.275	X70	15.875	12893
W - 7507	Soldadura	75070		89078.633	X70	15.875	12893
W - 7508	Soldadura	75080		89080.299	X70	15.875	12893
F - 34	Accesorio		75080.10.67	89090.970	X70	15.875	12893
W - 7509	Soldadura	75090		89090.998	X70	15.875	12893
F - 35	Accesorio		75090.03.99	89094.991	X70	15.875	12893
F - 36	Accesorio		75090.10.92	89101.922	X70	15.875	12893
F - 37	Accesorio		75090.11.43	89102.433	X70	15.875	12893
F - 38	Accesorio		75090.11.93	89102.933	X70	15.875	12893
W - 7510	Soldadura	75100		89103.457	X70	17.475	14196
W - 7511	Soldadura	75110		89103.899	X70	17.475	14196
F - 39	Accesorio		75110.00.23	89104.127	X70	17.475	14196
W - 7512	Soldadura	75120		89104.457	X70	17.475	14196
W - 7513	Soldadura	75130		89104.940	X70	17.475	14196
F - 40	Accesorio		75130.00.57	89105.511	X70	17.475	14196
W - 7514	Soldadura	75140		89106.146	X70	15.875	14196
W - 7515	Soldadura	75150		89111.313	X70	26.975	21912

Programa de Inspección Interna OCP 2009  
 Hoja de Datos NDT  
 OCP 32"  
 PS4 Páramo a PRS1 Chiquilpe

Oleoducto de Crudos Pesados (OCP) Ecuador S.A.  
 Nro. de Trabajo de NDT: 4007701  
 Fecha de Inspección: 02 de Julio de 2009

Descripción/Ubicación		Características del Caño					
Item	Descripción	Número de Junta Soldadura (Soldadura Aguas Arriba)	Identific. (xxxx.xx.xx)	Odómetro (m)	Grado	Espesor Nominal (mm)	MOP (kPa)
M - 28	Marcador		75150.01.70	89113.009	X70	26.975	21912
W - 7516	Soldadura	75160		89114.716	X70	26.975	21912
					X70		21912

# ANEXO C

NOMBRE DE LA TUBERIA RELACIONADA DE PIPELINE STUDIO	DIAMETRO ( pulg )	LONGITUD DE CADA TUBO ( m )	ESPESOR ( mm )	LONGITUD DE LA TUBERIA ( m )	ELEVACION DE LA TUBERIA ( m )	LONGITUD DEL TRAMO
EQUIPO	32	10.2	19	0.00	2862.75	
EQUIPO	32	3.408	19.05	0.00	2862.74	20.89
EQUIPO	32	1.194	17.48	1.19	2862.74	
EQUIPO	32	1.5	17.5	2.69	2862.73	
L1	32	5.32	19.05	8.01	2862.74	
EQUIPO	32	2.528	22.23	10.54	2862.03	
L1	32	1.82	19.05	12.36	2861.14	
EQUIPO	32	2.528	22.23	14.89	2860.45	
L1	32.00	2.60	19.05	17.49	2860.44	
VALVULA	32.00	3.40	19.05	20.89	2860.43	
L2	32.00	3.25	19.05	24.14	2860.44	42.15
EQUIPO	32.00	0.35	15.88	24.49	2860.43	
L2	32.00	6.00	19.05	30.49	2860.43	
EQUIPO	32.00	7.38	22.23	37.88	2860.39	
EQUIPO	32.00	5.82	22.23	43.70	2860.31	
L2	32.00	11.96	19.05	55.66	2860.34	
EQUIPO	32.00	7.38	22.23	63.05	2857.95	
L3	32.00	5.32	15.88	68.37	2854.11	74.28
EQUIPO	32.00	3.13	15.88	71.49	2853.08	
L3	32.00	9.09	15.88	80.58	2852.23	
L3	32.00	12.39	15.88	92.97	2852.28	
L3	32.00	12.26	15.88	105.23	2852.32	
L3	32.00	12.38	15.88	117.61	2853.19	
L3	32.00	2.49	15.88	120.10	2853.41	
L3	32.00	12.33	15.88	132.43	2856.52	
L3	32.00	4.90	15.88	137.33	2858.24	
L4	32.00	12.24	19.05	149.56	2861.29	63.17
L4	32.00	12.14	19.05	161.70	2863.10	
L4	32.00	11.96	19.05	173.65	2864.76	
L4	32.00	10.80	19.05	184.45	2866.42	
L4	32.00	9.71	19.05	194.16	2867.77	
EQUIPO	32.00	6.33	19.60	200.49	2868.00	
L5	32.00	12.29	15.88	212.78	2867.54	12.29
L6	32.00	12.35	19.05	225.13	2867.35	36.67
L6	32.00	12.36	19.05	237.48	2866.91	
L6	32.00	11.97	19.05	249.45	2866.11	
L7	32.00	6.37	15.88	255.82	2865.69	2958.55
L7	32.00	12.35	15.88	268.17	2864.91	
L7	32.00	12.35	15.88	280.52	2863.29	
L7	32.00	12.34	15.88	292.86	2861.35	
L7	32.00	12.35	15.88	305.21	2861.27	
L7	32.00	12.35	15.88	317.56	2861.87	
L7	32.00	12.31	15.88	329.87	2862.74	
L7	32.00	12.39	15.88	342.26	2862.86	
L7	32.00	12.35	15.88	354.61	2863.13	
L7	32.00	12.37	15.88	366.98	2864.00	
L7	32.00	12.37	15.88	379.35	2864.94	
L7	32.00	12.35	15.88	391.69	2865.68	
L7	32.00	12.35	15.88	404.04	2866.68	
L7	32.00	12.36	15.88	416.40	2867.78	
L7	32.00	12.36	15.88	428.76	2868.64	
L7	32.00	12.36	15.88	441.12	2869.49	
L7	32.00	12.35	15.88	453.47	2870.35	
L7	32.00	12.32	15.88	465.79	2871.00	
L7	32.00	11.80	15.88	477.59	2871.54	
L7	32.00	12.36	15.88	489.95	2872.26	
L7	32.00	12.36	15.88	502.31	2872.85	
L7	32.00	12.35	15.88	514.66	2873.30	
L7	32.00	12.29	15.88	526.95	2873.52	
L7	32.00	12.25	15.88	539.20	2873.60	
L7	32.00	9.41	15.88	548.61	2873.70	
L7	32.00	12.36	15.88	560.97	2873.88	
L7	32.00	12.35	15.88	573.32	2873.33	

L7	32.00	12.23	15.88	585.55	2873.47	
L7	32.00	12.36	15.88	597.91	2873.86	
L7	32.00	12.36	15.88	610.27	2872.95	
L7	32.00	12.05	15.88	622.32	2871.68	
L7	32.00	12.34	15.88	634.66	2871.42	
L7	32.00	12.36	15.88	647.02	2872.05	
L7	32.00	12.36	15.88	659.38	2872.46	
L7	32.00	12.36	15.88	671.74	2872.92	
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L7	32.00	11.97	15.88	730.31	2874.92	
L7	32.00	12.34	15.88	742.65	2875.36	
L7	32.00	12.35	15.88	755.00	2875.88	
L7	32.00	12.35	15.88	767.35	2876.49	
L7	32.00	12.17	15.88	779.52	2876.88	
L7	32.00	12.31	15.88	791.83	2877.34	
L7	32.00	12.37	15.88	804.20	2877.74	
L7	32.00	12.25	15.88	816.45	2878.09	
L7	32.00	11.26	15.88	827.71	2878.42	
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L7	32.00	12.31	15.88	876.26	2880.26	
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L7	32.00	12.24	15.88	937.92	2882.19	
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L7	32.00	12.35	15.88	962.61	2882.12	
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L7	32.00	12.36	15.88	998.95	2882.84	
L7	32.00	12.36	15.88	1011.31	2883.33	
L7	32.00	12.35	15.88	1023.66	2883.88	
L7	32.00	12.05	15.88	1035.71	2884.31	
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L7	32.00	12.16	15.88	1072.10	2886.03	
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L7	32.00	11.70	15.88	1120.87	2888.06	
L7	32.00	12.35	15.88	1133.22	2888.99	
L7	32.00	12.36	15.88	1145.58	2890.15	
L7	32.00	11.63	15.88	1157.21	2891.46	
L7	32.00	12.36	15.88	1169.57	2892.79	
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L7	32.00	11.43	15.88	1218.01	2897.04	
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L7	32.00	11.64	15.88	1241.17	2898.50	
L7	32.00	11.39	15.88	1252.56	2899.83	
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L7	32.00	12.35	15.88	1288.13	2901.72	
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L7	32.00	12.36	15.88	1385.45	2912.19	
L7	32.00	12.28	15.88	1397.73	2913.25	
L7	32.00	12.18	15.88	1409.91	2914.09	

L7	32.00	11.52	15.88	1421.43	2914.99	
L7	32.00	12.36	15.88	1433.79	2916.05	
L7	32.00	12.50	15.88	1446.29	2917.44	
L7	32.00	12.36	15.88	1458.65	2919.26	
L7	32.00	12.36	15.88	1471.01	2921.14	
L7	32.00	12.33	15.88	1483.34	2922.86	
L7	32.00	11.68	15.88	1495.02	2924.30	
L7	32.00	12.35	15.88	1507.37	2925.66	
L7	32.00	12.31	15.88	1519.68	2926.85	
L7	32.00	12.36	15.88	1532.04	2928.53	
L7	32.00	12.35	15.88	1544.39	2930.18	
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L7	32.00	12.37	15.88	1665.64	2941.00	
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L7	32.00	12.37	15.88	1701.93	2940.66	
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L7	32.00	12.39	15.88	1788.18	2935.09	
L7	32.00	12.35	15.88	1800.53	2934.30	
L7	32.00	12.36	15.88	1812.89	2933.25	
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L7	32.00	12.39	15.88	1862.33	2929.42	
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L7	32.00	12.36	15.88	1887.05	2930.62	
L7	32.00	12.34	15.88	1899.39	2931.80	
L7	32.00	12.39	15.88	1911.78	2932.80	
L7	32.00	12.20	15.88	1923.98	2933.93	
L7	32.00	12.36	15.88	1936.34	2935.11	
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L7	32.00	11.96	15.88	2021.35	2942.25	
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L7	32.00	12.21	15.88	2045.91	2944.31	
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L7	32.00	12.37	15.88	2132.18	2949.46	
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L7	32.00	12.36	15.88	2206.00	2956.80	
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L7	32.00	12.36	15.88	2254.92	2961.40	



L7	32.00	12.36	15.88	2267.28	2962.03	
L7	32.00	11.95	15.88	2279.23	2962.61	
L7	32.00	12.31	15.88	2291.54	2963.17	
L7	32.00	12.35	15.88	2303.89	2963.68	
L7	32.00	12.31	15.88	2316.20	2964.30	
L7	32.00	11.99	15.88	2328.19	2964.93	
L7	32.00	12.29	15.88	2340.48	2965.20	
L7	32.00	12.36	15.88	2352.84	2964.84	
L7	32.00	11.02	15.88	2363.86	2964.12	
L7	32.00	2.00	15.88	2365.86	2963.96	
L7	32.00	12.25	15.88	2378.11	2962.78	
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L8	32.00	12.35	14.27	3232.70	3013.05	
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L8	32.00	12.35	14.27	3619.71	3028.74	
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L8	32.00	12.35	14.27	3912.84	3081.90	
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L8	32.00	12.31	14.27	3973.55	3089.16	
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L8	32.00	12.35	14.27	3998.13	3090.38	
L8	32.00	1.83	15.88	3999.96	3090.38	
L8	32.00	12.36	14.27	4012.32	3089.09	
L8	32.00	12.05	14.27	4024.37	3086.47	
L8	32.00	12.35	14.27	4036.72	3083.93	
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VALVULA	32.00	4.44	19.05	4346.31	3109.92	
L13	32.00	1.28	19.05	4347.59	3110.09	746.86
L13	32.00	6.20	14.27	4353.79	3111.15	
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L14	32.00	12.35	11.91	7550.71	3360.16	
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L14	32.00	12.28	11.91	7575.30	3359.62	
L14	32.00	12.33	11.91	7587.63	3359.45	
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L14	32.00	12.35	11.91	7612.34	3357.45	
L14	32.00	12.35	11.91	7624.69	3356.54	
L14	32.00	12.35	11.91	7637.04	3355.60	
L14	32.00	12.33	11.91	7649.37	3354.89	
L14	32.00	12.35	11.91	7661.72	3354.25	
L14	32.00	12.35	11.91	7674.07	3353.60	
L14	32.00	12.35	11.91	7686.42	3353.13	
L14	32.00	12.36	11.91	7698.78	3352.65	
L14	32.00	12.27	11.91	7711.05	3352.33	
L14	32.00	12.30	11.91	7723.35	3351.94	
L14	32.00	12.23	11.91	7735.58	3351.71	
L14	32.00	12.22	11.91	7747.80	3351.83	
L14	32.00	12.35	11.91	7760.15	3351.96	
L14	32.00	2.13	14.27	7762.28	3352.00	
L16	32.00	12.29	15.88	7774.57	3352.26	1049.76
L16	32.00	12.23	15.88	7786.80	3352.53	
L16	32.00	12.36	15.88	7799.16	3352.82	
L16	32.00	12.35	15.88	7811.51	3353.12	
L16	32.00	12.37	15.88	7823.88	3353.36	
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L16	32.00	12.35	15.88	7848.59	3353.55	
L16	32.00	12.35	15.88	7860.93	3353.63	
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L16	32.00	12.36	15.88	7947.25	3354.88	
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L16	32.00	12.35	15.88	7971.81	3357.17	

L16	32.00	12.35	15.88	7984.16	3358.22	
L16	32.00	12.31	15.88	7996.47	3358.83	
L16	32.00	12.35	15.88	8008.82	3359.31	
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L16	32.00	11.83	15.88	8102.94	3365.76	
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L16	32.00	12.37	15.88	8212.95	3367.56	
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L16	32.00	12.25	15.88	8689.04	3380.48	
L16	32.00	12.31	15.88	8701.35	3382.20	
L16	32.00	12.36	15.88	8713.71	3384.05	
L16	32.00	12.31	15.88	8726.02	3385.92	
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L16	32.00	12.35	15.88	8799.67	3401.24	
L16	32.00	12.37	15.88	8812.04	3403.41	
L17	32.00	3.95	14.27	8815.99	3403.98	3.95
L18	32.00	12.38	15.88	8828.37	3405.43	317.32
L18	32.00	10.39	15.88	8838.76	3406.22	
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L18	32.00	12.36	15.88	8863.49	3407.81	
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L18	32.00	11.65	15.88	8948.94	3419.27	
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L18	32.00	12.36	15.88	8997.90	3427.90	
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L18	32.00	12.34	15.88	9059.23	3439.23	
L18	32.00	12.32	15.88	9071.54	3441.20	
L18	32.00	12.35	15.88	9083.89	3443.38	
L18	32.00	12.31	15.88	9096.20	3445.69	
L18	32.00	12.39	15.88	9108.59	3448.24	
L18	32.00	12.36	15.88	9120.95	3450.94	
L18	32.00	12.36	15.88	9133.30	3453.36	
L19	32.00	2.10	14.27	9135.40	3453.73	419.86
L20	32.00	12.26	11.91	9147.66	3455.58	
L20	32.00	12.35	11.91	9160.01	3457.21	
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L20	32.00	12.36	11.91	9184.56	3460.54	
L20	32.00	12.34	11.91	9196.90	3462.53	
L20	32.00	12.35	11.91	9209.25	3464.76	
L20	32.00	12.33	11.91	9221.58	3467.43	
L20	32.00	12.35	11.91	9233.93	3470.62	
L20	32.00	12.35	11.91	9246.28	3473.83	
L20	32.00	12.34	11.91	9258.62	3476.77	
L20	32.00	12.32	11.91	9270.94	3479.69	
L20	32.00	12.35	11.91	9283.29	3482.68	
L20	32.00	12.34	11.91	9295.63	3485.83	
L20	32.00	12.34	11.91	9307.97	3489.08	
L20	32.00	12.36	11.91	9320.33	3492.31	
L20	32.00	12.27	11.91	9332.60	3495.74	
L20	32.00	12.35	11.91	9344.95	3499.58	
L20	32.00	12.12	11.91	9357.07	3503.44	
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L20	32.00	12.35	11.91	9381.72	3510.37	
L20	32.00	12.31	11.91	9394.03	3513.55	
L20	32.00	12.27	11.91	9406.30	3516.70	
L20	32.00	12.35	11.91	9418.65	3520.08	
L20	32.00	12.16	11.91	9430.81	3523.91	
L20	32.00	12.35	11.91	9443.16	3527.98	
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L20	32.00	12.35	11.91	9528.86	3550.87	
L20	32.00	12.06	11.91	9540.92	3555.78	
L20	32.00	12.24	11.91	9553.16	3560.03	
L21	32.00	12.29	8.74	9565.45	3563.57	89.32
L21	32.00	12.00	8.74	9577.45	3566.55	
L21	32.00	12.36	8.74	9589.81	3568.66	
L21	32.00	11.88	8.74	9601.69	3570.46	
L21	32.00	12.36	8.74	9614.05	3571.75	

L21	32.00	11.77	8.74	9625.82	3572.68	
L21	32.00	12.30	8.74	9638.12	3573.59	
L21	32.00	1.25	14.27	9639.37	3573.70	
VALVULA	32.00	3.11	14.27	9642.48	3573.94	
L24	32.00	1.25	14.27	9643.73	3574.05	1149.330
L24	32.00	6.05	8.74	9649.78	3574.50	
L24	32.00	8.16	8.74	9657.94	3575.16	
L24	32.00	12.30	8.74	9670.24	3576.01	
L24	32.00	12.29	8.74	9682.53	3577.56	
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L24	32.00	11.45	8.74	9718.49	3582.58	
L24	32.00	12.37	8.74	9730.86	3584.20	
L24	32.00	12.12	8.74	9742.98	3585.87	
L24	32.00	11.95	8.74	9754.93	3587.45	
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L24	32.00	12.06	8.74	9791.14	3589.19	
L24	32.00	12.37	8.74	9803.51	3589.23	
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L24	32.00	12.37	8.74	9914.31	3593.18	
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L24	32.00	12.33	8.74	10000.23	3610.33	
L24	32.00	12.35	8.74	10012.58	3612.18	
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L24	32.00	12.22	8.74	10073.32	3619.47	
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L24	32.00	12.18	8.74	10097.86	3622.42	
L24	32.00	12.35	8.74	10110.21	3623.71	
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L24	32.00	11.16	8.74	10445.04	3669.50	
L24	32.00	11.01	8.74	10456.05	3671.90	
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L24	32.00	11.96	8.74	10479.14	3679.18	
L24	32.00	2.95	11.91	10482.09	3679.97	
L24	32.00	12.08	8.74	10494.17	3683.40	
L24	32.00	12.39	8.74	10506.56	3687.20	
L24	32.00	12.35	8.74	10518.91	3690.61	
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L24	32.00	12.35	8.74	10592.79	3705.91	
L24	32.00	1.92	8.74	10594.71	3706.18	
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L24	32.00	9.85	8.74	10723.89	3718.88	
L24	32.00	12.16	8.74	10736.05	3719.68	
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L24	32.00	1.82	11.91	10750.08	3720.59	
L24	32.00	7.90	8.74	10757.98	3721.20	
L24	32.00	12.14	8.74	10770.12	3722.03	
L24	32.00	11.37	8.74	10781.49	3722.75	
L24	32.00	10.32	8.74	10791.81	3723.31	
L29	32.00	11.40	11.91	10803.21	3723.46	23.76
L29	32.00	12.36	11.91	10815.57	3722.58	
L30	32.00	11.36	9.53	10826.93	3720.41	47.38
L30	32.00	11.32	9.53	10838.25	3718.33	
L30	32.00	12.45	9.53	10850.70	3718.44	
L30	32.00	12.25	9.53	10862.95	3720.18	
L31	32.00	12.35	8.74	10875.30	3722.83	1086.49
L31	32.00	12.20	8.74	10887.50	3725.43	
L31	32.00	12.31	8.74	10899.81	3727.99	
L31	32.00	12.16	8.74	10911.97	3729.07	
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L31	32.00	12.36	8.74	10964.81	3735.69	
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L31	32.00	12.35	8.74	11062.34	3762.98	
L31	32.00	12.36	8.74	11074.70	3765.62	
L31	32.00	12.36	8.74	11087.06	3767.14	
L31	32.00	12.37	8.74	11099.43	3768.47	
L31	32.00	12.26	8.74	11111.69	3770.49	
L31	32.00	12.22	8.74	11123.91	3773.76	
L31	32.00	12.25	8.74	11136.16	3777.49	
L31	32.00	12.31	8.74	11148.47	3779.55	
L31	32.00	12.30	8.74	11160.77	3780.47	
L31	32.00	12.37	8.74	11173.14	3781.88	
L31	32.00	12.20	8.74	11185.34	3782.30	
L31	32.00	11.44	8.74	11196.78	3783.22	

L31	32.00	11.70	8.74	11208.48	3784.14	
L31	32.00	11.29	8.74	11219.77	3785.01	
L31	32.00	11.50	8.74	11231.27	3785.74	
L31	32.00	12.21	8.74	11243.48	3786.39	
L31	32.00	11.04	8.74	11254.52	3786.39	
L31	32.00	1.03	11.91	11255.55	3787.04	
L31	32.00	12.25	8.74	11267.80	3787.68	
L31	32.00	12.34	8.74	11280.14	3788.32	
L31	32.00	12.39	8.74	11292.53	3788.95	
L31	32.00	12.07	8.74	11304.59	3789.33	
L31	32.00	12.20	8.74	11316.79	3789.59	
L31	32.00	12.23	8.74	11329.02	3789.72	
L31	32.00	11.58	8.74	11340.60	3789.95	
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L31	32.00	12.37	8.74	11365.05	3790.93	
L31	32.00	12.16	8.74	11377.21	3791.37	
L31	32.00	12.16	8.74	11389.37	3791.07	
L31	32.00	12.16	8.74	11401.53	3791.35	
L31	32.00	12.01	8.74	11413.54	3791.60	
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L31	32.00	12.29	8.74	11462.50	3793.69	
L31	32.00	11.91	8.74	11474.41	3796.05	
L31	32.00	12.38	8.74	11486.79	3798.49	
L31	32.00	12.13	8.74	11498.91	3800.09	
L31	32.00	12.34	8.74	11511.25	3801.11	
L31	32.00	12.33	8.74	11523.58	3801.80	
L31	32.00	12.33	8.74	11535.91	3802.31	
L31	32.00	12.30	8.74	11548.21	3802.53	
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L31	32.00	11.94	8.74	11584.81	3805.07	
L31	32.00	12.37	8.74	11597.18	3806.09	
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L31	32.00	12.27	8.74	11645.80	3807.73	
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L31	32.00	12.38	8.74	11705.87	3809.35	
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L31	32.00	11.97	8.74	11791.67	3818.21	
L31	32.00	12.14	8.74	11803.81	3821.94	
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L31	32.00	11.09	8.74	11827.28	3830.64	
L31	32.00	12.32	8.74	11839.60	3834.80	
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L31	32.00	12.20	8.74	11863.48	3841.28	
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L34	32.00	12.35	14.27	11961.79	3855.39	12.3500
L35	32.00	12.20	9.53	11973.98	3856.89	22.4550
L35	32.00	10.26	9.53	11984.24	3857.85	
L36	32.00	11.33	8.74	11995.57	3858.39	1398.34
L36	32.00	11.62	8.74	12007.19	3859.00	
L36	32.00	12.28	8.74	12019.47	3859.79	

L36	32.00	12.37	8.74	12031.84	3860.50	
L36	32.00	12.31	8.74	12044.15	3861.84	
L36	32.00	12.38	8.74	12056.53	3863.85	
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L36	32.00	11.48	8.74	12091.95	3867.48	
L36	32.00	12.06	8.74	12104.01	3868.37	
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L36	32.00	12.38	8.74	12201.12	3878.24	
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L36	32.00	11.51	8.74	12236.72	3882.97	
L36	32.00	12.38	8.74	12249.09	3884.46	
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L36	32.00	12.38	8.74	12270.41	3888.00	
L36	32.00	11.72	8.74	12282.13	3890.62	
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L36	32.00	12.34	8.74	12306.39	3895.51	
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L36	32.00	12.18	8.74	12539.58	3909.96	
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L36	32.00	12.23	8.74	12699.32	3928.02	
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L36	32.00	12.28	8.74	12723.79	3935.25	
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L36	32.00	12.29	8.74	12797.20	3951.80	
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L18	24	12.39	15.88	29758.00	1399.57	
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L19	24	12.375	17.48	33689.77	1246.13	
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L19	24	12.36	17.48	33714.50	1242.80	
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L19	24	12.38	17.48	33764.00	1240.95	
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L20	24	12.375	19.05	37531.75	1142.15	
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L20	24	12.385	19.05	37556.50	1140.89	

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L20	24	12.05	19.05	37617.15	1141.20	
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L20	24	12.305	19.05	38909.23	1020.55	
EQUIPO	24	2.37	20.62	38911.60	1020.18	
L20	24	12.315	19.05	38923.91	1021.49	
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EQUIPO	24	4.34	20.62	39171.05	973.43	
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L23	24	1.27	20.62	45259.31	946.13	
L23	24	12.29	20.62	45271.60	945.50	
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L23	24	11.965	20.62	45308.31	941.02	
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L23	24	12.375	20.62	45332.98	936.37	
L23	24	12.385	20.62	45345.37	934.99	
L23	24	12.37	20.62	45357.74	934.20	
L23	24	12.25	20.62	45369.99	933.94	
L23	24	12.325	20.62	45382.31	933.99	
L23	24	11.985	20.62	45394.30	934.21	
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L23	24	12.365	20.62	45419.04	935.08	
L23	24	12.235	20.62	45431.27	937.01	
L23	24	12.36	20.62	45443.63	938.91	
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L23	24	11.97	20.62	45492.19	937.66	
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L23	24	12.38	20.62	45600.02	927.88	
L23	24	12.36	20.62	45612.38	930.09	
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L23	24	11.58	20.62	45648.64	932.56	
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L23	24	12.355	20.62	49269.25	870.60	
L23	24	12.37	20.62	49281.62	870.22	
L23	24	12.085	20.62	49293.71	867.38	
L23	24	12.355	20.62	49306.06	864.33	
L23	24	12.365	20.62	49318.43	863.28	
L23	24	12.385	20.62	49330.81	864.00	
L23	24	12.365	20.62	49343.18	864.19	
L23	24	12.355	20.62	49355.53	863.24	
L23	24	12.34	20.62	49367.87	862.64	
L23	24	12.205	20.62	49380.08	863.90	
L23	24	12.26	20.62	49392.34	867.22	
L23	24	12.385	20.62	49404.72	871.35	
L23	24	12.36	20.62	49417.08	873.48	
L23	24	11.71	20.62	49428.79	873.31	
L23	24	12.37	20.62	49441.16	872.26	
L23	24	12.12	20.62	49453.28	871.46	
L23	24	12.37	20.62	49465.65	871.66	
L23	24	12.37	20.62	49478.02	872.40	
L23	24	12.085	20.62	49490.11	872.16	
L23	24	12.065	20.62	49502.17	870.68	
L23	24	12.34	20.62	49514.51	868.89	
L23	24	12.15	20.62	49526.66	867.69	
L23	24	12.365	20.62	49539.03	867.04	
L23	24	12.25	20.62	49551.28	866.92	
L23	24	12.365	20.62	49563.64	867.14	
L23	24	12.245	20.62	49575.89	867.10	
L23	24	12.37	20.62	49588.26	866.41	

L23	24	12.355	20.62	49600.61	863.96	
L23	24	12.195	20.62	49612.81	860.34	
L23	24	12.37	20.62	49625.18	856.21	
L23	24	12.355	20.62	49637.53	854.80	
L23	24	12.365	20.62	49649.90	856.70	
L23	24	7.45	20.62	49657.35	858.36	
L23	24	12.17	20.62	49669.52	861.35	
L23	24	12.295	20.62	49681.81	861.74	
L23	24	12.355	20.62	49694.17	859.48	
L23	24	12.39	20.62	49706.56	857.70	
L23	24	9	20.62	49715.56	857.22	
L23	24	12.385	20.62	49727.94	856.93	
L23	24	12.335	20.62	49740.28	856.83	
L23	24	11.138	20.62	49751.42	856.64	
L23	24	12.315	20.62	49763.73	857.00	
L23	24	12.36	20.62	49776.09	857.13	
L23	24	12.21	20.62	49788.30	857.39	
L23	24	12.29	20.62	49800.59	858.43	
L23	24	12.365	20.62	49812.96	860.73	
L23	24	12.22	20.62	49825.18	863.21	
L23	24	12.37	20.62	49837.55	864.80	
L23	24	12.26	20.62	49849.81	864.14	
L23	24	12.36	20.62	49862.17	861.14	
L23	24	12.36	20.62	49874.53	858.02	
L23	24	12.365	20.62	49886.89	858.20	
L23	24	11.7	20.62	49898.59	859.63	
L23	24	11.875	20.62	49910.47	861.80	
L23	24	12.37	20.62	49922.84	862.43	
L23	24	12.35	20.62	49935.19	863.52	
L23	24	12.365	20.62	49947.55	864.21	
L23	24	12.355	20.62	49959.91	863.46	
L23	24	11.87	20.62	49971.78	861.29	
L23	24	11.89	20.62	49983.67	858.27	
L23	24	12.19	20.62	49995.86	856.03	
L23	24	12.375	20.62	50008.23	854.87	
L23	24	11.785	20.62	50020.02	854.05	
L23	24	12.365	20.62	50032.38	853.26	
L23	24	12.275	20.62	50044.66	852.96	
L23	24	12.385	20.62	50057.04	853.10	
L23	24	12.355	20.62	50069.40	852.94	
L23	24	12.385	20.62	50081.78	852.51	
L23	24	12.365	20.62	50094.15	852.03	
L23	24	10.07	20.62	50104.22	851.32	
L23	24	12.36	20.62	50116.58	850.23	
L23	24	12.365	20.62	50128.94	849.65	
L23	24	12.36	20.62	50141.30	849.28	
L23	24	12.365	20.62	50153.67	849.03	
L23	24	12.215	20.62	50165.88	848.38	
L23	24	12.34	20.62	50178.22	848.53	
L23	24	12.07	20.62	50190.29	848.67	
L23	24	12.37	20.62	50202.66	848.33	
L23	24	12.305	20.62	50214.97	847.04	
L23	24	12.195	20.62	50227.16	845.45	
L23	24	12.355	20.62	50239.52	844.84	
L23	24	12.27	20.62	50251.79	844.76	
L23	24	10.98	20.62	50262.77	844.41	
L23	24	12.365	20.62	50275.13	842.93	
L23	24	11.97	20.62	50287.10	840.52	
L23	24	11.9	20.62	50299.00	838.07	
L23	24	11.43	20.62	50310.43	835.79	
L23	24	12.225	20.62	50322.66	833.18	
L23	24	11.93	20.62	50334.59	830.78	
L23	24	11.46	20.62	50346.05	829.60	

L23	24	11.65	20.62	50357.70	828.86	
L23	24	12.37	20.62	50370.07	828.46	
L23	24	12.285	20.62	50382.35	828.39	
L23	24	12.36	20.62	50394.71	828.51	
L23	24	12.36	20.62	50407.07	829.17	
L23	24	12.375	20.62	50419.45	830.09	
L23	24	12.385	20.62	50431.83	830.61	
L23	24	12.355	20.62	50444.19	830.63	
L23	24	12.36	20.62	50456.55	831.12	
L23	24	12.39	20.62	50468.94	832.88	
L23	24	12.28	20.62	50481.22	834.90	
L23	24	12.15	20.62	50493.37	835.15	
L23	24	12.315	20.62	50505.68	833.98	
L23	24	12.37	20.62	50518.05	832.14	
L23	24	0.99	20.62	50519.04	831.98	
L23	24	12.05	20.62	50531.09	830.41	
L23	24	11.3	20.62	50542.39	829.32	
L23	24	12.355	20.62	50554.75	828.66	
L23	24	11.53	20.62	50566.28	828.93	
L23	24	12.355	20.62	50578.63	829.76	
L23	24	12.2	20.62	50590.83	831.17	
L23	24	11.83	20.62	50602.66	831.38	
L23	24	12.37	20.62	50615.03	829.68	
L23	24	12.23	20.62	50627.26	827.60	
L23	24	12.17	20.62	50639.43	826.31	
L23	24	12.335	20.62	50651.77	825.60	
L23	24	12.035	20.62	50663.80	825.23	
L23	24	10.64	20.62	50674.44	824.96	
L23	24	12.335	20.62	50686.78	824.81	
L23	24	12.155	20.62	50698.93	825.16	
L23	24	12.34	20.62	50711.27	826.64	
L23	24	12.345	20.62	50723.62	828.57	
L23	24	11.945	20.62	50735.56	829.99	
L23	24	12.145	20.62	50747.71	831.03	
L23	24	12.26	20.62	50759.97	831.70	
L23	24	12.23	20.62	50772.20	831.97	
L23	24	12.365	20.62	50784.56	831.51	
L23	24	12.355	20.62	50796.92	829.12	
L23	24	12.45	20.62	50809.37	826.10	
L23	24	12.27	20.62	50821.64	823.26	
L23	24	12.36	20.62	50834.00	821.52	
L23	24	11.43	20.62	50845.43	820.74	
L23	24	12.35	20.62	50857.78	820.03	
L23	24	12.37	20.62	50870.15	819.57	
L23	24	12.365	20.62	50882.51	819.63	
L23	24	12.325	20.62	50894.84	820.17	
L23	24	12.375	20.62	50907.21	820.65	
L23	24	12.375	20.62	50919.59	821.02	
L23	24	12.35	20.62	50931.94	821.62	
L23	24	12.35	20.62	50944.29	821.49	
L23	24	11.765	20.62	50956.05	819.11	
L23	24	12.365	20.62	50968.42	817.76	
L23	24	11.29	20.62	50979.71	818.32	
L23	24	12.22	20.62	50991.93	818.75	
L23	24	12.23	20.62	51004.16	818.38	
L23	24	12.36	20.62	51016.52	817.68	
L23	24	12.385	20.62	51028.90	817.39	
L23	24	12.385	20.62	51041.29	817.52	
L23	24	12.36	20.62	51053.65	817.41	
L23	24	12.175	20.62	51065.82	816.45	
L23	24	12.225	20.62	51078.05	815.33	
L23	24	12.17	20.62	51090.22	814.91	
L23	24	12.235	20.62	51102.45	814.51	

L23	24	12.365	20.62	51114.82	814.05	
L23	24	12.37	20.62	51127.19	813.51	
L23	24	12.34	20.62	51139.53	812.62	
L23	24	12.305	20.62	51151.83	810.99	
L23	24	12.265	20.62	51164.10	808.21	
L23	24	12.095	20.62	51176.19	806.58	
L23	24	12.35	20.62	51188.54	808.23	
L23	24	11.865	20.62	51200.41	810.71	
L23	24	12.36	20.62	51212.77	812.86	
L23	24	12.37	20.62	51225.14	814.00	
L23	24	12.35	20.62	51237.49	813.68	
L23	24	1.96	20.62	51239.45	813.54	
L23	24	12.155	20.62	51251.60	812.61	
L23	24	11.96	20.62	51263.56	811.39	
L23	24	12.26	20.62	51275.82	809.11	
L23	24	11.775	20.62	51287.60	808.09	
L23	24	12.05	20.62	51299.65	808.94	
L23	24	12.255	20.62	51311.90	809.47	
L23	24	4.03	20.62	51315.93	809.52	
L23	24	12.29	20.62	51328.22	809.43	
L23	24	12.355	20.62	51340.58	808.70	
L23	24	12.365	20.62	51352.94	806.88	
L23	24	11.96	20.62	51364.90	804.74	
L23	24	12.31	20.62	51377.21	803.15	
L23	24	12.365	20.62	51389.58	802.16	
L23	24	12.36	20.62	51401.94	800.65	
L23	24	12.37	20.62	51414.31	799.95	
L23	24	12.75	20.62	51427.06	802.28	
L23	24	12.315	20.62	51439.37	805.71	
L23	24	12.355	20.62	51451.73	808.72	
L23	24	12.365	20.62	51464.09	811.57	
L23	24	12.28	20.62	51476.37	814.45	
L23	24	12.355	20.62	51488.73	817.01	
L23	24	11.2	20.62	51499.93	818.21	
L23	24	11.86	20.62	51511.79	817.11	
L23	24	12.075	20.62	51523.86	815.23	
L23	24	12.365	20.62	51536.23	814.83	
L23	24	12.365	20.62	51548.59	814.93	
L23	24	12.36	20.62	51560.95	813.56	
L23	24	12.305	20.62	51573.26	813.99	
L23	24	10.82	20.62	51584.08	814.76	
L23	24	12.35	20.62	51596.43	813.48	
L23	24	12.32	20.62	51608.75	810.55	
L23	24	12.28	20.62	51621.03	807.19	
L23	24	12.345	20.62	51633.37	804.12	
L23	24	11.63	20.62	51645.00	801.72	
L23	24	12.32	20.62	51657.32	799.66	
L23	24	12.345	20.62	51669.67	797.75	
L23	24	12.365	20.62	51682.03	795.95	
L23	24	12.275	20.62	51694.31	793.03	
L23	24	12.36	20.62	51706.67	788.69	
L23	24	12.36	20.62	51719.03	785.40	
L23	24	12.165	20.62	51731.19	785.14	
L23	24	11.675	20.62	51742.87	787.04	
L23	24	11.815	20.62	51754.68	790.39	
L23	24	11.97	20.62	51766.65	792.90	
L23	24	12.385	20.62	51779.04	795.02	
L23	24	12.23	20.62	51791.27	796.27	
L23	24	11.955	20.62	51803.22	796.46	
L23	24	12.375	20.62	51815.60	795.86	
L23	24	12.295	20.62	51827.89	793.64	
L23	24	12.375	20.62	51840.27	791.14	
L23	24	12.36	20.62	51852.63	789.02	

L23	24	12.365	20.62	51864.99	787.23	
L23	24	12.355	20.62	51877.35	785.45	
L23	24	12.355	20.62	51889.70	783.38	
L23	24	12.365	20.62	51902.07	781.01	
L23	24	12.365	20.62	51914.43	779.42	
L23	24	12.295	20.62	51926.73	776.22	
L23	24	12.36	20.62	51939.09	773.84	
L23	24	12.075	20.62	51951.16	771.55	
L23	24	12.37	20.62	51963.53	769.29	
L23	24	12.3	20.62	51975.83	767.20	
L23	24	12.35	20.62	51988.18	765.14	
L23	24	11.58	20.62	51999.76	762.08	
L23	24	12.36	20.62	52012.12	756.28	
L23	24	12.355	20.62	52024.48	749.80	
EQUIPO	24	1.74	20.62	52026.22	749.35	
L23	24	12.345	20.62	52038.56	749.76	
L23	24	12.38	20.62	52050.94	749.79	
L23	24	12.345	20.62	52063.29	752.02	
L23	24	12.365	20.62	52075.65	757.74	
L23	24	12.37	20.62	52088.02	764.93	
L23	24	12.275	20.62	52100.30	771.48	
L23	24	12.365	20.62	52112.66	777.81	
L23	24	12.35	20.62	52125.01	783.70	
L23	24	12.36	20.62	52137.37	788.87	
L23	24	12.365	20.62	52149.74	792.83	
L23	24	12.355	20.62	52162.09	795.02	
L23	24	10.845	20.62	52172.94	795.38	
L23	24	12.37	20.62	52185.31	795.79	
EQUIPO	24	5.681	22.23	52190.99	796.28	
L23	24	12.17	20.62	52203.16	797.70	
EQUIPO	24	5.788	22.23	52208.95	798.21	
L23	24	1.75	20.62	52210.70	798.28	
EQUIPO	24	5.788	22.23	52216.49	798.40	
L23	24	12.38	20.62	52228.87	798.45	
L23	24	1	20.62	52229.87	798.45	
EQUIPO	24	0.312	20.62	52230.18	798.46	
EQUIPO	24	3.66	22.23	52233.84	799.84	
EQUIPO	24	3.66	22.23	52237.50	801.43	
L23	24	1.60	20.62	52239.10	801.43	
EQUIPO	24	1.5	22.2	52240.60	801.43	
EQUIPO	24	0.864	25.4	52241.46	801.43	
L23	24	4.97	20.62	52246.43	801.43	
VALVULA	24	3.163	31.75	52249.59	801.43	
	24	7.875	25	52257.47		
		52291.94		31.86		
				2.617		
				52291.94		

# ANEXO D

Longitud	Elevación	Presion	Temperatura	MAOP
m	m	psig	Deg F	psig
0	2862.74	1674	82.53	3134.33
4.005	2862.74	1673.99	82.5295	3134.33
8.01	2862.74	1673.98	82.529	3134.33
12.36	2861.14	1676.11	82.5285	3134.33
14.925	2861.14	1676.11	82.5282	3134.33
17.49	2860.44	1677.03	82.5279	3134.33
20.89	2860.43	1677.04	82.5275	3134.33
20.89	2860.43	1677.04	82.5275	3134.33
24.14	2860.44	1677.02	82.5271	3134.33
27.315	2860.43	1677.03	82.5268	3134.33
30.49	2860.43	1677.02	82.5264	3134.33
34.185	2860.41	1677.04	82.526	3134.33
37.88	2860.39	1677.06	82.5256	3134.33
40.79	2860.39	1677.05	82.5252	3134.33
43.7	2860.31	1677.15	82.5249	3134.33
47.6867	2860.32	1677.13	82.5244	3134.33
51.6733	2860.33	1677.11	82.524	3134.33
55.66	2860.34	1677.09	82.5235	3134.33
59.35	2859.15	1678.67	82.5231	3134.33
63.04	2857.95	1680.26	82.5226	3134.33
63.04	2857.95	1680.26	82.5226	2632.38
65.705	2857.95	1680.26	82.5224	2632.38
68.37	2854.11	1685.38	82.5221	2632.38
71.49	2853.08	1686.75	82.5217	2632.38
76.035	2852.66	1687.3	82.5212	2632.38
80.58	2852.23	1687.86	82.5207	2632.38
84.71	2852.25	1687.83	82.5202	2632.38
88.84	2852.26	1687.8	82.5198	2632.38
92.97	2852.28	1687.77	82.5194	2632.38
97.0567	2852.29	1687.74	82.5189	2632.38
101.143	2852.31	1687.72	82.5185	2632.38
105.23	2852.32	1687.69	82.5181	2632.38
109.357	2852.61	1687.3	82.5176	2632.38
113.483	2852.9	1686.9	82.5171	2632.38
117.61	2853.19	1686.51	82.5166	2632.38
122.55	2853.41	1686.2	82.5161	2632.38
127.49	2855.27	1683.7	82.5156	2632.38
132.43	2856.52	1682.03	82.5151	2632.38
137.32	2858.24	1679.72	82.5145	2632.38
137.32	2858.24	1679.72	82.5145	3134.33
141.4	2859.26	1678.36	82.514	3134.33
145.48	2860.27	1676.99	82.5136	3134.33
149.56	2861.29	1675.63	82.5131	3134.33
153.607	2861.89	1674.81	82.5127	3134.33
157.653	2862.5	1674	82.5123	3134.33
161.7	2863.1	1673.19	82.5118	3134.33
165.683	2863.65	1672.44	82.5113	3134.33
169.667	2864.21	1671.69	82.5109	3134.33
173.65	2864.76	1670.94	82.5104	3134.33
177.25	2865.31	1670.2	82.5101	3134.33
180.85	2865.87	1669.45	82.5096	3134.33
184.45	2866.42	1668.71	82.5093	3134.33
189.305	2867.09	1667.8	82.5087	3134.33
194.16	2867.77	1666.89	82.5082	3134.33



197.325	2867.89	1666.73	82.5078	3134.33
200.49	2868	1666.57	82.5074	3134.33
200.49	2868	1666.57	82.5075	2632.38
204.587	2867.85	1666.76	82.5069	2632.38
208.683	2867.69	1666.96	82.5065	2632.38
212.78	2867.54	1667.15	82.5059	2632.38
212.78	2867.54	1667.15	82.5059	3134.33
216.897	2867.48	1667.23	82.5055	3134.33
221.013	2867.41	1667.31	82.505	3134.33
225.13	2867.35	1667.38	82.5045	3134.33
229.247	2867.2	1667.57	82.504	3134.33
233.363	2867.06	1667.76	82.5035	3134.33
237.48	2866.91	1667.94	82.503	3134.33
241.47	2866.64	1668.29	82.5025	3134.33
245.46	2866.38	1668.64	82.5021	3134.33
249.45	2866.11	1668.99	82.5016	3134.33
249.45	2866.11	1668.99	82.5016	2632.38
255.82	2865.69	1669.54	82.5013	2632.38
268.17	2864.91	1670.55	82.5005	2632.38
280.52	2863.29	1672.69	82.4997	2632.38
292.86	2861.35	1675.25	82.499	2632.38
305.21	2861.27	1675.33	82.4983	2632.38
317.56	2861.87	1674.51	82.4975	2632.38
329.87	2862.74	1673.32	82.4968	2632.38
342.26	2862.86	1673.14	82.496	2632.38
354.61	2863.13	1672.75	82.4953	2632.38
366.98	2864	1671.56	82.4946	2632.38
379.35	2864.94	1670.28	82.4938	2632.38
391.69	2865.68	1669.27	82.4931	2632.38
404.04	2866.68	1667.91	82.4923	2632.38
416.4	2867.78	1666.42	82.4916	2632.38
428.76	2868.64	1665.24	82.4908	2632.38
441.12	2869.49	1664.08	82.4901	2632.38
453.47	2870.35	1662.91	82.4893	2632.38
465.79	2871	1662.02	82.4886	2632.38
477.59	2871.54	1661.27	82.4879	2632.38
489.95	2872.26	1660.29	82.4871	2632.38
502.31	2872.85	1659.47	82.4864	2632.38
514.66	2873.3	1658.85	82.4856	2632.38
526.95	2873.52	1658.53	82.4849	2632.38
539.2	2873.6	1658.4	82.4842	2632.38
548.61	2873.7	1658.24	82.4836	2632.38
560.97	2873.88	1657.98	82.4828	2632.38
573.32	2873.33	1658.69	82.4821	2632.38
585.55	2873.47	1658.47	82.4814	2632.38
597.91	2873.86	1657.93	82.4806	2632.38
610.27	2872.95	1659.12	82.4798	2632.38
622.32	2871.68	1660.79	82.4792	2632.38
634.66	2871.42	1661.11	82.4784	2632.38
647.02	2872.05	1660.24	82.4776	2632.38
659.38	2872.46	1659.67	82.4769	2632.38
671.74	2872.92	1659.03	82.4762	2632.38
681.27	2873.3	1658.5	82.4756	2632.38
693.63	2873.63	1658.04	82.4748	2632.38
705.98	2873.94	1657.6	82.4741	2632.38
718.34	2874.41	1656.95	82.4734	2632.38

730.31	2874.92	1656.24	82.4726	2632.38
742.65	2875.36	1655.63	82.4719	2632.38
755	2875.88	1654.91	82.4712	2632.38
767.35	2876.49	1654.07	82.4704	2632.38
779.52	2876.88	1653.52	82.4697	2632.38
791.83	2877.34	1652.89	82.4689	2632.38
804.2	2877.74	1652.33	82.4682	2632.38
816.45	2878.09	1651.83	82.4675	2632.38
827.71	2878.42	1651.37	82.4668	2632.38
840.05	2878.78	1650.86	82.466	2632.38
852.41	2879.24	1650.23	82.4653	2632.38
863.95	2879.71	1649.57	82.4646	2632.38
876.26	2880.26	1648.81	82.4639	2632.38
888.62	2880.74	1648.15	82.4631	2632.38
900.96	2881.22	1647.48	82.4623	2632.38
913.32	2881.65	1646.88	82.4616	2632.38
925.68	2882	1646.39	82.4609	2632.38
937.92	2882.19	1646.11	82.4601	2632.38
950.26	2882.15	1646.14	82.4594	2632.38
962.61	2882.12	1646.15	82.4587	2632.38
974.23	2882.29	1645.9	82.4579	2632.38
986.59	2882.54	1645.54	82.4572	2632.38
998.95	2882.84	1645.12	82.4565	2632.38
1011.31	2883.33	1644.44	82.4557	2632.38
1023.66	2883.88	1643.68	82.4549	2632.38
1035.71	2884.31	1643.08	82.4543	2632.38
1047.59	2884.73	1642.5	82.4535	2632.38
1059.94	2885.35	1641.64	82.4528	2632.38
1072.1	2886.03	1640.71	82.4521	2632.38
1084.46	2886.7	1639.79	82.4513	2632.38
1096.81	2886.89	1639.51	82.4505	2632.38
1109.17	2887.23	1639.03	82.4498	2632.38
1120.87	2888.06	1637.9	82.4491	2632.38
1133.22	2888.99	1636.63	82.4483	2632.38
1145.58	2890.15	1635.06	82.4476	2632.38
1157.21	2891.46	1633.29	82.4469	2632.38
1169.57	2892.79	1631.49	82.4462	2632.38
1181.93	2893.92	1629.95	82.4454	2632.38
1194.29	2895.03	1628.45	82.4447	2632.38
1206.58	2896.14	1626.94	82.444	2632.38
1218.01	2897.04	1625.72	82.4433	2632.38
1229.53	2897.64	1624.89	82.4426	2632.38
1241.17	2898.5	1623.72	82.4419	2632.38
1252.56	2899.83	1621.92	82.4412	2632.38
1264.14	2900.51	1620.99	82.4405	2632.38
1275.78	2901.17	1620.09	82.4398	2632.38
1288.13	2901.72	1619.33	82.4391	2632.38
1300.32	2902.62	1618.1	82.4383	2632.38
1312.68	2904.07	1616.14	82.4375	2632.38
1324.55	2905.48	1614.23	82.4369	2632.38
1336.91	2906.79	1612.46	82.4361	2632.38
1349.25	2908.35	1610.35	82.4353	2632.38
1361.5	2909.79	1608.4	82.4346	2632.38
1373.09	2910.95	1606.83	82.4339	2632.38
1385.45	2912.19	1605.15	82.4332	2632.38
1397.73	2913.25	1603.71	82.4325	2632.38

1409.91	2914.09	1602.57	82.4317	2632.38
1421.43	2914.99	1601.34	82.431	2632.38
1433.79	2916.05	1599.9	82.4303	2632.38
1446.29	2917.44	1598.02	82.4296	2632.38
1458.65	2919.26	1595.57	82.4288	2632.38
1471.01	2921.14	1593.03	82.4281	2632.38
1483.34	2922.86	1590.71	82.4273	2632.38
1495.02	2924.3	1588.77	82.4266	2632.38
1507.37	2925.66	1586.93	82.4259	2632.38
1519.68	2926.85	1585.31	82.4252	2632.38
1532.04	2928.53	1583.05	82.4244	2632.38
1544.39	2930.18	1580.82	82.4236	2632.38
1556.75	2931.39	1579.18	82.4229	2632.38
1569.11	2932.57	1577.58	82.4222	2632.38
1580.52	2933.09	1576.86	82.4215	2632.38
1592.67	2933.91	1575.74	82.4208	2632.38
1604.17	2935.44	1573.68	82.4201	2632.38
1616.52	2937.17	1571.34	82.4193	2632.38
1628.88	2938.51	1569.53	82.4186	2632.38
1641.22	2939.47	1568.22	82.4178	2632.38
1653.27	2940.28	1567.12	82.4171	2632.38
1665.64	2941	1566.13	82.4164	2632.38
1677.82	2941.31	1565.69	82.4156	2632.38
1689.56	2940.88	1566.24	82.415	2632.38
1701.93	2940.66	1566.51	82.4142	2632.38
1714.29	2940.61	1566.55	82.4134	2632.38
1726.65	2939.39	1568.15	82.4127	2632.38
1738.72	2938.24	1569.66	82.412	2632.38
1751.07	2937.48	1570.65	82.4112	2632.38
1763.44	2936.38	1572.09	82.4105	2632.38
1775.79	2935.58	1573.14	82.4098	2632.38
1788.18	2935.09	1573.77	82.409	2632.38
1800.53	2934.3	1574.79	82.4082	2632.38
1812.89	2933.25	1576.17	82.4075	2632.38
1825.25	2932.04	1577.76	82.4068	2632.38
1837.6	2930.99	1579.13	82.4061	2632.38
1849.95	2930	1580.43	82.4053	2632.38
1862.33	2929.42	1581.18	82.4046	2632.38
1874.69	2929.72	1580.75	82.4039	2632.38
1887.05	2930.62	1579.53	82.4031	2632.38
1899.39	2931.8	1577.93	82.4023	2632.38
1911.78	2932.8	1576.57	82.4016	2632.38
1923.98	2933.93	1575.03	82.4009	2632.38
1936.34	2935.11	1573.43	82.4001	2632.38
1948.66	2936.27	1571.86	82.3994	2632.38
1961	2937.36	1570.38	82.3987	2632.38
1973.32	2938.42	1568.94	82.3979	2632.38
1985.67	2939.37	1567.65	82.3972	2632.38
1997.03	2940.31	1566.37	82.3965	2632.38
2009.39	2941.32	1565	82.3957	2632.38
2021.35	2942.25	1563.73	82.395	2632.38
2033.7	2943.25	1562.37	82.3943	2632.38
2045.91	2944.31	1560.93	82.3935	2632.38
2058.27	2945.45	1559.39	82.3928	2632.38
2070.63	2946.27	1558.27	82.3921	2632.38
2082.99	2946.51	1557.92	82.3913	2632.38

2095.35	2946.94	1557.32	82.3906	2632.38
2107.54	2947.8	1556.15	82.3899	2632.38
2119.81	2948.56	1555.11	82.3891	2632.38
2132.18	2949.46	1553.88	82.3884	2632.38
2144.53	2950.48	1552.5	82.3877	2632.38
2156.72	2951.58	1551	82.3869	2632.38
2168.93	2952.6	1549.62	82.3862	2632.38
2181.29	2953.75	1548.06	82.3854	2632.38
2193.64	2955.22	1546.07	82.3847	2632.38
2206	2956.8	1543.94	82.384	2632.38
2218.36	2958.38	1541.8	82.3832	2632.38
2230.46	2959.72	1539.99	82.3825	2632.38
2242.56	2960.67	1538.7	82.3818	2632.38
2254.92	2961.4	1537.7	82.381	2632.38
2267.28	2962.03	1536.83	82.3803	2632.38
2279.23	2962.61	1536.03	82.3796	2632.38
2291.54	2963.17	1535.26	82.3788	2632.38
2303.89	2963.68	1534.56	82.3781	2632.38
2316.2	2964.3	1533.7	82.3774	2632.38
2328.19	2964.93	1532.84	82.3766	2632.38
2340.48	2965.2	1532.45	82.3759	2632.38
2352.84	2964.84	1532.91	82.3752	2632.38
2363.86	2964.12	1533.85	82.3745	2632.38
2378.11	2962.78	1535.6	82.3736	2632.38
2390.46	2961.18	1537.71	82.3729	2632.38
2402.82	2958.83	1540.82	82.3722	2632.38
2415.12	2955.99	1544.59	82.3714	2632.38
2427.42	2953	1548.55	82.3707	2632.38
2439.78	2950.48	1551.89	82.37	2632.38
2452.14	2949.46	1553.22	82.3692	2632.38
2463.68	2949.4	1553.28	82.3685	2632.38
2475.28	2949.68	1552.88	82.3678	2632.38
2486.72	2949.76	1552.75	82.3672	2632.38
2499.1	2949.86	1552.59	82.3664	2632.38
2510.61	2949.97	1552.42	82.3657	2632.38
2522.02	2950.12	1552.2	82.365	2632.38
2533.6	2950.32	1551.91	82.3644	2632.38
2543.94	2950.43	1551.74	82.3638	2632.38
2556.14	2950.7	1551.35	82.363	2632.38
2567.34	2951.22	1550.64	82.3624	2632.38
2578.92	2951.5	1550.24	82.3617	2632.38
2591.27	2953.12	1548.05	82.3609	2632.38
2603.62	2955.31	1545.11	82.3602	2632.38
2615.92	2956.49	1543.51	82.3594	2632.38
2620.73	2956.68	1543.24	82.3592	2632.38
2632.09	2956.41	1543.58	82.3584	2632.38
2643.85	2956.42	1543.54	82.3578	2632.38
2656.2	2957.42	1542.18	82.357	2632.38
2668.56	2958.11	1541.24	82.3563	2632.38
2680.91	2958.74	1540.37	82.3556	2632.38
2690.48	2959.43	1539.43	82.355	2632.38
2702.83	2960.52	1537.95	82.3542	2632.38
2715.21	2961.91	1536.07	82.3535	2632.38
2727.56	2963.29	1534.2	82.3528	2632.38
2739.92	2963.94	1533.31	82.352	2632.38
2752.04	2964.43	1532.63	82.3513	2632.38

2764.39	2965.28	1531.47	82.3506	2632.38
2776.75	2966.14	1530.3	82.3498	2632.38
2789.1	2967.17	1528.9	82.3491	2632.38
2801.45	2968.64	1526.91	82.3484	2632.38
2813.83	2970.03	1525.03	82.3476	2632.38
2826.19	2971.36	1523.23	82.3468	2632.38
2838.54	2972.44	1521.77	82.3461	2632.38
2850.9	2973.4	1520.46	82.3454	2632.38
2863.25	2974.22	1519.34	82.3447	2632.38
2875.61	2975.19	1518.02	82.3439	2632.38
2887.96	2976.59	1516.13	82.3432	2632.38
2900.32	2977.88	1514.38	82.3425	2632.38
2912.67	2979.03	1512.82	82.3417	2632.38
2924.95	2980.25	1511.17	82.341	2632.38
2937.3	2981.49	1509.49	82.3403	2632.38
2949.58	2982.66	1507.9	82.3395	2632.38
2961.93	2983.88	1506.25	82.3388	2632.38
2974.28	2984.97	1504.77	82.338	2632.38
2986.62	2986.15	1503.17	82.3373	2632.38
2998.98	2987.34	1501.56	82.3365	2632.38
3011.33	2988.69	1499.73	82.3358	2632.38
3023.62	2990.21	1497.68	82.3351	2632.38
3035.97	2991.77	1495.57	82.3343	2632.38
3048.28	2992.84	1494.12	82.3336	2632.38
3060.63	2993.62	1493.05	82.3329	2632.38
3072.99	2995.16	1490.97	82.3321	2632.38
3085.35	2996.96	1488.55	82.3314	2632.38
3097.32	2997.97	1487.17	82.3307	2632.38
3109.68	2999.07	1485.68	82.3299	2632.38
3121.63	3000.58	1483.64	82.3292	2632.38
3133.99	3002.16	1481.51	82.3285	2632.38
3146.34	3003.55	1479.63	82.3277	2632.38
3158.69	3004.9	1477.8	82.327	2632.38
3170.92	3006.33	1475.87	82.3263	2632.38
3183.31	3007.84	1473.83	82.3255	2632.38
3195.65	3009.27	1471.9	82.3248	2632.38
3208	3010.55	1470.16	82.3241	2632.38
3208	3010.55	1470.16	82.3241	2374.55
3220.35	3011.8	1468.47	82.3232	2374.55
3232.7	3013.05	1466.78	82.3223	2374.55
3245.01	3014.36	1465.01	82.3213	2374.55
3257.36	3015.7	1463.19	82.3205	2374.55
3269.71	3016.96	1461.49	82.3196	2374.55
3282.07	3018.08	1459.97	82.3186	2374.55
3294.41	3019.35	1458.25	82.3177	2374.55
3306.75	3021.03	1455.98	82.3169	2374.55
3319.05	3022.81	1453.58	82.316	2374.55
3331.41	3024.35	1451.5	82.315	2374.55
3343.2	3025.35	1450.15	82.3142	2374.55
3355.55	3026.03	1449.21	82.3133	2374.55
3367.73	3026.04	1449.17	82.3124	2374.55
3380.08	3025.89	1449.35	82.3115	2374.55
3392.43	3027.11	1447.7	82.3106	2374.55
3404.8	3028.12	1446.32	82.3097	2374.55
3417.14	3028.98	1445.15	82.3088	2374.55
3429.48	3030.26	1443.42	82.3079	2374.55

3441.85	3030.66	1442.86	82.307	2374.55
3454.19	3030.13	1443.54	82.3061	2374.55
3466.54	3029.44	1444.44	82.3052	2374.55
3478.89	3028.49	1445.68	82.3043	2374.55
3490.75	3027.3	1447.24	82.3035	2374.55
3503.06	3026.06	1448.87	82.3025	2374.55
3515.42	3024.07	1451.5	82.3016	2374.55
3527.79	3022.87	1453.07	82.3007	2374.55
3540.08	3022.62	1453.38	82.2999	2374.55
3552.02	3021.84	1454.39	82.2989	2374.55
3564.32	3020.57	1456.06	82.2981	2374.55
3576.26	3020.43	1456.23	82.2972	2374.55
3588.6	3022.37	1453.61	82.2963	2374.55
3598.52	3025.05	1450.02	82.2956	2374.55
3607.36	3027.2	1447.13	82.2949	2374.55
3619.71	3028.74	1445.05	82.294	2374.55
3634.39	3029.75	1443.67	82.293	2374.55
3646.74	3031.68	1441.08	82.292	2374.55
3658.7	3034.49	1437.3	82.2912	2374.55
3671.07	3038.47	1431.97	82.2903	2374.55
3683.35	3043.46	1425.29	82.2894	2374.55
3695.7	3048.07	1419.12	82.2885	2374.55
3707.74	3050.75	1415.52	82.2876	2374.55
3719.99	3053.1	1412.36	82.2867	2374.55
3732.34	3056.18	1408.22	82.2858	2374.55
3744.68	3059.28	1404.07	82.2849	2374.55
3755.25	3062.42	1399.86	82.2842	2374.55
3767.19	3066.61	1394.24	82.2832	2374.55
3778.19	3070.65	1388.83	82.2825	2374.55
3790.54	3074.41	1383.8	82.2815	2374.55
3802.83	3077.26	1379.97	82.2807	2374.55
3814.87	3078.96	1377.68	82.2798	2374.55
3827.21	3079.75	1376.6	82.2789	2374.55
3839.55	3079.86	1376.43	82.278	2374.55
3851.48	3079.57	1376.79	82.2771	2374.55
3863.7	3078.91	1377.64	82.2762	2374.55
3876.04	3077.71	1379.22	82.2753	2374.55
3888.14	3077.41	1379.59	82.2745	2374.55
3900.49	3079.3	1377.05	82.2735	2374.55
3912.84	3081.9	1373.56	82.2727	2374.55
3925.09	3084.07	1370.64	82.2718	2374.55
3936.54	3085.55	1368.64	82.2709	2374.55
3948.89	3087	1366.68	82.2701	2374.55
3961.24	3088.11	1365.18	82.2691	2374.55
3973.55	3089.16	1363.75	82.2682	2374.55
3985.78	3090.08	1362.5	82.2674	2374.55
3998.13	3090.38	1362.07	82.2665	2374.55
4012.32	3089.09	1363.76	82.2654	2374.55
4024.37	3086.47	1367.23	82.2646	2374.55
4036.72	3083.93	1370.59	82.2637	2374.55
4049.08	3084.61	1369.66	82.2627	2374.55
4061.45	3087.79	1365.39	82.2618	2374.55
4073.79	3092.02	1359.73	82.261	2374.55
4086.06	3095.43	1355.16	82.2601	2374.55
4098.42	3097.16	1352.83	82.2591	2374.55
4103.42	3097.64	1352.18	82.2588	2374.55

4115.28	3097.95	1351.74	82.2579	2374.55
4127.68	3096.94	1353.06	82.257	2374.55
4139.65	3095.43	1355.05	82.2561	2374.55
4152	3092.55	1358.86	82.2552	2374.55
4164.37	3089.5	1362.9	82.2544	2374.55
4176.73	3087.93	1364.97	82.2535	2374.55
4189.1	3087.96	1364.9	82.2525	2374.55
4201.48	3088.08	1364.72	82.2517	2374.55
4213.77	3089.95	1362.2	82.2508	2374.55
4226.06	3093	1358.11	82.2499	2374.55
4238.43	3095.64	1354.56	82.249	2374.55
4250.79	3097.65	1351.86	82.2481	2374.55
4263.15	3099.4	1349.5	82.2472	2374.55
4266.31	3099.82	1348.93	82.2469	2374.55
4278.27	3101.54	1346.61	82.2461	2374.55
4292.54	3103.35	1344.17	82.245	2374.55
4304.75	3104.93	1342.04	82.2442	2374.55
4316.93	3106.94	1339.33	82.2433	2374.55
4329.29	3108.17	1337.67	82.2424	2374.55
4340.59	3109.22	1336.25	82.2416	2374.55
4346.31	3109.92	1335.3	82.2411	2374.55
4346.31	3109.92	1335.3	82.2411	2374.55
4353.78	3111.15	1333.64	82.2405	2374.55
4366.16	3113.3	1330.75	82.2395	2374.55
4378.53	3115.71	1327.51	82.2386	2374.55
4390.9	3118.28	1324.06	82.2377	2374.55
4402.63	3120.45	1321.14	82.2367	2374.55
4414.98	3122.48	1318.41	82.2358	2374.55
4427.29	3124.69	1315.44	82.2348	2374.55
4439.63	3126.99	1312.35	82.2338	2374.55
4451.98	3128.77	1309.95	82.2328	2374.55
4464.33	3130.4	1307.75	82.2319	2374.55
4476.68	3132.31	1305.18	82.2309	2374.55
4489.02	3133.22	1303.94	82.2299	2374.55
4500.58	3134.26	1302.53	82.229	2374.55
4512.92	3135.05	1301.45	82.2281	2374.55
4525.11	3135.77	1300.47	82.2271	2374.55
4537.46	3137.23	1298.5	82.2261	2374.55
4549.5	3138.77	1296.42	82.2252	2374.55
4561.54	3139.82	1294.99	82.2242	2374.55
4573.89	3140.48	1294.09	82.2233	2374.55
4585.83	3141.17	1293.14	82.2223	2374.55
4598.18	3141.75	1292.34	82.2214	2374.55
4610.53	3142.88	1290.81	82.2204	2374.55
4622.84	3144.3	1288.89	82.2194	2374.55
4635.2	3144.83	1288.16	82.2185	2374.55
4647.55	3145.38	1287.4	82.2175	2374.55
4659.85	3145.37	1287.39	82.2165	2374.55
4672.21	3145.37	1287.37	82.2156	2374.55
4684.57	3145.66	1286.95	82.2146	2374.55
4696.92	3145.99	1286.49	82.2136	2374.55
4700.87	3146.1	1286.33	82.2133	2374.55
4713.23	3146.35	1285.97	82.2123	2374.55
4725.58	3146.21	1286.14	82.2113	2374.55
4737.68	3145.54	1287	82.2104	2374.55
4749.77	3143.76	1289.35	82.2095	2374.55

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4774.47	3143.71	1289.37	82.2076	2374.55
4786.82	3145.28	1287.25	82.2066	2374.55
4799.17	3146.27	1285.9	82.2056	2374.55
4811.52	3146.82	1285.14	82.2046	2374.55
4823.17	3146.76	1285.2	82.2037	2374.55
4835.47	3147.22	1284.56	82.2027	2374.55
4847.84	3149.21	1281.88	82.2018	2374.55
4860.15	3151.36	1278.99	82.2009	2374.55
4872.51	3152.84	1276.99	82.1999	2374.55
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5427.36	3306.32	1070.56	82.1624	1993.02



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5464.17	3316.37	1057.11	82.1602	1993.02
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5782.07	3372.05	982.31	82.141	1993.02
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5831.42	3372.47	981.648	82.1381	1993.02
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5917.05	3373.08	980.657	82.1329	1993.02
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6012.36	3390.18	957.697	82.1272	1993.02
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6073.78	3391.93	955.239	82.1235	1993.02
6086.14	3392.78	954.082	82.1228	1993.02
6098.49	3393.86	952.618	82.1221	1993.02
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6147.79	3399.18	945.435	82.1191	1993.02
6160.14	3400.51	943.638	82.1183	1993.02
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6197.15	3403.09	940.127	82.1161	1993.02
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6221.85	3402.12	941.367	82.1146	1993.02
6234.14	3400.28	943.79	82.1139	1993.02
6246.49	3398.49	946.147	82.1131	1993.02
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6318.13	3398.42	946.091	82.1088	1993.02
6330.47	3398.59	945.839	82.1081	1993.02
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6398.49	3396.06	949.064	82.104	1993.02
6410.63	3395.93	949.212	82.1033	1993.02
6422.98	3395.86	949.279	82.1025	1993.02
6435.19	3395.7	949.467	82.1018	1993.02
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6490.18	3391.97	954.317	82.0985	1993.02
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6562.41	3386.3	961.713	82.0942	1993.02
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7774.42	3352.26	1004.49	82.0215	2632.38
7786.65	3352.53	1004.11	82.0206	2632.38
7799.01	3352.82	1003.7	82.0197	2632.38
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7823.73	3353.36	1002.93	82.0179	2632.38
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7897.85	3353.92	1002.03	82.0125	2632.38
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7934.74	3354.42	1001.28	82.0099	2632.38
7947.1	3354.88	1000.64	82.009	2632.38
7959.31	3355.98	999.154	82.008	2632.38
7971.66	3357.17	997.543	82.0072	2632.38
7984.01	3358.22	996.119	82.0063	2632.38
7996.32	3358.83	995.281	82.0054	2632.38
8008.67	3359.31	994.616	82.0045	2632.38
8021.03	3360	993.672	82.0036	2632.38
8033.08	3360.72	992.688	82.0027	2632.38
8045.32	3361.5	991.624	82.0018	2632.38
8054.37	3362.07	990.846	82.0011	2632.38
8066.73	3362.95	989.648	82.0002	2632.38
8079.08	3363.95	988.291	81.9994	2632.38
8090.96	3364.97	986.908	81.9985	2632.38
8102.79	3365.76	985.832	81.9977	2632.38
8115.14	3366.31	985.074	81.9967	2632.38
8127.3	3366.83	984.356	81.9958	2632.38

8139.65	3367.17	983.877	81.995	2632.38
8152	3367.33	983.638	81.9941	2632.38
8164.35	3367.44	983.466	81.9931	2632.38
8176.19	3367.49	983.375	81.9923	2632.38
8188.54	3367.54	983.282	81.9914	2632.38
8200.44	3367.7	983.044	81.9905	2632.38
8212.8	3367.56	983.204	81.9897	2632.38
8225.16	3366.92	984.031	81.9888	2632.38
8237.48	3367.79	982.847	81.9878	2632.38
8247.9	3368.35	982.079	81.9871	2632.38
8260.24	3368.66	981.641	81.9862	2632.38
8272.6	3368.92	981.269	81.9853	2632.38
8284.95	3369.18	980.896	81.9844	2632.38
8296.9	3369.52	980.419	81.9836	2632.38
8307.92	3369.1	980.955	81.9828	2632.38
8321.61	3366.97	983.762	81.9817	2632.38
8333.9	3364.09	987.57	81.9809	2632.38
8346.25	3362.44	989.741	81.98	2632.38
8358.57	3362.36	989.821	81.9791	2632.38
8370.85	3362.61	989.462	81.9782	2632.38
8383.23	3362.69	989.33	81.9773	2632.38
8395.61	3362.75	989.224	81.9764	2632.38
8407.78	3362.84	989.079	81.9755	2632.38
8420.16	3362.87	989.013	81.9746	2632.38
8432.48	3362.97	988.854	81.9737	2632.38
8444.79	3363.71	987.843	81.9728	2632.38
8457.12	3365.03	986.059	81.972	2632.38
8469.48	3366.22	984.45	81.9711	2632.38
8479.64	3366.92	983.496	81.9703	2632.38
8491.99	3367.58	982.591	81.9694	2632.38
8504.25	3368.06	981.927	81.9686	2632.38
8516.48	3368.62	981.155	81.9676	2632.38
8528.73	3368.96	980.677	81.9668	2632.38
8541.08	3369.51	979.919	81.9659	2632.38
8553.44	3370.08	979.134	81.965	2632.38
8565.79	3370.75	978.216	81.9641	2632.38
8578.14	3371.5	977.192	81.9632	2632.38
8590.49	3372.39	975.981	81.9623	2632.38
8602.85	3373.16	974.93	81.9614	2632.38
8614.93	3373.64	974.266	81.9605	2632.38
8627.28	3373.9	973.894	81.9596	2632.38
8639.63	3374.78	972.696	81.9587	2632.38
8651.99	3376.35	970.58	81.9578	2632.38
8664.28	3377.64	968.837	81.957	2632.38
8676.64	3379.05	966.934	81.956	2632.38
8688.89	3380.48	965.005	81.9551	2632.38
8701.2	3382.2	962.689	81.9543	2632.38
8713.56	3384.05	960.2	81.9534	2632.38
8725.87	3385.92	957.685	81.9525	2632.38
8738.24	3386.98	956.248	81.9516	2632.38
8750.6	3388.78	953.826	81.9507	2632.38
8762.93	3392.94	948.263	81.9498	2632.38
8775.23	3396.43	943.591	81.9489	2632.38
8787.17	3398.79	940.425	81.948	2632.38
8799.52	3401.24	937.138	81.9471	2632.38
8811.89	3403.41	934.223	81.9463	2632.38

8811.89	3403.41	934.223	81.9462	2632.38
8815.84	3403.98	933.456	81.9459	2632.38
8819.97	3404.46	932.804	81.9455	2632.38
8824.09	3404.95	932.152	81.9452	2632.38
8828.22	3405.43	931.5	81.9448	2632.38
8831.68	3405.69	931.142	81.9445	2632.38
8835.15	3405.96	930.785	81.9442	2632.38
8838.61	3406.22	930.427	81.9439	2632.38
8842.73	3406.65	929.85	81.9435	2632.38
8846.86	3407.07	929.273	81.9432	2632.38
8850.98	3407.5	928.697	81.9428	2632.38
8855.1	3407.6	928.551	81.9424	2632.38
8859.22	3407.71	928.404	81.9421	2632.38
8863.34	3407.81	928.258	81.9417	2632.38
8867.46	3407.6	928.525	81.9413	2632.38
8871.58	3407.4	928.791	81.941	2632.38
8875.7	3407.19	929.058	81.9406	2632.38
8879.77	3407.12	929.138	81.9402	2632.38
8883.85	3407.06	929.218	81.9399	2632.38
8887.92	3406.99	929.298	81.9395	2632.38
8892.04	3407.67	928.384	81.9391	2632.38
8896.15	3408.35	927.47	81.9388	2632.38
8900.27	3409.03	926.557	81.9384	2632.38
8904.4	3410.28	924.88	81.938	2632.38
8908.52	3411.54	923.203	81.9377	2632.38
8912.65	3412.79	921.526	81.9374	2632.38
8916.73	3413.52	920.551	81.937	2632.38
8920.82	3414.24	919.575	81.9366	2632.38
8924.9	3414.97	918.599	81.9363	2632.38
8928.98	3415.69	917.636	81.9359	2632.38
8933.06	3416.4	916.674	81.9355	2632.38
8937.14	3417.12	915.711	81.9352	2632.38
8941.02	3417.84	914.75	81.9349	2632.38
8944.91	3418.55	913.788	81.9345	2632.38
8948.79	3419.27	912.826	81.9341	2632.38
8952.92	3420.06	911.761	81.9338	2632.38
8957.05	3420.86	910.697	81.9334	2632.38
8961.18	3421.65	909.632	81.933	2632.38
8965.13	3422.39	908.639	81.9327	2632.38
8969.08	3423.13	907.645	81.9324	2632.38
8973.03	3423.87	906.652	81.932	2632.38
8977.15	3424.57	905.717	81.9316	2632.38
8981.27	3425.26	904.78	81.9313	2632.38
8985.39	3425.96	903.845	81.9309	2632.38
8989.51	3426.61	902.976	81.9305	2632.38
8993.63	3427.25	902.106	81.9302	2632.38
8997.75	3427.9	901.237	81.9298	2632.38
9001.77	3428.58	900.328	81.9295	2632.38
9005.8	3429.25	899.419	81.9291	2632.38
9009.82	3429.93	898.51	81.9288	2632.38
9013.94	3430.71	897.459	81.9284	2632.38
9018.05	3431.5	896.408	81.928	2632.38
9022.17	3432.28	895.356	81.9277	2632.38
9026.24	3433.08	894.278	81.9273	2632.38
9030.32	3433.89	893.201	81.9269	2632.38
9034.39	3434.69	892.123	81.9266	2632.38

9038.51	3435.48	891.063	81.9263	2632.38
9042.62	3436.27	890.003	81.9259	2632.38
9046.74	3437.06	888.943	81.9255	2632.38
9050.85	3437.78	887.972	81.9252	2632.38
9054.97	3438.51	887.001	81.9248	2632.38
9059.08	3439.23	886.03	81.9244	2632.38
9063.18	3439.89	885.147	81.9241	2632.38
9067.29	3440.54	884.265	81.9237	2632.38
9071.39	3441.2	883.382	81.9233	2632.38
9075.51	3441.93	882.406	81.923	2632.38
9079.62	3442.65	881.431	81.9226	2632.38
9083.74	3443.38	880.455	81.9222	2632.38
9087.84	3444.15	879.422	81.9219	2632.38
9091.95	3444.92	878.389	81.9215	2632.38
9096.05	3445.69	877.355	81.9211	2632.38
9100.18	3446.54	876.215	81.9208	2632.38
9104.31	3447.39	875.076	81.9204	2632.38
9108.44	3448.24	873.936	81.92	2632.38
9112.56	3449.14	872.729	81.9197	2632.38
9116.68	3450.04	871.523	81.9194	2632.38
9120.8	3450.94	870.317	81.919	2632.38
9124.92	3451.75	869.235	81.9186	2632.38
9129.03	3452.55	868.152	81.9183	2632.38
9133.15	3453.36	867.07	81.9179	2632.38
9133.15	3453.36	867.07	81.9178	1993.02
9137.93	3453.73	866.568	81.9175	1993.02
9142.72	3454.86	865.057	81.917	1993.02
9147.5	3455.58	864.086	81.9167	1993.02
9151.62	3456.12	863.354	81.9163	1993.02
9155.73	3456.67	862.622	81.9159	1993.02
9159.85	3457.21	861.891	81.9156	1993.02
9163.91	3457.73	861.195	81.9153	1993.02
9167.98	3458.24	860.499	81.9149	1993.02
9172.04	3458.76	859.803	81.9146	1993.02
9176.16	3459.35	859.005	81.9142	1993.02
9180.28	3459.95	858.206	81.9139	1993.02
9184.4	3460.54	857.408	81.9136	1993.02
9188.51	3461.2	856.517	81.9132	1993.02
9192.63	3461.87	855.626	81.9128	1993.02
9196.74	3462.53	854.734	81.9125	1993.02
9200.86	3463.27	853.737	81.9122	1993.02
9204.97	3464.02	852.739	81.9118	1993.02
9209.09	3464.76	851.741	81.9114	1993.02
9213.2	3465.65	850.548	81.9111	1993.02
9217.31	3466.54	849.356	81.9108	1993.02
9221.42	3467.43	848.163	81.9104	1993.02
9225.54	3468.49	846.739	81.9101	1993.02
9229.65	3469.56	845.316	81.9097	1993.02
9233.77	3470.62	843.892	81.9093	1993.02
9237.89	3471.69	842.46	81.909	1993.02
9242	3472.76	841.027	81.9087	1993.02
9246.12	3473.83	839.595	81.9083	1993.02
9250.23	3474.81	838.282	81.9079	1993.02
9254.35	3475.79	836.97	81.9076	1993.02
9258.46	3476.77	835.657	81.9073	1993.02
9262.57	3477.74	834.354	81.9069	1993.02

9266.67	3478.72	833.05	81.9066	1993.02
9270.78	3479.69	831.746	81.9062	1993.02
9274.9	3480.69	830.412	81.9059	1993.02
9279.01	3481.68	829.077	81.9056	1993.02
9283.13	3482.68	827.742	81.9052	1993.02
9287.24	3483.73	826.337	81.9048	1993.02
9291.36	3484.78	824.931	81.9045	1993.02
9295.47	3485.83	823.525	81.9042	1993.02
9299.58	3486.91	822.075	81.9038	1993.02
9303.7	3488	820.625	81.9034	1993.02
9307.81	3489.08	819.175	81.9031	1993.02
9311.93	3490.16	817.734	81.9028	1993.02
9316.05	3491.23	816.293	81.9024	1993.02
9320.17	3492.31	814.852	81.9021	1993.02
9324.26	3493.45	813.322	81.9017	1993.02
9328.35	3494.6	811.793	81.9014	1993.02
9332.44	3495.74	810.263	81.901	1993.02
9336.56	3497.02	808.552	81.9007	1993.02
9340.67	3498.3	806.84	81.9003	1993.02
9344.79	3499.58	805.128	81.8999	1993.02
9348.83	3500.87	803.408	81.8996	1993.02
9352.87	3502.15	801.688	81.8993	1993.02
9356.91	3503.44	799.968	81.899	1993.02
9361.01	3504.65	798.354	81.8986	1993.02
9365.11	3505.85	796.74	81.8982	1993.02
9369.21	3507.06	795.126	81.8979	1993.02
9373.33	3508.16	793.649	81.8976	1993.02
9377.44	3509.27	792.173	81.8972	1993.02
9381.56	3510.37	790.697	81.8969	1993.02
9385.66	3511.43	789.278	81.8965	1993.02
9389.77	3512.49	787.859	81.8962	1993.02
9393.87	3513.55	786.44	81.8959	1993.02
9397.96	3514.6	785.035	81.8955	1993.02
9402.05	3515.65	783.63	81.8951	1993.02
9406.14	3516.7	782.225	81.8948	1993.02
9410.26	3517.83	780.717	81.8945	1993.02
9414.37	3518.95	779.21	81.8941	1993.02
9418.49	3520.08	777.702	81.8938	1993.02
9422.54	3521.36	775.996	81.8934	1993.02
9426.6	3522.63	774.289	81.8931	1993.02
9430.65	3523.91	772.583	81.8927	1993.02
9434.77	3525.27	770.769	81.8924	1993.02
9438.88	3526.62	768.956	81.892	1993.02
9443	3527.98	767.143	81.8917	1993.02
9447.12	3529.29	765.396	81.8913	1993.02
9451.23	3530.59	763.649	81.891	1993.02
9455.35	3531.9	761.903	81.8907	1993.02
9459.37	3533.11	760.289	81.8903	1993.02
9463.39	3534.31	758.675	81.8899	1993.02
9467.41	3535.52	757.062	81.8896	1993.02
9471.53	3536.6	755.621	81.8893	1993.02
9475.64	3537.67	754.18	81.889	1993.02
9479.76	3538.75	752.74	81.8886	1993.02
9483.74	3539.35	751.938	81.8882	1993.02
9487.72	3539.94	751.135	81.8879	1993.02
9491.7	3540.54	750.334	81.8876	1993.02



9495.8	3541.29	749.323	81.8873	1993.02
9499.9	3542.05	748.313	81.8869	1993.02
9504	3542.8	747.302	81.8865	1993.02
9508.12	3543.99	745.711	81.8862	1993.02
9512.23	3545.18	744.119	81.8858	1993.02
9516.35	3546.37	742.528	81.8855	1993.02
9520.47	3547.87	740.524	81.8852	1993.02
9524.58	3549.37	738.52	81.8848	1993.02
9528.7	3550.87	736.517	81.8844	1993.02
9532.72	3552.51	734.332	81.8841	1993.02
9536.74	3554.14	732.146	81.8838	1993.02
9540.76	3555.78	729.961	81.8835	1993.02
9544.84	3557.2	728.069	81.8831	1993.02
9548.93	3558.61	726.176	81.8827	1993.02
9553.01	3560.03	724.283	81.8824	1993.02
9553.01	3560.03	724.283	81.8824	1473.72
9557.1	3561.21	722.706	81.882	1473.72
9561.2	3562.39	721.128	81.8816	1473.72
9565.29	3563.57	719.55	81.8811	1473.72
9569.29	3564.56	718.22	81.8807	1473.72
9573.29	3565.56	716.891	81.8803	1473.72
9577.29	3566.55	715.562	81.8799	1473.72
9581.41	3567.25	714.617	81.8795	1473.72
9585.53	3567.96	713.673	81.8791	1473.72
9589.65	3568.66	712.729	81.8786	1473.72
9593.61	3569.26	711.923	81.8782	1473.72
9597.57	3569.86	711.117	81.8778	1473.72
9601.53	3570.46	710.311	81.8774	1473.72
9605.65	3570.89	709.73	81.877	1473.72
9609.77	3571.32	709.15	81.8766	1473.72
9613.89	3571.75	708.569	81.8761	1473.72
9617.81	3572.06	708.149	81.8757	1473.72
9621.74	3572.37	707.728	81.8754	1473.72
9625.66	3572.68	707.308	81.8749	1473.72
9629.76	3572.98	706.896	81.8745	1473.72
9633.86	3573.29	706.483	81.8741	1473.72
9637.96	3573.59	706.071	81.8736	1473.72
9640.76	3573.59	706.065	81.8733	1473.72
9643.57	3574.05	705.448	81.8731	1473.72
9643.57	3573.94	705.445	81.8731	1473.72
9650.86	3574.5	704.685	81.8725	1473.72
9659.02	3575.16	703.79	81.872	1473.72
9671.32	3576.01	702.634	81.8711	1473.72
9683.61	3577.56	700.547	81.8703	1473.72
9695.75	3579.22	698.314	81.8694	1473.72
9708.12	3581.05	695.854	81.8685	1473.72
9719.57	3582.58	693.795	81.8677	1473.72
9731.94	3584.2	691.615	81.8669	1473.72
9744.06	3585.87	689.369	81.866	1473.72
9756.01	3587.45	687.243	81.8652	1473.72
9768.36	3588.59	685.701	81.8643	1473.72
9780.16	3588.99	685.144	81.8634	1473.72
9792.22	3589.19	684.853	81.8626	1473.72
9804.59	3589.23	684.774	81.8617	1473.72
9816.86	3589.29	684.668	81.8609	1473.72
9829.14	3589.5	684.363	81.86	1473.72

9841.5	3589.89	683.818	81.8591	1473.72
9853.75	3590.36	683.167	81.8583	1473.72
9866.05	3590.64	682.769	81.8574	1473.72
9878.42	3590.83	682.49	81.8566	1473.72
9890.77	3591.1	682.105	81.8556	1473.72
9903.02	3591.8	681.148	81.8548	1473.72
9915.39	3593.18	679.287	81.8539	1473.72
9927.76	3594.95	676.908	81.8531	1473.72
9939.6	3596.97	674.197	81.8522	1473.72
9951.97	3599.7	670.541	81.8514	1473.72
9964.34	3602.68	666.553	81.8504	1473.72
9976.7	3605.5	662.777	81.8496	1473.72
9988.98	3607.92	659.534	81.8487	1473.72
10001.3	3610.33	656.303	81.8479	1473.72
10013.7	3612.18	653.818	81.847	1473.72
10025.8	3613.63	651.864	81.8461	1473.72
10037.9	3614.95	650.084	81.8453	1473.72
10050.3	3616.22	648.369	81.8444	1473.72
10062.2	3617.75	646.31	81.8436	1473.72
10074.4	3619.47	643.997	81.8427	1473.72
10086.8	3620.81	642.19	81.8418	1473.72
10099	3622.42	640.023	81.841	1473.72
10111.3	3623.71	638.282	81.8401	1473.72
10123.7	3624.62	637.046	81.8393	1473.72
10136.1	3625.3	636.116	81.8384	1473.72
10148.4	3625.96	635.213	81.8375	1473.72
10157.3	3626.53	634.436	81.8369	1473.72
10169.4	3627.24	633.467	81.836	1473.72
10181.6	3627.94	632.51	81.8352	1473.72
10193.9	3628.69	631.488	81.8343	1473.72
10206.3	3629.39	630.531	81.8334	1473.72
10218.6	3630.12	629.534	81.8326	1473.72
10231	3630.94	628.418	81.8317	1473.72
10242.9	3631.88	627.143	81.8309	1473.72
10255.1	3633	625.628	81.83	1473.72
10267.4	3634.26	623.927	81.8291	1473.72
10279.7	3635.62	622.093	81.8283	1473.72
10292	3637.16	620.02	81.8274	1473.72
10304.2	3638.8	617.814	81.8266	1473.72
10316.6	3640.57	615.435	81.8257	1473.72
10329	3642.61	612.697	81.8248	1473.72
10341.2	3644.89	609.641	81.824	1473.72
10353.5	3647.31	606.398	81.8231	1473.72
10365.8	3650.21	602.517	81.8223	1473.72
10378.1	3653.48	598.144	81.8213	1473.72
10390	3656.7	593.839	81.8205	1473.72
10401.8	3659	590.757	81.8197	1473.72
10414.2	3663.01	585.401	81.8188	1473.72
10425.3	3665.44	582.147	81.818	1473.72
10435	3667.22	579.761	81.8174	1473.72
10446.1	3669.5	576.707	81.8166	1473.72
10457.1	3671.9	573.494	81.8158	1473.72
10468.3	3675.48	568.712	81.815	1473.72
10480.2	3679.18	563.769	81.8142	1473.72
10495.3	3683.4	558.129	81.8132	1473.72
10507.7	3687.2	553.053	81.8122	1473.72

10520	3690.61	548.495	81.8114	1473.72
10532.3	3693.77	544.269	81.8105	1473.72
10544.6	3696.95	540.017	81.8097	1473.72
10556.9	3699.87	536.111	81.8088	1473.72
10569.3	3702.4	532.723	81.8079	1473.72
10581.5	3704.31	530.159	81.8071	1473.72
10593.9	3705.91	528.006	81.8062	1473.72
10604.8	3707.19	526.282	81.8055	1473.72
10617	3708.54	524.462	81.8046	1473.72
10629.4	3710.1	522.363	81.8037	1473.72
10641.7	3711.63	520.304	81.8028	1473.72
10653.9	3713.18	518.219	81.802	1473.72
10666.2	3714.49	516.452	81.8011	1473.72
10678.5	3715.47	515.124	81.8003	1473.72
10690.8	3716.31	513.981	81.7994	1473.72
10702.9	3717.28	512.667	81.7986	1473.72
10715.1	3718.3	511.285	81.7977	1473.72
10725	3718.88	510.494	81.797	1473.72
10737.1	3719.68	509.406	81.7962	1473.72
10749.4	3720.47	508.33	81.7953	1473.72
10759.1	3721.2	507.339	81.7946	1473.72
10771.2	3722.03	506.211	81.7937	1473.72
10782.6	3722.75	505.23	81.793	1473.72
10792.9	3723.31	504.464	81.7922	1473.72
10792.9	3723.31	504.464	81.7923	1993.02
10796.7	3723.36	504.389	81.7918	1993.02
10800.5	3723.41	504.315	81.7914	1993.02
10804.3	3723.46	504.24	81.7909	1993.02
10808.4	3723.17	504.621	81.7905	1993.02
10812.5	3722.87	505.001	81.79	1993.02
10816.7	3722.58	505.383	81.7895	1993.02
10816.7	3722.58	505.383	81.7895	1603.88
10820.4	3721.86	506.333	81.7891	1603.88
10824.2	3721.13	507.288	81.7887	1603.88
10828	3720.41	508.243	81.7883	1603.88
10831.8	3719.72	509.156	81.7879	1603.88
10835.6	3719.02	510.069	81.7875	1603.88
10839.4	3718.33	510.982	81.787	1603.88
10843.5	3718.37	510.925	81.7866	1603.88
10847.6	3718.4	510.867	81.7861	1603.88
10851.8	3718.44	510.81	81.7857	1603.88
10855.9	3719.02	510.033	81.7853	1603.88
10860	3719.6	509.257	81.7848	1603.88
10864	3720.18	508.472	81.7843	1603.88
10864	3720.18	508.472	81.7843	1473.72
10876.4	3722.83	504.924	81.7834	1473.72
10888.6	3725.43	501.444	81.7826	1473.72
10900.9	3727.99	498.017	81.7817	1473.72
10913.1	3729.07	496.556	81.7809	1473.72
10917.4	3729.25	496.307	81.7806	1473.72
10929.8	3729.82	495.524	81.7796	1473.72
10941.8	3730.73	494.289	81.7789	1473.72
10953.6	3733.14	491.063	81.778	1473.72
10965.9	3735.69	487.648	81.7771	1473.72
10977.5	3737.7	484.953	81.7763	1473.72
10989.9	3740.61	481.06	81.7754	1473.72

11002	3743.93	476.624	81.7746	1473.72
11014.4	3747.63	471.682	81.7737	1473.72
11026.7	3751.57	466.421	81.7728	1473.72
11039.1	3755.3	461.44	81.772	1473.72
11051.1	3759.23	456.194	81.7711	1473.72
11063.4	3762.98	451.186	81.7702	1473.72
11075.8	3765.62	447.652	81.7693	1473.72
11088.2	3767.14	445.607	81.7685	1473.72
11100.5	3768.47	443.814	81.7676	1473.72
11112.8	3770.49	441.105	81.7667	1473.72
11125	3773.76	436.735	81.7659	1473.72
11137.3	3777.49	431.754	81.765	1473.72
11149.6	3779.55	428.992	81.7641	1473.72
11161.9	3780.47	427.743	81.7632	1473.72
11174.2	3781.88	425.845	81.7624	1473.72
11186.4	3782.3	425.261	81.7615	1473.72
11197.9	3783.22	424.015	81.7607	1473.72
11209.6	3784.14	422.768	81.7599	1473.72
11220.9	3785.01	421.588	81.7591	1473.72
11232.4	3785.74	420.594	81.7583	1473.72
11244.6	3786.39	419.705	81.7574	1473.72
11255.6	3786.39	419.681	81.7566	1473.72
11268.9	3787.68	417.94	81.7557	1473.72
11281.2	3788.32	417.063	81.7548	1473.72
11293.6	3788.95	416.2	81.754	1473.72
11305.7	3789.33	415.67	81.7531	1473.72
11317.9	3789.59	415.299	81.7522	1473.72
11330.1	3789.72	415.1	81.7514	1473.72
11341.7	3789.95	414.77	81.7505	1473.72
11353.8	3790.26	414.332	81.7497	1473.72
11366.1	3790.93	413.416	81.7488	1473.72
11378.3	3791.37	412.806	81.748	1473.72
11390.5	3791.07	413.179	81.7471	1473.72
11402.6	3791.35	412.781	81.7463	1473.72
11414.6	3791.6	412.423	81.7454	1473.72
11426.9	3791.77	412.172	81.7446	1473.72
11439.1	3791.93	411.933	81.7436	1473.72
11451.3	3792.16	411.602	81.7428	1473.72
11463.6	3793.69	409.544	81.7419	1473.72
11475.5	3796.05	406.384	81.7411	1473.72
11487.9	3798.49	403.117	81.7402	1473.72
11500	3800.09	400.966	81.7394	1473.72
11512.4	3801.11	399.584	81.7385	1473.72
11524.7	3801.8	398.642	81.7376	1473.72
11537	3802.31	397.939	81.7367	1473.72
11549.3	3802.53	397.62	81.7359	1473.72
11561.6	3803.09	396.85	81.735	1473.72
11574	3803.97	395.655	81.7341	1473.72
11585.9	3805.07	394.169	81.7333	1473.72
11598.3	3806.09	392.788	81.7324	1473.72
11610.5	3806.58	392.111	81.7316	1473.72
11622.5	3806.54	392.139	81.7307	1473.72
11634.6	3807.49	390.852	81.7298	1473.72
11646.9	3807.73	390.506	81.729	1473.72
11658.5	3807.99	390.137	81.7282	1473.72
11670	3808.3	389.7	81.7273	1473.72

11682.4	3808.68	389.17	81.7265	1473.72
11694.6	3808.99	388.732	81.7256	1473.72
11707	3809.35	388.227	81.7248	1473.72
11719.4	3810.01	387.324	81.7239	1473.72
11731.5	3810.66	386.435	81.723	1473.72
11743.9	3811.32	385.532	81.7222	1473.72
11756.3	3812.41	384.059	81.7213	1473.72
11768.7	3813.68	382.346	81.7204	1473.72
11780.8	3815.73	379.597	81.7195	1473.72
11792.8	3818.21	376.278	81.7187	1473.72
11804.9	3821.94	371.299	81.7179	1473.72
11817.3	3826.54	365.163	81.717	1473.72
11828.4	3830.64	359.696	81.7162	1473.72
11840.7	3834.8	354.145	81.7153	1473.72
11852.4	3838.33	349.433	81.7145	1473.72
11864.6	3841.28	345.489	81.7137	1473.72
11876.9	3843.43	342.608	81.7128	1473.72
11889.1	3845.23	340.192	81.7119	1473.72
11901.5	3846.94	337.895	81.711	1473.72
11913.6	3848.67	335.572	81.7102	1473.72
11926	3850.4	333.249	81.7093	1473.72
11938.3	3852.29	330.713	81.7085	1473.72
11950.5	3853.96	328.47	81.7076	1473.72
11950.5	3853.96	328.47	81.7076	2374.55
11954.6	3854.31	327.997	81.7071	2374.55
11958.7	3854.65	327.53	81.7066	2374.55
11962.8	3855	327.063	81.7061	2374.55
11962.8	3855	327.063	81.7061	1603.88
11966.9	3855.63	326.217	81.7056	1603.88
11971	3856.26	325.373	81.7052	1603.88
11975	3856.89	324.527	81.7047	1603.88
11978.4	3857.21	324.095	81.7043	1603.88
11981.8	3857.53	323.663	81.7039	1603.88
11985.2	3857.85	323.231	81.7035	1603.88
11985.2	3857.85	323.231	81.7035	1473.72
11996.6	3858.39	322.49	81.7027	1473.72
12008.2	3859	321.655	81.702	1473.72
12020.5	3859.79	320.58	81.7012	1473.72
12032.8	3860.5	319.611	81.7003	1473.72
12045.2	3861.84	317.805	81.6995	1473.72
12057.5	3863.85	315.11	81.6987	1473.72
12069.9	3865.66	312.681	81.6979	1473.72
12081.5	3866.73	311.236	81.6971	1473.72
12093	3867.48	310.215	81.6963	1473.72
12105	3868.37	309.008	81.6955	1473.72
12117.3	3869.13	307.973	81.6947	1473.72
12128.9	3869.8	307.059	81.6939	1473.72
12141.1	3871.35	304.975	81.6931	1473.72
12153.5	3872.89	302.904	81.6922	1473.72
12165.5	3874.13	301.233	81.6915	1473.72
12177.8	3875.43	299.48	81.6907	1473.72
12189.7	3876.74	297.716	81.6898	1473.72
12202.1	3878.24	295.698	81.689	1473.72
12214.4	3879.91	293.454	81.6882	1473.72
12226.2	3881.46	291.372	81.6874	1473.72
12237.7	3882.97	289.343	81.6866	1473.72

12250.1	3884.46	287.338	81.6858	1473.72
12259	3885.66	285.726	81.6852	1473.72
12271.4	3888	282.593	81.6844	1473.72
12283.1	3890.62	279.09	81.6836	1473.72
12295	3893.15	275.706	81.6828	1473.72
12307.4	3895.51	272.547	81.682	1473.72
12319.7	3897.52	269.852	81.6811	1473.72
12332	3899.53	267.158	81.6803	1473.72
12344.4	3901.54	264.463	81.6795	1473.72
12356.7	3902.71	262.884	81.6787	1473.72
12368.6	3902.97	262.513	81.6779	1473.72
12381	3904	261.12	81.677	1473.72
12392.5	3905.39	259.25	81.6763	1473.72
12404.9	3906.67	257.525	81.6755	1473.72
12416.8	3907.43	256.49	81.6747	1473.72
12429.1	3907.41	256.491	81.6738	1473.72
12441.5	3906.98	257.035	81.673	1473.72
12453.8	3907.04	256.929	81.6722	1473.72
12466.5	3907.4	256.424	81.6713	1473.72
12478.9	3907.79	255.88	81.6705	1473.72
12491.3	3908.14	255.389	81.6697	1473.72
12503.7	3908.44	254.964	81.6689	1473.72
12516	3908.69	254.606	81.668	1473.72
12528.4	3908.96	254.222	81.6672	1473.72
12540.6	3909.96	252.868	81.6664	1473.72
12552.8	3911.3	251.063	81.6656	1473.72
12565.1	3912.36	249.63	81.6648	1473.72
12577.4	3913.24	248.436	81.6639	1473.72
12589.8	3914.32	246.976	81.6631	1473.72
12602	3915.56	245.304	81.6623	1473.72
12614.4	3916.64	243.844	81.6615	1473.72
12626.7	3917.62	242.517	81.6606	1473.72
12639.1	3918.6	241.19	81.6598	1473.72
12651.4	3919.57	239.876	81.659	1473.72
12663.6	3920.65	238.417	81.6582	1473.72
12676	3922.08	236.492	81.6573	1473.72
12688.1	3924.55	233.188	81.6565	1473.72
12700.3	3928.02	228.556	81.6557	1473.72
12712.5	3931.66	223.699	81.6549	1473.72
12724.8	3935.25	218.908	81.6541	1473.72
12737.2	3938.64	214.383	81.6532	1473.72
12748.9	3941.86	210.084	81.6525	1473.72
12761.2	3944.91	206.01	81.6517	1473.72
12773.5	3947.6	202.413	81.6509	1473.72
12785.9	3949.87	199.375	81.65	1473.72
12798.2	3951.8	196.787	81.6492	1473.72
12810.6	3953.66	194.293	81.6484	1473.72
12820.7	3954.63	192.984	81.6477	1473.72
12833.1	3954.79	192.745	81.6469	1473.72
12845.5	3954.41	193.223	81.646	1473.72
12857.7	3953.78	194.032	81.6452	1473.72
12870	3952.9	195.174	81.6444	1473.72
12882.3	3952.81	195.267	81.6436	1473.72
12894.7	3953.08	194.883	81.6427	1473.72
12907	3953.14	194.777	81.642	1473.72
12919.2	3953.38	194.432	81.6412	1473.72

12931.4	3954.23	193.278	81.6403	1473.72
12943.6	3955.06	192.151	81.6395	1473.72
12956	3955.74	191.222	81.6387	1473.72
12968.4	3956.39	190.333	81.6379	1473.72
12980.6	3956.95	189.564	81.6371	1473.72
12992.6	3957.6	188.675	81.6363	1473.72
13004.7	3957.96	188.172	81.6354	1473.72
13017.1	3957.96	188.145	81.6346	1473.72
13029.3	3957.86	188.252	81.6338	1473.72
13041.5	3956.99	189.38	81.633	1473.72
13053.9	3955.88	190.827	81.6322	1473.72
13066.3	3954.71	192.353	81.6313	1473.72
13078.6	3953.02	194.57	81.6305	1473.72
13090.7	3951.09	197.105	81.6297	1473.72
13102.6	3948.34	200.729	81.629	1473.72
13114.9	3945.24	204.817	81.6281	1473.72
13119.6	3944.34	206.001	81.6278	1473.72
13124	3943.09	207.651	81.6275	1473.72
13138.7	3940.01	211.707	81.6265	1473.72
13150.6	3938.14	214.164	81.6257	1473.72
13162.8	3936.76	215.969	81.6249	1473.72
13174.6	3935.42	217.722	81.6241	1473.72
13187	3934.77	218.558	81.6233	1473.72
13199.3	3934.54	218.837	81.6225	1473.72
13211.7	3934.41	218.983	81.6217	1473.72
13224	3935.03	218.134	81.6208	1473.72
13236.4	3937.25	215.161	81.62	1473.72
13248.3	3940.15	211.287	81.6192	1473.72
13260.5	3942.62	207.983	81.6184	1473.72
13272.8	3944.31	205.714	81.6176	1473.72
13285.2	3945.07	204.678	81.6168	1473.72
13297.4	3944.77	205.05	81.616	1473.72
13309.4	3943.68	206.472	81.6152	1473.72
13321.8	3942.01	208.661	81.6144	1473.72
13334	3939.96	211.356	81.6135	1473.72
13346.3	3937.49	214.608	81.6127	1473.72
13358.6	3934.77	218.191	81.6119	1473.72
13362.2	3933.97	219.246	81.6117	1473.72
13371.2	3931.98	221.867	81.6111	1473.72
13383.6	3929.3	225.398	81.6102	1473.72
13383.6	3929.3	225.398	81.6102	2374.55
13387.7	3928.6	226.314	81.6098	2374.55
13391.8	3927.91	227.23	81.6094	2374.55
13395.9	3927.21	228.146	81.6089	2374.55
13400	3926.67	228.854	81.6084	2374.55
13404.1	3926.13	229.562	81.608	2374.55
13408.2	3925.59	230.27	81.6075	2374.55
13412.3	3925.14	230.859	81.607	2374.55
13416.5	3924.69	231.449	81.6066	2374.55
13420.6	3924.24	232.035	81.6061	2374.55
13420.6	3924.24	232.035	81.6061	1473.72
13424.7	3924.33	231.911	81.6056	1473.72
13428.8	3924.41	231.787	81.6052	1473.72
13433	3924.5	231.663	81.6047	1473.72
13437.1	3924.71	231.38	81.6042	1473.72
13441.2	3924.91	231.097	81.6038	1473.72

13445.3	3925.12	230.814	81.6033	1473.72
13445.3	3925.12	230.814	81.6033	2374.55
13449.4	3924.8	231.226	81.6028	2374.55
13453.5	3924.49	231.637	81.6023	2374.55
13457.6	3924.17	232.049	81.6019	2374.55
13457.6	3924.17	232.049	81.6019	1473.72
13461.7	3923.65	232.724	81.6014	1473.72
13465.9	3923.14	233.402	81.6009	1473.72
13470	3922.62	234.08	81.6005	1473.72
13474	3922.66	234.022	81.6001	1473.72
13478.1	3922.69	233.965	81.5996	1473.72
13482.2	3922.73	233.908	81.5992	1473.72
13486.4	3922.96	233.593	81.5987	1473.72
13490.6	3923.54	232.814	81.5983	1473.72
13494.8	3923.94	232.275	81.5978	1473.72
13494.8	3923.94	232.275	81.5978	2374.55
13498.9	3923.68	232.607	81.5973	2374.55
13503	3923.43	232.939	81.5968	2374.55
13507	3923.17	233.271	81.5963	2374.55
13507	3923.17	233.271	81.5964	1473.72
13511.2	3921.94	234.89	81.5959	1473.72
13515.3	3920.73	236.496	81.5955	1473.72
13519.4	3919.51	238.102	81.5951	1473.72
13523.5	3918.08	239.996	81.5947	1473.72
13527.7	3916.64	241.89	81.5942	1473.72
13531.8	3915.21	243.783	81.5938	1473.72
13535.9	3914.21	245.097	81.5934	1473.72
13540	3913.22	246.411	81.5929	1473.72
13544.1	3912.22	247.726	81.5925	1473.72
13548.2	3911.5	248.668	81.5921	1473.72
13552.3	3910.79	249.611	81.5917	1473.72
13556.4	3910.07	250.553	81.5912	1473.72
13560.5	3909.39	251.452	81.5908	1473.72
13564.5	3908.7	252.35	81.5904	1473.72
13568.6	3908.02	253.248	81.59	1473.72
13572.7	3906.89	254.737	81.5896	1473.72
13576.8	3905.76	256.225	81.5892	1473.72
13580.9	3904.65	257.696	81.5887	1473.72
13580.9	3904.65	257.696	81.5887	1603.88
13585	3902.81	260.125	81.5883	1603.88
13589.1	3901	262.527	81.5878	1603.88
13593.2	3899.18	264.93	81.5874	1603.88
13597.8	3896.75	268.146	81.5868	1603.88
13602.3	3894.13	271.615	81.5863	1603.88
13606.9	3891.51	275.083	81.5858	1603.88
13610.8	3890.99	275.765	81.5854	1603.88
13610.8	3890.99	275.765	81.5854	1993.02
13614.9	3891.5	275.078	81.5849	1993.02
13618.9	3892.01	274.397	81.5845	1993.02
13622.9	3892.52	273.708	81.584	1993.02
13622.9	3892.52	273.708	81.584	1473.72
13627	3893.08	272.961	81.5835	1473.72
13631.1	3893.64	272.207	81.583	1473.72
13635.2	3894.2	271.452	81.5824	1473.72
13635.2	3894.2	271.452	81.5825	1603.88
13639.4	3895.28	270.003	81.582	1603.88



13643.5	3896.37	268.557	81.5815	1603.88
13647.7	3897.46	267.097	81.581	1603.88
13647.7	3897.46	267.097	81.581	1473.72
13651.4	3898.79	265.319	81.5806	1473.72
13655.1	3900.14	263.522	81.5803	1473.72
13658.8	3901.49	261.723	81.5799	1473.72
13663.3	3902.36	260.559	81.5795	1473.72
13667.8	3903.55	258.969	81.5791	1473.72
13671.9	3904.27	258.009	81.5787	1473.72
13676	3904.98	257.049	81.5784	1473.72
13680.1	3905.7	256.089	81.578	1473.72
13685	3906.3	255.282	81.5776	1473.72
13689.8	3908.42	252.464	81.5771	1473.72
13694.7	3909.8	250.616	81.5766	1473.72
13698.8	3910.9	249.146	81.5763	1473.72
13702.9	3912	247.677	81.5759	1473.72
13707	3913.1	246.209	81.5755	1473.72
13711.1	3914.13	244.837	81.5751	1473.72
13715.3	3915.15	243.465	81.5748	1473.72
13719.4	3916.18	242.094	81.5744	1473.72
13723.3	3917.5	240.338	81.574	1473.72
13727.3	3918.81	238.582	81.5737	1473.72
13731.2	3920.13	236.826	81.5733	1473.72
13735.1	3921.35	235.193	81.5729	1473.72
13739.1	3922.58	233.561	81.5726	1473.72
13743	3923.8	231.929	81.5722	1473.72
13747	3924.81	230.575	81.5718	1473.72
13751	3925.83	229.221	81.5715	1473.72
13755	3926.84	227.868	81.5711	1473.72
13759.1	3927.61	226.841	81.5707	1473.72
13763.2	3928.37	225.815	81.5703	1473.72
13767.3	3929.14	224.789	81.5699	1473.72
13771.4	3929.75	223.975	81.5696	1473.72
13775.4	3930.35	223.162	81.5692	1473.72
13779.5	3930.96	222.347	81.5688	1473.72
13783.6	3931.76	221.276	81.5684	1473.72
13787.8	3932.56	220.206	81.568	1473.72
13791.9	3933.36	219.135	81.5677	1473.72
13796	3934.3	217.879	81.5673	1473.72
13800.1	3935.24	216.622	81.5669	1473.72
13804.2	3936.18	215.366	81.5665	1473.72
13808.3	3936.67	214.707	81.5661	1473.72
13812.5	3937.16	214.048	81.5658	1473.72
13816.6	3937.65	213.389	81.5654	1473.72
13820.5	3937.96	212.974	81.565	1473.72
13824.3	3938.26	212.558	81.5647	1473.72
13828.2	3938.57	212.143	81.5643	1473.72
13831.6	3938.79	211.838	81.564	1473.72
13835	3939.02	211.534	81.5637	1473.72
13838.4	3939.24	211.232	81.5634	1473.72
13838.4	3939.24	211.232	81.5634	2374.55
13842.5	3939.65	210.68	81.5629	2374.55
13846.6	3940.05	210.133	81.5625	2374.55
13850.7	3940.46	209.586	81.562	2374.55
13855.7	3941.22	208.564	81.5614	2374.55
13860.7	3942.29	207.136	81.5608	2374.55

79998.6	2869.23	1479.41	78.163	3380.17
80002.7	2869.1	1479.57	78.1629	3380.17
80006.8	2868.97	1479.74	78.1627	3380.17
80011	2868.84	1479.9	78.1626	3380.17
80015	2868.56	1480.27	78.1624	3380.17
80019	2868.28	1480.63	78.1623	3380.17
80023.1	2868	1480.99	78.1621	3380.17
80027.2	2867.5	1481.65	78.162	3380.17
80031.3	2867.01	1482.3	78.1618	3380.17
80035.5	2866.51	1482.95	78.1617	3380.17
80039.4	2865.97	1483.67	78.1615	3380.17
80043.3	2865.42	1484.39	78.1614	3380.17
80047.2	2864.88	1485.1	78.1612	3380.17
80051.3	2864.33	1485.82	78.1611	3380.17
80055.4	2863.79	1486.54	78.1609	3380.17
80059.6	2863.24	1487.26	78.1608	3380.17
80063.6	2862.78	1487.87	78.1606	3380.17
80067.7	2862.32	1488.47	78.1605	3380.17
80071.8	2861.86	1489.07	78.1603	3380.17
80075.9	2861.42	1489.65	78.1602	3380.17
80080	2860.98	1490.23	78.16	3380.17
80084.2	2860.54	1490.81	78.1599	3380.17
80088.3	2860.08	1491.42	78.1597	3380.17
80092.4	2859.61	1492.02	78.1596	3380.17
80096.5	2859.15	1492.63	78.1594	3380.17
80100.6	2858.69	1493.24	78.1593	3380.17
80104.7	2858.22	1493.85	78.1592	3380.17
80108.9	2857.76	1494.46	78.159	3380.17
80113	2857.26	1495.11	78.1589	3380.17
80117.1	2856.77	1495.77	78.1587	3380.17
80121.2	2856.27	1496.42	78.1586	3380.17
80125.2	2855.81	1497.02	78.1584	3380.17
80129.2	2855.36	1497.62	78.1582	3380.17
80133.3	2854.9	1498.22	78.1581	3380.17
80137.1	2854.47	1498.78	78.1579	3380.17
80140.9	2854.05	1499.34	78.1578	3380.17
80144.7	2853.62	1499.9	78.1577	3380.17
80148.6	2853.17	1500.49	78.1575	3380.17
80152.5	2852.73	1501.08	78.1574	3380.17
80156.5	2852.28	1501.66	78.1573	3380.17
80160.6	2851.74	1502.37	78.1571	3380.17
80164.7	2851.21	1503.08	78.157	3380.17
80168.8	2850.67	1503.78	78.1568	3380.17
80172.9	2850.1	1504.53	78.1567	3380.17
80177	2849.54	1505.28	78.1565	3380.17
80181.2	2848.97	1506.02	78.1564	3380.17
80184.9	2848.63	1506.47	78.1562	3380.17
80188.7	2848.07	1507.21	78.1561	3380.17
80192.5	2847.63	1507.79	78.1559	3380.17
80196.3	2847.18	1508.38	78.1558	3380.17
80199.9	2846.94	1508.69	78.1556	3380.17
80203.5	2846.7	1509	78.1555	3380.17
80207.2	2846.46	1509.31	78.1554	3380.17
80211.3	2846.16	1509.7	78.1553	3380.17
80215.4	2845.86	1510.09	78.1551	3380.17
80219.5	2845.56	1510.48	78.155	3380.17

80223.2	2844.56	1511.81	78.1548	3380.17
80226.9	2843.57	1513.13	78.1546	3380.17
80230.7	2842.57	1514.45	78.1545	3380.17
80234.6	2840.55	1517.14	78.1544	3380.17
80238.6	2838.53	1519.82	78.1542	3380.17
80242.6	2836.51	1522.52	78.1541	3380.17
80246.6	2834.13	1525.7	78.154	3380.17
80250.7	2831.74	1528.87	78.1538	3380.17
80254.8	2829.35	1532.06	78.1537	3380.17
80258.9	2827.4	1534.65	78.1535	3380.17
80263	2825.45	1537.25	78.1534	3380.17
80267.2	2823.5	1539.84	78.1532	3380.17
80271.2	2822.42	1541.27	78.1531	3380.17
80275.2	2821.34	1542.7	78.1529	3380.17
80279.3	2820.27	1544.13	78.1528	3380.17
80283.4	2819.14	1545.63	78.1526	3380.17
80287.5	2818.01	1547.13	78.1525	3380.17
80291.6	2816.88	1548.63	78.1523	3380.17
80295.7	2814.96	1551.19	78.1521	3380.17
80299.8	2813.04	1553.74	78.152	3380.17
80304	2811.12	1556.29	78.1518	3380.17
80308.1	2809.78	1558.07	78.1517	3380.17
80312.2	2808.44	1559.85	78.1515	3380.17
80316.3	2807.11	1561.62	78.1514	3380.17
80320.4	2805.12	1564.27	78.1512	3380.17
80324.5	2803.13	1566.92	78.1511	3380.17
80328.7	2801.14	1569.57	78.1509	3380.17
80332.8	2799.31	1572.01	78.1508	3380.17
80336.9	2797.48	1574.44	78.1506	3380.17
80341.1	2795.65	1576.88	78.1505	3380.17
80345.2	2793.51	1579.72	78.1504	3380.17
80349.3	2791.38	1582.56	78.1502	3380.17
80353.4	2789.24	1585.41	78.1501	3380.17
80357.3	2786.97	1588.44	78.1499	3380.17
80361.2	2784.69	1591.48	78.1498	3380.17
80365.1	2782.41	1594.51	78.1496	3380.17
80369.1	2779.96	1597.78	78.1495	3380.17
80373.1	2777.5	1601.05	78.1493	3380.17
80377.1	2775.05	1604.32	78.1492	3380.17
80381.2	2772.57	1607.62	78.149	3380.17
80385.3	2770.1	1610.92	78.1488	3380.17
80389.4	2767.63	1614.21	78.1487	3380.17
80393.4	2765.14	1617.53	78.1486	3380.17
80397.5	2762.65	1620.85	78.1484	3380.17
80401.6	2760.16	1624.17	78.1483	3380.17
80405.7	2757.52	1627.68	78.1481	3380.17
80409.8	2754.89	1631.19	78.148	3380.17
80413.9	2752.26	1634.69	78.1478	3380.17
80417.9	2749.7	1638.11	78.1477	3380.17
80421.9	2747.14	1641.52	78.1476	3380.17
80425.9	2744.58	1644.93	78.1474	3380.17
80430	2741.94	1648.45	78.1473	3380.17
80434.1	2739.31	1651.96	78.1471	3380.17
80438.3	2736.67	1655.48	78.147	3380.17
80442.4	2734.07	1658.95	78.1468	3380.17
80446.5	2731.46	1662.42	78.1467	3380.17

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80454.6	2726.43	1669.13	78.1463	3380.17
80458.7	2724	1672.36	78.1462	3380.17
80462.8	2721.58	1675.59	78.146	3380.17
80466.9	2719.18	1678.78	78.1459	3380.17
80471	2716.79	1681.98	78.1457	3380.17
80475.2	2714.4	1685.16	78.1456	3380.17
80479.1	2712.14	1688.17	78.1454	3380.17
80483	2709.88	1691.19	78.1453	3380.17
80487	2707.62	1694.2	78.1452	3380.17
80491.1	2705.24	1697.36	78.145	3380.17
80495.2	2702.87	1700.53	78.1449	3380.17
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80503.3	2698.14	1706.83	78.1446	3380.17
80507.4	2695.78	1709.98	78.1444	3380.17
80511.5	2693.43	1713.11	78.1443	3380.17
80515.6	2691.09	1716.23	78.1441	3380.17
80519.7	2688.75	1719.35	78.144	3380.17
80523.9	2686.41	1722.47	78.1438	3380.17
80528	2684.14	1725.49	78.1437	3380.17
80532.1	2681.87	1728.52	78.1435	3380.17
80536.3	2679.61	1731.53	78.1434	3380.17
80540.2	2677.46	1734.4	78.1432	3380.17
80544.1	2675.3	1737.27	78.1431	3380.17
80548.1	2673.15	1740.14	78.1429	3380.17
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80556.3	2668.65	1746.14	78.1426	3380.17
80560.5	2666.4	1749.14	78.1425	3380.17
80564.6	2664.17	1752.12	78.1423	3380.17
80568.7	2661.93	1755.09	78.1422	3380.17
80572.9	2659.7	1758.07	78.142	3380.17
80576.9	2657.3	1761.27	78.1419	3380.17
80580.9	2654.9	1764.47	78.1417	3380.17
80585	2652.5	1767.67	78.1416	3380.17
80589	2650.09	1770.88	78.1414	3380.17
80593.1	2647.68	1774.1	78.1413	3380.17
80597.2	2645.27	1777.31	78.1412	3380.17
80601.3	2642.88	1780.5	78.141	3380.17
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80617.7	2633.42	1793.12	78.1404	3380.17
80621.8	2631.08	1796.23	78.1402	3380.17
80625.9	2629.2	1798.74	78.1401	3380.17
80630	2627.32	1801.24	78.1399	3380.17
80634.2	2625.44	1803.75	78.1398	3380.17
80638.3	2623.93	1805.75	78.1396	3380.17
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80666.5	2615.42	1817.07	78.1386	3380.17
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80674.5	2614.06	1818.86	78.1383	3380.17

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80682.7	2612.89	1820.41	78.138	3380.17
80686.7	2612.53	1820.88	78.1379	3380.17
80690.7	2612.18	1821.35	78.1377	3380.17
80694.8	2611.82	1821.82	78.1376	3380.17
80698.8	2611.59	1822.12	78.1374	3380.17
80702.9	2611.35	1822.42	78.1373	3380.17
80707	2611.12	1822.72	78.1371	3380.17
80711.1	2610.9	1823	78.1369	3380.17
80715.2	2610.69	1823.28	78.1368	3380.17
80719.3	2610.47	1823.56	78.1367	3380.17
80723.3	2610.26	1823.83	78.1365	3380.17
80727.3	2610.05	1824.1	78.1364	3380.17
80731.4	2609.84	1824.37	78.1362	3380.17
80735.5	2609.62	1824.65	78.1361	3380.17
80739.6	2609.41	1824.93	78.1359	3380.17
80743.8	2609.19	1825.21	78.1358	3380.17
80747.9	2609	1825.46	78.1356	3380.17
80752	2608.8	1825.71	78.1355	3380.17
80756.1	2608.61	1825.96	78.1354	3380.17
80760	2608.44	1826.17	78.1352	3380.17
80764	2608.28	1826.38	78.1351	3380.17
80768	2608.11	1826.6	78.1349	3380.17
80772.1	2607.89	1826.88	78.1348	3380.17
80776.2	2607.66	1827.17	78.1346	3380.17
80780.4	2607.44	1827.46	78.1344	3380.17
80784.5	2607.36	1827.56	78.1343	3380.17
80788.6	2607.27	1827.66	78.1341	3380.17
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80815	2606.71	1828.35	78.1332	3380.17
80819	2606.61	1828.48	78.133	3380.17
80823	2606.5	1828.61	78.1329	3380.17
80827.1	2606.4	1828.74	78.1327	3380.17
80831.2	2606.29	1828.88	78.1326	3380.17
80835.3	2606.17	1829.02	78.1324	3380.17
80839.4	2606.06	1829.16	78.1323	3380.17
80843.5	2605.91	1829.35	78.1321	3380.17
80847.6	2605.77	1829.53	78.132	3380.17
80851.8	2605.62	1829.72	78.1318	3380.17
80855.9	2605.48	1829.89	78.1317	3380.17
80860	2605.35	1830.06	78.1315	3380.17
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80867.8	2605.05	1830.45	78.1313	3380.17
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80875.4	2604.72	1830.86	78.131	3380.17
80879.4	2604.54	1831.1	78.1308	3380.17
80883.4	2604.35	1831.33	78.1307	3380.17
80887.5	2604.17	1831.57	78.1305	3380.17
80891.6	2604	1831.79	78.1304	3380.17
80895.7	2603.82	1832.01	78.1302	3380.17
80899.8	2603.65	1832.23	78.1301	3380.17
80903.9	2603.48	1832.45	78.1299	3380.17

80908	2603.32	1832.66	78.1298	3380.17
80912.2	2603.15	1832.87	78.1296	3380.17
80916.3	2602.96	1833.12	78.1295	3380.17
80920.4	2602.76	1833.37	78.1293	3380.17
80924.5	2602.57	1833.62	78.1292	3380.17
80928.6	2602.36	1833.89	78.129	3380.17
80932.7	2602.15	1834.16	78.1289	3380.17
80936.9	2601.94	1834.43	78.1287	3380.17
80940.9	2601.69	1834.76	78.1286	3380.17
80945	2601.43	1835.09	78.1284	3380.17
80949.1	2601.18	1835.42	78.1283	3380.17
80953.2	2600.9	1835.77	78.1282	3380.17
80957.3	2600.63	1836.13	78.128	3380.17
80961.4	2600.35	1836.49	78.1279	3380.17
80965.5	2600.1	1836.82	78.1277	3380.17
80969.6	2599.84	1837.15	78.1275	3380.17
80973.8	2599.59	1837.48	78.1274	3380.17
80977.9	2599.3	1837.86	78.1272	3380.17
80982	2599.01	1838.24	78.1271	3380.17
80986.1	2598.72	1838.61	78.1269	3380.17
80990.4	2598.3	1839.16	78.1268	3380.17
80994.7	2597.88	1839.72	78.1266	3380.17
80998.2	2597.58	1840.1	78.1265	3380.17
81001.8	2597.29	1840.49	78.1264	3380.17
81005.7	2596.74	1841.21	78.1262	3380.17
81009.6	2596.2	1841.93	78.1261	3380.17
81013.5	2595.65	1842.65	78.126	3380.17
81017.6	2594.36	1844.37	78.1258	3380.17
81021.7	2593.07	1846.08	78.1257	3380.17
81025.8	2591.78	1847.8	78.1255	3380.17
81029.5	2590.53	1849.46	78.1254	3380.17
81033.2	2589.28	1851.12	78.1252	3380.17
81036.9	2588.04	1852.78	78.1251	3380.17
81040.6	2587.79	1853.1	78.1249	3380.17
81044.3	2587.54	1853.43	78.1248	3380.17
81048.1	2587.29	1853.75	78.1247	3380.17
81052.2	2587.48	1853.49	78.1245	3380.17
81056.3	2587.67	1853.22	78.1244	3380.17
81060.5	2587.86	1852.96	78.1242	3380.17
81064.6	2587.97	1852.8	78.1241	3380.17
81068.7	2588.09	1852.63	78.1239	3380.17
81072.8	2588.2	1852.47	78.1238	3380.17
81076.9	2588.83	1851.62	78.1236	3380.17
81081	2589.45	1850.77	78.1235	3380.17
81085.2	2590.08	1849.93	78.1233	3380.17
81090	2591.6	1847.88	78.1232	3380.17
81093.8	2592.52	1846.64	78.123	3380.17
81097.6	2593.45	1845.39	78.1228	3380.17
81101.4	2594.37	1844.15	78.1227	3380.17
81105	2594.67	1843.74	78.1226	3380.17
81108.6	2594.96	1843.33	78.1225	3380.17
81112.2	2595.26	1842.93	78.1224	3380.17
81116.8	2595.43	1842.7	78.1222	3380.17
81121.4	2595.59	1842.46	78.122	3380.17
81125.5	2595.74	1842.26	78.1219	3380.17
81129.6	2595.88	1842.05	78.1217	3380.17

81133.7	2596.03	1841.84	78.1216	3380.17
81137.7	2596.2	1841.6	78.1214	3380.17
81141.7	2596.38	1841.36	78.1213	3380.17
81145.7	2596.55	1841.12	78.1211	3380.17
81149.5	2596.73	1840.86	78.121	3380.17
81153.4	2596.92	1840.61	78.1208	3380.17
81157.3	2597.1	1840.35	78.1207	3380.17
81161.2	2597.29	1840.08	78.1205	3380.17
81165.1	2597.49	1839.82	78.1204	3380.17
81169.1	2597.68	1839.55	78.1203	3380.17
81173.2	2597.93	1839.2	78.1201	3380.17
81177.3	2598.19	1838.85	78.12	3380.17
81181.4	2598.44	1838.5	78.1198	3380.17
81185.5	2598.49	1838.42	78.1197	3380.17
81189.6	2598.54	1838.34	78.1195	3380.17
81193.8	2598.59	1838.27	78.1194	3380.17
81197.7	2598.66	1838.16	78.1192	3380.17
81201.6	2598.73	1838.06	78.1191	3380.17
81205.5	2598.8	1837.96	78.1189	3380.17
81209.6	2598.75	1838.01	78.1188	3380.17
81213.7	2598.71	1838.06	78.1186	3380.17
81217.9	2598.66	1838.11	78.1185	3380.17
81222	2598.42	1838.43	78.1183	3380.17
81226.1	2598.17	1838.74	78.1181	3380.17
81230.2	2597.93	1839.06	78.118	3380.17
81234.2	2597.56	1839.54	78.1179	3380.17
81238.3	2597.2	1840.02	78.1177	3380.17
81242.4	2596.83	1840.5	78.1176	3380.17
81246.4	2596.58	1840.83	78.1174	3380.17
81250.5	2596.32	1841.16	78.1173	3380.17
81254.6	2596.07	1841.49	78.1171	3380.17
81258.5	2595.68	1842	78.117	3380.17
81262.5	2595.28	1842.52	78.1169	3380.17
81266.4	2594.89	1843.04	78.1167	3380.17
81270.5	2594.62	1843.39	78.1166	3380.17
81274.5	2594.35	1843.74	78.1164	3380.17
81278.6	2594.08	1844.09	78.1163	3380.17
81282.6	2593.9	1844.32	78.1161	3380.17
81286.7	2593.71	1844.56	78.116	3380.17
81290.8	2593.53	1844.79	78.1158	3380.17
81294.8	2593.37	1845	78.1156	3380.17
81298.8	2593.21	1845.2	78.1155	3380.17
81302.9	2593.05	1845.41	78.1154	3380.17
81306.3	2592.94	1845.54	78.1153	3380.17
81309.7	2592.84	1845.68	78.1152	3380.17
81313.1	2592.73	1845.81	78.115	3380.17
81317.1	2592.64	1845.92	78.1149	3380.17
81321.2	2592.54	1846.04	78.1147	3380.17
81325.3	2592.45	1846.15	78.1145	3380.17
81328.6	2592.32	1846.32	78.1144	3380.17
81332	2592.19	1846.48	78.1143	3380.17
81335.4	2592.06	1846.65	78.1142	3380.17
81339.5	2591.32	1847.63	78.1141	3380.17
81343.6	2590.58	1848.61	78.1139	3380.17
81347.7	2589.84	1849.59	78.1138	3380.17
81351.8	2589.13	1850.53	78.1136	3380.17

81355.9	2588.43	1851.46	78.1134	3380.17
81360.1	2587.72	1852.4	78.1133	3380.17
81364.2	2588.22	1851.72	78.1131	3380.17
81368.3	2588.72	1851.04	78.113	3380.17
81372.5	2589.22	1850.36	78.1128	3380.17
81376.6	2590.14	1849.11	78.1127	3380.17
81380.7	2591.07	1847.86	78.1125	3380.17
81384.8	2591.99	1846.62	78.1124	3380.17
81388.3	2592.35	1846.13	78.1123	3380.17
81391.9	2592.71	1845.64	78.1121	3380.17
81395.5	2593.07	1845.15	78.112	3380.17
81399.5	2592.9	1845.37	78.1119	3380.17
81403.4	2592.73	1845.58	78.1117	3380.17
81407.4	2592.56	1845.8	78.1116	3380.17
81411.6	2592.28	1846.16	78.1114	3380.17
81415.7	2592	1846.53	78.1113	3380.17
81419.9	2591.72	1846.89	78.1111	3380.17
81424	2591.81	1846.76	78.1109	3380.17
81428.1	2591.91	1846.62	78.1108	3380.17
81432.2	2592	1846.49	78.1106	3380.17
81436.1	2592.71	1845.52	78.1105	3380.17
81440	2593.43	1844.56	78.1104	3380.17
81443.9	2594.14	1843.59	78.1102	3380.17
81448	2595.07	1842.34	78.1101	3380.17
81452.1	2596.01	1841.08	78.1099	3380.17
81456.2	2596.94	1839.82	78.1098	3380.17
81460.2	2597.6	1838.93	78.1097	3380.17
81464.3	2598.25	1838.04	78.1095	3380.17
81468.4	2598.91	1837.15	78.1094	3380.17
81472.3	2599.34	1836.57	78.1092	3380.17
81476.3	2599.77	1835.98	78.1091	3380.17
81480.3	2600.2	1835.4	78.1089	3380.17
81484.4	2600.49	1834.99	78.1087	3380.17
81488.5	2600.79	1834.59	78.1086	3380.17
81492.7	2601.08	1834.19	78.1084	3380.17
81496.8	2601.47	1833.65	78.1083	3380.17
81500.9	2601.87	1833.11	78.1081	3380.17
81505	2602.26	1832.58	78.108	3380.17
81508.9	2602.92	1831.68	78.1079	3380.17
81512.9	2603.59	1830.78	78.1077	3380.17
81516.9	2604.25	1829.88	78.1076	3380.17
81521	2605.01	1828.85	78.1074	3380.17
81525.1	2605.78	1827.82	78.1073	3380.17
81529.3	2606.54	1826.79	78.1071	3380.17
81533.4	2607.16	1825.95	78.107	3380.17
81537.5	2607.78	1825.11	78.1068	3380.17
81541.7	2608.4	1824.27	78.1067	3380.17
81545.5	2608.98	1823.48	78.1066	3380.17
81549.4	2609.57	1822.69	78.1064	3380.17
81553.3	2610.15	1821.9	78.1062	3380.17
81557.3	2610.75	1821.08	78.1061	3380.17
81561.4	2611.36	1820.26	78.1059	3380.17
81565.4	2611.96	1819.45	78.1058	3380.17
81569.6	2612.59	1818.59	78.1056	3380.17
81573.7	2613.22	1817.74	78.1055	3380.17
81577.9	2613.85	1816.89	78.1053	3380.17



81581.8	2614.47	1816.05	78.1052	3380.17
81585.7	2615.09	1815.21	78.1051	3380.17
81589.6	2615.71	1814.37	78.1049	3380.17
81593.8	2616.46	1813.36	78.1048	3380.17
81597.9	2617.2	1812.35	78.1046	3380.17
81602.1	2617.95	1811.34	78.1045	3380.17
81606	2618.96	1809.99	78.1044	3380.17
81609.9	2619.96	1808.63	78.1042	3380.17
81613.9	2620.97	1807.27	78.104	3380.17
81618	2621.9	1806.02	78.1039	3380.17
81622.1	2622.82	1804.77	78.1037	3380.17
81626.1	2623.75	1803.52	78.1036	3380.17
81630.3	2624.76	1802.16	78.1034	3380.17
81634.4	2625.77	1800.8	78.1033	3380.17
81638.6	2626.78	1799.44	78.1031	3380.17
81642.6	2628.3	1797.39	78.103	3380.17
81646.6	2629.82	1795.35	78.1028	3380.17
81650.7	2631.34	1793.31	78.1027	3380.17
81654.8	2632.9	1791.21	78.1026	3380.17
81658.9	2634.46	1789.11	78.1024	3380.17
81663	2636.03	1787	78.1023	3380.17
81667.1	2637.33	1785.25	78.1021	3380.17
81671.2	2638.63	1783.5	78.102	3380.17
81675.4	2639.93	1781.75	78.1018	3380.17
81679.5	2641.37	1779.82	78.1017	3380.17
81683.6	2642.81	1777.88	78.1015	3380.17
81687.7	2644.25	1775.94	78.1014	3380.17
81691.8	2645.9	1773.72	78.1012	3380.17
81695.8	2647.55	1771.5	78.1011	3380.17
81699.9	2649.21	1769.28	78.1009	3380.17
81704.1	2650.93	1766.97	78.1008	3380.17
81708.2	2652.64	1764.67	78.1006	3380.17
81712.4	2654.36	1762.36	78.1004	3380.17
81716.5	2656.17	1759.93	78.1003	3380.17
81720.6	2657.98	1757.5	78.1001	3380.17
81724.7	2659.79	1755.06	78.1	3380.17
81728.8	2661.6	1752.63	78.0998	3380.17
81732.9	2663.41	1750.2	78.0997	3380.17
81737	2665.22	1747.77	78.0996	3380.17
81741.2	2667.03	1745.33	78.0994	3380.17
81745.3	2668.85	1742.9	78.0993	3380.17
81749.4	2670.66	1740.46	78.0991	3380.17
81753.6	2672.45	1738.06	78.099	3380.17
81757.7	2674.24	1735.66	78.0988	3380.17
81761.8	2676.02	1733.26	78.0987	3380.17
81765.8	2677.79	1730.89	78.0985	3380.17
81769.8	2679.55	1728.52	78.0984	3380.17
81773.8	2681.32	1726.14	78.0983	3380.17
81777.9	2683.2	1723.62	78.0981	3380.17
81782	2685.08	1721.1	78.0979	3380.17
81786.1	2686.96	1718.57	78.0978	3380.17
81790.2	2688.82	1716.07	78.0976	3380.17
81794.3	2690.68	1713.57	78.0975	3380.17
81798.4	2692.54	1711.08	78.0973	3380.17
81802.5	2694.25	1708.77	78.0972	3380.17
81806.5	2695.97	1706.47	78.097	3380.17

81810.6	2697.68	1704.17	78.0969	3380.17
81814.7	2699.24	1702.08	78.0967	3380.17
81818.8	2700.8	1699.99	78.0966	3380.17
81822.9	2702.35	1697.9	78.0964	3380.17
81826.6	2703.61	1696.2	78.0963	3380.17
81830.3	2704.87	1694.51	78.0962	3380.17
81834	2706.13	1692.81	78.0961	3380.17
81838.2	2707.48	1691	78.0959	3380.17
81842.3	2708.83	1689.18	78.0957	3380.17
81846.4	2710.18	1687.37	78.0956	3380.17
81850.5	2711.52	1685.56	78.0954	3380.17
81854.6	2712.87	1683.75	78.0953	3380.17
81858.8	2714.21	1681.95	78.0951	3380.17
81862.8	2715.48	1680.24	78.095	3380.17
81866.8	2716.75	1678.53	78.0948	3380.17
81870.7	2718.02	1676.82	78.0947	3380.17
81874.7	2719.24	1675.18	78.0945	3380.17
81878.7	2720.47	1673.53	78.0944	3380.17
81882.8	2721.69	1671.89	78.0943	3380.17
81886.9	2723.05	1670.06	78.0941	3380.17
81891	2724.4	1668.24	78.094	3380.17
81895.2	2725.76	1666.41	78.0938	3380.17
81899.1	2726.89	1664.89	78.0937	3380.17
81903.1	2728.02	1663.37	78.0936	3380.17
81907	2729.15	1661.85	78.0934	3380.17
81911.2	2729.91	1660.82	78.0932	3380.17
81915.3	2730.68	1659.79	78.0931	3380.17
81919.4	2731.44	1658.76	78.0929	3380.17
81923.6	2732.12	1657.84	78.0928	3380.17
81927.7	2732.79	1656.93	78.0926	3380.17
81931.8	2733.47	1656.01	78.0925	3380.17
81935.8	2734.04	1655.24	78.0923	3380.17
81939.8	2734.61	1654.47	78.0922	3380.17
81943.7	2735.18	1653.7	78.092	3380.17
81946.5	2735.18	1653.69	78.092	3380.17
81949.3	2735.97	1652.63	78.0918	3380.17
81953.4	2736.6	1651.77	78.0917	3380.17
81957.5	2737.24	1650.91	78.0915	3380.17
81961.5	2737.87	1650.05	78.0914	3380.17
81965.6	2738.39	1649.35	78.0912	3380.17
81969.6	2738.91	1648.65	78.0911	3380.17
81973.6	2739.43	1647.94	78.091	3380.17
81977.7	2739.97	1647.21	78.0908	3380.17
81981.8	2740.51	1646.48	78.0907	3380.17
81985.9	2741.05	1645.74	78.0905	3380.17
81990.1	2741.69	1644.88	78.0904	3380.17
81994.2	2742.33	1644.01	78.0902	3380.17
81998.4	2742.97	1643.14	78.0901	3380.17
82002.5	2743.65	1642.23	78.0899	3380.17
82006.6	2744.32	1641.32	78.0898	3380.17
82010.7	2745	1640.4	78.0896	3380.17
82014.4	2745.53	1639.68	78.0895	3380.17
82018.2	2746.06	1638.96	78.0893	3380.17
82021.9	2746.59	1638.25	78.0892	3380.17
82026	2746.95	1637.75	78.089	3380.17
82030.2	2747.32	1637.25	78.0889	3380.17

82034.3	2747.68	1636.76	78.0888	3380.17
82038.4	2747.31	1637.24	78.0886	3380.17
82042.5	2746.94	1637.73	78.0885	3380.17
82046.6	2746.57	1638.21	78.0883	3380.17
82050.7	2745.25	1639.97	78.0882	3380.17
82054.8	2743.92	1641.73	78.088	3380.17
82058.9	2742.6	1643.49	78.0879	3380.17
82062.8	2740.96	1645.67	78.0878	3380.17
82066.7	2739.31	1647.86	78.0876	3380.17
82070.5	2737.67	1650.05	78.0874	3380.17
82074.6	2735.8	1652.54	78.0873	3380.17
82078.7	2733.93	1655.03	78.0871	3380.17
82082.8	2732.05	1657.53	78.087	3380.17
82086.9	2729.95	1660.33	78.0868	3380.17
82091	2727.85	1663.12	78.0867	3380.17
82095.1	2725.76	1665.91	78.0865	3380.17
82099.3	2723.59	1668.8	78.0864	3380.17
82103.4	2721.43	1671.68	78.0862	3380.17
82107.5	2719.26	1674.57	78.0861	3380.17
82111.4	2717.21	1677.3	78.086	3380.17
82115.3	2715.17	1680.03	78.0858	3380.17
82119.1	2713.12	1682.75	78.0857	3380.17
82123.2	2711.01	1685.56	78.0856	3380.17
82127.3	2708.9	1688.37	78.0854	3380.17
82131.4	2706.79	1691.19	78.0853	3380.17
82135.4	2704.81	1693.82	78.0851	3380.17
82139.3	2702.84	1696.45	78.0849	3380.17
82143.2	2700.86	1699.09	78.0848	3380.17
82147.3	2698.86	1701.74	78.0846	3380.17
82151.4	2696.87	1704.4	78.0845	3380.17
82155.5	2694.87	1707.07	78.0843	3380.17
82159.7	2692.8	1709.82	78.0842	3380.17
82163.8	2690.73	1712.58	78.084	3380.17
82167.9	2688.66	1715.34	78.0839	3380.17
82172.1	2686.57	1718.13	78.0838	3380.17
82176.2	2684.47	1720.92	78.0836	3380.17
82180.3	2682.38	1723.71	78.0835	3380.17
82184.5	2680.32	1726.45	78.0833	3380.17
82188.6	2678.27	1729.19	78.0832	3380.17
82192.7	2676.21	1731.93	78.083	3380.17
82196.6	2674.25	1734.54	78.0829	3380.17
82200.4	2672.29	1737.15	78.0827	3380.17
82204.2	2670.33	1739.76	78.0826	3380.17
82208.4	2668.22	1742.57	78.0824	3380.17
82212.5	2666.12	1745.38	78.0823	3380.17
82216.6	2664.01	1748.18	78.0821	3380.17
82220.8	2661.9	1751	78.082	3380.17
82224.9	2659.78	1753.82	78.0818	3380.17
82229	2657.67	1756.63	78.0817	3380.17
82232.9	2655.58	1759.42	78.0815	3380.17
82236.8	2653.49	1762.21	78.0814	3380.17
82240.7	2651.39	1765	78.0813	3380.17
82244.8	2649.2	1767.93	78.0811	3380.17
82248.9	2647	1770.86	78.081	3380.17
82253	2644.8	1773.79	78.0808	3380.17
82257.1	2642.61	1776.71	78.0807	3380.17

82261.2	2640.42	1779.62	78.0805	3380.17
82265.3	2638.24	1782.53	78.0804	3380.17
82269.4	2636.32	1785.09	78.0802	3380.17
82273.4	2634.41	1787.64	78.0801	3380.17
82277.4	2632.49	1790.2	78.0799	3380.17
82281.6	2630.63	1792.67	78.0798	3380.17
82285.7	2628.77	1795.15	78.0796	3380.17
82289.9	2626.91	1797.63	78.0795	3380.17
82294	2625.12	1800.01	78.0793	3380.17
82298.1	2623.33	1802.39	78.0792	3380.17
82302.2	2621.54	1804.78	78.079	3380.17
82305.9	2619.93	1806.93	78.0789	3380.17
82309.5	2618.32	1809.08	78.0788	3380.17
82313.2	2616.7	1811.23	78.0787	3380.17
82317.4	2614.87	1813.67	78.0785	3380.17
82321.5	2613.04	1816.11	78.0784	3380.17
82325.6	2611.21	1818.54	78.0782	3380.17
82329.7	2609.32	1821.06	78.078	3380.17
82333.8	2607.43	1823.59	78.0779	3380.17
82337.9	2605.53	1826.11	78.0777	3380.17
82341.9	2603.83	1828.38	78.0776	3380.17
82345.8	2602.13	1830.64	78.0774	3380.17
82349.7	2600.43	1832.91	78.0773	3380.17
82353.8	2598.77	1835.12	78.0771	3380.17
82357.9	2597.11	1837.33	78.077	3380.17
82362	2595.44	1839.55	78.0769	3380.17
82366.2	2594	1841.46	78.0767	3380.17
82370.3	2592.57	1843.38	78.0766	3380.17
82374.4	2591.13	1845.29	78.0764	3380.17
82378.4	2590.05	1846.72	78.0763	3380.17
82382.4	2588.97	1848.15	78.0761	3380.17
82386.4	2587.9	1849.58	78.076	3380.17
82390.9	2586.79	1851.05	78.0758	3380.17
82395.5	2585.75	1852.43	78.0757	3380.17
82400	2584.71	1853.81	78.0755	3380.17
82404.1	2583.73	1855.12	78.0753	3380.17
82408.2	2582.74	1856.42	78.0752	3380.17
82412.3	2581.76	1857.73	78.0751	3380.17
82416.3	2581.02	1858.72	78.0749	3380.17
82420.3	2580.27	1859.7	78.0748	3380.17
82424.3	2579.53	1860.69	78.0746	3380.17
82428.4	2578.86	1861.57	78.0744	3380.17
82432.5	2578.19	1862.46	78.0743	3380.17
82436.6	2577.52	1863.34	78.0741	3380.17
82440.7	2576.94	1864.1	78.074	3380.17
82444.8	2576.37	1864.87	78.0738	3380.17
82448.9	2575.79	1865.63	78.0737	3380.17
82453.1	2575.17	1866.45	78.0735	3380.17
82457.2	2574.55	1867.27	78.0734	3380.17
82461.4	2573.93	1868.09	78.0732	3380.17
82465.5	2573.21	1869.04	78.0731	3380.17
82469.6	2572.48	1870	78.073	3380.17
82473.7	2571.76	1870.96	78.0728	3380.17
82477.8	2570.79	1872.25	78.0727	3380.17
82481.9	2569.81	1873.54	78.0725	3380.17
82486	2568.84	1874.84	78.0724	3380.17

82490.2	2567.5	1876.62	78.0722	3380.17
82494.3	2566.15	1878.41	78.0721	3380.17
82498.4	2564.81	1880.2	78.0719	3380.17
82502.5	2563.14	1882.43	78.0718	3380.17
82506.6	2561.46	1884.66	78.0716	3380.17
82510.6	2559.79	1886.89	78.0715	3380.17
82514.7	2557.93	1889.37	78.0713	3380.17
82518.8	2556.06	1891.86	78.0712	3380.17
82522.9	2554.19	1894.35	78.071	3380.17
82527.1	2552.1	1897.14	78.0708	3380.17
82531.2	2550.01	1899.93	78.0707	3380.17
82535.4	2547.91	1902.72	78.0705	3380.17
82539.3	2545.7	1905.67	78.0704	3380.17
82543.3	2543.49	1908.61	78.0703	3380.17
82547.2	2541.28	1911.57	78.0701	3380.17
82551.3	2539	1914.61	78.07	3380.17
82555.3	2536.71	1917.66	78.0699	3380.17
82559.3	2534.42	1920.72	78.0697	3380.17
82562.9	2532.41	1923.41	78.0696	3380.17
82566.5	2530.39	1926.09	78.0694	3380.17
82570	2528.37	1928.79	78.0693	3380.17
82574	2526.21	1931.67	78.0692	3380.17
82577.9	2524.05	1934.55	78.069	3380.17
82581.9	2521.89	1937.43	78.0689	3380.17
82586	2519.59	1940.51	78.0687	3380.17
82590.1	2517.29	1943.58	78.0686	3380.17
82594.2	2514.99	1946.64	78.0684	3380.17
82598.3	2512.65	1949.76	78.0683	3380.17
82602.4	2510.31	1952.89	78.0682	3380.17
82606.5	2507.96	1956.02	78.068	3380.17
82610.5	2505.63	1959.13	78.0679	3380.17
82614.5	2503.29	1962.25	78.0677	3380.17
82618.5	2500.96	1965.36	78.0676	3380.17
82622.6	2498.55	1968.57	78.0674	3380.17
82626.7	2496.14	1971.79	78.0672	3380.17
82630.8	2493.74	1975	78.0671	3380.17
82634.9	2491.29	1978.27	78.0669	3380.17
82639	2488.84	1981.54	78.0668	3380.17
82643.1	2486.38	1984.82	78.0666	3380.17
82647.2	2483.87	1988.17	78.0665	3380.17
82651.3	2481.36	1991.51	78.0664	3380.17
82655.4	2478.85	1994.87	78.0662	3380.17
82659.5	2476.23	1998.37	78.0661	3380.17
82663.6	2473.61	2001.86	78.0659	3380.17
82667.7	2471	2005.35	78.0658	3380.17
82671.9	2468.48	2008.71	78.0656	3380.17
82676	2465.97	2012.07	78.0655	3380.17
82680.1	2463.45	2015.43	78.0653	3380.17
82684.2	2461.52	2018	78.0652	3380.17
82688.3	2459.59	2020.58	78.065	3380.17
82692.4	2457.65	2023.16	78.0649	3380.17
82695.9	2456.46	2024.75	78.0647	3380.17
82699.4	2455.27	2026.33	78.0646	3380.17
82704.3	2454.97	2026.72	78.0644	3380.17
82709.3	2456.7	2024.39	78.0643	3380.17
82714.2	2457.88	2022.8	78.0641	3380.17

82718.3	2459.11	2021.14	78.0639	3380.17
82722.4	2460.35	2019.47	78.0638	3380.17
82726.4	2461.58	2017.82	78.0636	3380.17
82730.4	2462.49	2016.59	78.0635	3380.17
82734.5	2463.49	2015.23	78.0633	3380.17
82738.6	2464.5	2013.88	78.0632	3380.17
82742.7	2465.5	2012.53	78.063	3380.17
82746.8	2466.88	2010.67	78.0629	3380.17
82750.9	2468.25	2008.82	78.0627	3380.17
82755	2469.63	2006.96	78.0626	3380.17
82759	2471.29	2004.73	78.0625	3380.17
82763.2	2472.8	2002.7	78.0623	3380.17
82767.3	2474.31	2000.67	78.0622	3380.17
82771.4	2475.82	1998.63	78.062	3380.17
82775.6	2477.15	1996.85	78.0619	3380.17
82779.7	2478.47	1995.06	78.0617	3380.17
82783.8	2479.8	1993.27	78.0616	3380.17
82787.2	2480.85	1991.85	78.0614	3380.17
82790.6	2481.91	1990.43	78.0613	3380.17
82794	2482.96	1989.02	78.0612	3380.17
82797.8	2484.3	1987.21	78.061	3380.17
82801.6	2485.65	1985.4	78.0609	3380.17
82805.3	2486.99	1983.59	78.0608	3380.17
82809	2488.69	1981.31	78.0607	3380.17
82812.7	2490.39	1979.02	78.0605	3380.17
82816.3	2492.09	1976.74	78.0603	3380.17
82820.3	2493.7	1974.57	78.0602	3380.17
82824.3	2495.31	1972.41	78.0601	3380.17
82828.2	2496.92	1970.24	78.0599	3380.17
82832.3	2498.85	1967.65	78.0598	3380.17
82836.3	2500.78	1965.05	78.0597	3380.17
82840.3	2502.71	1962.46	78.0595	3380.17
82844.3	2504.58	1959.94	78.0594	3380.17
82848.3	2506.45	1957.43	78.0592	3380.17
82852.2	2508.33	1954.91	78.0591	3380.17
82856.3	2510.19	1952.41	78.0589	3380.17
82860.4	2512.05	1949.91	78.0588	3380.17
82864.4	2513.9	1947.42	78.0586	3380.17
82868.6	2515.96	1944.65	78.0585	3380.17
82872.7	2518.02	1941.88	78.0583	3380.17
82876.8	2520.09	1939.1	78.0582	3380.17
82880.9	2522.4	1936	78.058	3380.17
82885	2524.71	1932.9	78.0579	3380.17
82889	2527.01	1929.81	78.0577	3380.17
82893.2	2529.32	1926.7	78.0576	3380.17
82897.3	2531.64	1923.6	78.0574	3380.17
82901.4	2533.95	1920.49	78.0573	3380.17
82905.5	2535.97	1917.77	78.0571	3380.17
82909.6	2537.99	1915.06	78.057	3380.17
82913.7	2540.01	1912.35	78.0569	3380.17
82917.8	2541.69	1910.09	78.0567	3380.17
82921.9	2543.36	1907.84	78.0566	3380.17
82926	2545.04	1905.58	78.0564	3380.17
82930.1	2546.36	1903.81	78.0563	3380.17
82934.2	2547.67	1902.04	78.0561	3380.17
82938.3	2548.99	1900.27	78.056	3380.17

82942.4	2550.12	1898.74	78.0558	3380.17
82946.5	2551.25	1897.22	78.0556	3380.17
82950.5	2552.38	1895.7	78.0555	3380.17
82954.6	2553.58	1894.08	78.0553	3380.17
82958.7	2554.78	1892.46	78.0552	3380.17
82962.8	2555.98	1890.85	78.055	3380.17
82967	2557.2	1889.2	78.0549	3380.17
82971.1	2558.43	1887.55	78.0548	3380.17
82975.2	2559.65	1885.91	78.0546	3380.17
82979.1	2560.55	1884.69	78.0545	3380.17
82983	2561.45	1883.48	78.0543	3380.17
82987.2	2562.38	1882.22	78.0542	3380.17
82991.3	2563.31	1880.97	78.0541	3380.17
82995.4	2564.24	1879.71	78.0539	3380.17
82999.4	2565.25	1878.35	78.0538	3380.17
83003.4	2566.26	1876.99	78.0536	3380.17
83007.3	2567.27	1875.63	78.0535	3380.17
83011.5	2568.24	1874.31	78.0533	3380.17
83015.6	2569.22	1873	78.0531	3380.17
83019.7	2570.19	1871.69	78.053	3380.17
83023.8	2571.45	1869.99	78.0528	3380.17
83027.9	2572.71	1868.29	78.0527	3380.17
83032	2573.98	1866.59	78.0525	3380.17
83036	2575.25	1864.88	78.0524	3380.17
83039.9	2576.51	1863.18	78.0523	3380.17
83043.8	2577.78	1861.47	78.0521	3380.17
83048	2579.15	1859.63	78.052	3380.17
83052.1	2580.52	1857.78	78.0518	3380.17
83056.2	2581.89	1855.94	78.0517	3380.17
83060.3	2583.3	1854.05	78.0516	3380.17
83064.4	2584.7	1852.16	78.0514	3380.17
83068.5	2586.11	1850.26	78.0513	3380.17
83072.6	2587.48	1848.42	78.0511	3380.17
83076.7	2588.85	1846.58	78.0509	3380.17
83080.8	2590.21	1844.74	78.0508	3380.17
83084.9	2591.56	1842.93	78.0506	3380.17
83089	2592.91	1841.11	78.0505	3380.17
83093.1	2594.27	1839.28	78.0503	3380.17
83097.3	2595.52	1837.6	78.0502	3380.17
83101.4	2596.76	1835.92	78.05	3380.17
83105.5	2598.01	1834.25	78.0499	3380.17
83109.6	2599.07	1832.82	78.0497	3380.17
83113.7	2600.13	1831.4	78.0496	3380.17
83117.8	2601.18	1829.97	78.0495	3380.17
83122	2602.09	1828.74	78.0493	3380.17
83126.1	2603.01	1827.51	78.0492	3380.17
83130.2	2603.92	1826.28	78.049	3380.17
83134.2	2604.71	1825.21	78.0489	3380.17
83138.2	2605.49	1824.15	78.0487	3380.17
83142.2	2606.28	1823.09	78.0486	3380.17
83146.3	2607.03	1822.08	78.0484	3380.17
83150.4	2607.78	1821.06	78.0483	3380.17
83154.5	2608.53	1820.05	78.0481	3380.17
83158.5	2609.24	1819.09	78.048	3380.17
83162.5	2609.95	1818.13	78.0478	3380.17
83166.4	2610.66	1817.17	78.0477	3380.17

83170.5	2611.44	1816.12	78.0475	3380.17
83174.6	2612.21	1815.07	78.0474	3380.17
83178.7	2612.99	1814.02	78.0472	3380.17
83182.9	2613.75	1813	78.0471	3380.17
83187	2614.5	1811.97	78.047	3380.17
83191.1	2615.26	1810.95	78.0468	3380.17
83195.2	2616.02	1809.92	78.0467	3380.17
83199.3	2616.78	1808.9	78.0465	3380.17
83203.3	2617.54	1807.87	78.0464	3380.17
83207.5	2618.34	1806.78	78.0462	3380.17
83211.6	2619.15	1805.7	78.0461	3380.17
83215.7	2619.95	1804.61	78.0459	3380.17
83219.8	2620.81	1803.46	78.0458	3380.17
83223.9	2621.66	1802.3	78.0456	3380.17
83228	2622.52	1801.15	78.0455	3380.17
83232	2623.36	1800.01	78.0453	3380.17
83236	2624.21	1798.87	78.0452	3380.17
83239.9	2625.05	1797.73	78.045	3380.17
83244	2625.79	1796.73	78.0449	3380.17
83248	2626.53	1795.73	78.0447	3380.17
83252	2627.27	1794.73	78.0446	3380.17
83256.2	2627.83	1793.97	78.0445	3380.17
83260.3	2628.39	1793.21	78.0443	3380.17
83264.4	2628.95	1792.45	78.0442	3380.17
83268.6	2629.42	1791.81	78.044	3380.17
83272.7	2629.89	1791.17	78.0439	3380.17
83276.8	2630.36	1790.53	78.0437	3380.17
83280.9	2630.9	1789.8	78.0436	3380.17
83285	2631.44	1789.07	78.0434	3380.17
83289.1	2631.98	1788.34	78.0433	3380.17
83293.2	2632.67	1787.4	78.0431	3380.17
83297.3	2633.36	1786.47	78.043	3380.17
83301.4	2634.05	1785.54	78.0428	3380.17
83305.5	2634.91	1784.38	78.0426	3380.17
83309.6	2635.76	1783.22	78.0425	3380.17
83313.7	2636.62	1782.07	78.0423	3380.17
83318.5	2637.08	1781.44	78.0422	3380.17
83323.2	2639.06	1778.77	78.042	3380.17
83327.9	2640.32	1777.08	78.0419	3380.17
83331.9	2641.45	1775.56	78.0417	3380.17
83335.8	2642.57	1774.05	78.0415	3380.17
83339.7	2643.7	1772.53	78.0414	3380.17
83343.9	2644.87	1770.96	78.0413	3380.17
83348	2646.03	1769.39	78.0411	3380.17
83352.1	2647.2	1767.82	78.041	3380.17
83356.2	2648.38	1766.23	78.0408	3380.17
83360.3	2649.56	1764.64	78.0407	3380.17
83364.4	2650.74	1763.05	78.0405	3380.17
83368.2	2651.76	1761.68	78.0404	3380.17
83372	2652.78	1760.3	78.0403	3380.17
83375.7	2653.8	1758.93	78.0401	3380.17
83379.8	2654.83	1757.54	78.04	3380.17
83383.9	2655.85	1756.16	78.0398	3380.17
83387.9	2656.88	1754.78	78.0397	3380.17
83392	2657.86	1753.46	78.0395	3380.17
83396.1	2658.84	1752.14	78.0394	3380.17



83400.1	2659.82	1750.82	78.0392	3380.17
83404.3	2660.71	1749.61	78.0391	3380.17
83408.4	2661.61	1748.41	78.0389	3380.17
83412.5	2662.5	1747.2	78.0388	3380.17
83416.5	2663.22	1746.23	78.0387	3380.17
83420.5	2663.94	1745.26	78.0385	3380.17
83424.4	2664.66	1744.28	78.0384	3380.17
83428.6	2665.27	1743.45	78.0382	3380.17
83432.7	2665.88	1742.63	78.0381	3380.17
83436.8	2666.49	1741.8	78.0379	3380.17
83440.9	2667.06	1741.03	78.0378	3380.17
83445	2667.63	1740.26	78.0376	3380.17
83449.1	2668.2	1739.48	78.0375	3380.17
83453.1	2668.73	1738.77	78.0373	3380.17
83457.1	2669.26	1738.05	78.0372	3380.17
83461.1	2669.79	1737.33	78.037	3380.17
83465.2	2670.3	1736.64	78.0369	3380.17
83469.3	2670.81	1735.94	78.0367	3380.17
83473.4	2671.32	1735.25	78.0366	3380.17
83477.6	2671.89	1734.48	78.0364	3380.17
83481.7	2672.45	1733.71	78.0363	3380.17
83485.8	2673.02	1732.94	78.0361	3380.17
83490	2673.68	1732.06	78.036	3380.17
83494.1	2674.33	1731.17	78.0359	3380.17
83498.2	2674.99	1730.28	78.0357	3380.17
83502.3	2675.78	1729.22	78.0356	3380.17
83506.4	2676.56	1728.16	78.0354	3380.17
83510.5	2677.35	1727.09	78.0353	3380.17
83514.7	2678.3	1725.81	78.0351	3380.17
83518.8	2679.25	1724.53	78.035	3380.17
83522.9	2680.2	1723.25	78.0348	3380.17
83526.9	2681.19	1721.91	78.0347	3380.17
83530.9	2682.18	1720.58	78.0345	3380.17
83534.8	2683.17	1719.25	78.0343	3380.17
83538.9	2684.2	1717.86	78.0342	3380.17
83543	2685.24	1716.46	78.0341	3380.17
83547.1	2686.27	1715.07	78.0339	3380.17
83551.1	2687.29	1713.69	78.0338	3380.17
83555	2688.32	1712.31	78.0337	3380.17
83558.9	2689.34	1710.93	78.0335	3380.17
83563	2690.42	1709.48	78.0334	3380.17
83567.1	2691.5	1708.03	78.0332	3380.17
83571.2	2692.57	1706.58	78.0331	3380.17
83575.2	2693.54	1705.28	78.0329	3380.17
83579.2	2694.5	1703.98	78.0328	3380.17
83583.2	2695.47	1702.68	78.0326	3380.17
83587.3	2696.44	1701.37	78.0325	3380.17
83591.4	2697.4	1700.07	78.0323	3380.17
83595.5	2698.37	1698.77	78.0322	3380.17
83599.7	2699.35	1697.45	78.032	3380.17
83603.8	2700.33	1696.12	78.0319	3380.17
83607.9	2701.31	1694.8	78.0317	3380.17
83612	2702.29	1693.48	78.0316	3380.17
83616.1	2703.28	1692.15	78.0314	3380.17
83620.2	2704.26	1690.83	78.0313	3380.17
83624.3	2705.27	1689.47	78.0312	3380.17

83628.4	2706.27	1688.12	78.031	3380.17
83632.5	2707.28	1686.76	78.0309	3380.17
83636.7	2708.33	1685.35	78.0307	3380.17
83640.8	2709.37	1683.94	78.0306	3380.17
83644.9	2710.42	1682.53	78.0304	3380.17
83648.8	2711.37	1681.25	78.0303	3380.17
83652.7	2712.32	1679.97	78.0301	3380.17
83656.6	2713.27	1678.69	78.03	3380.17
83660.7	2714.14	1677.52	78.0298	3380.17
83664.8	2715.01	1676.34	78.0297	3380.17
83668.9	2715.88	1675.17	78.0295	3380.17
83673.1	2716.63	1674.15	78.0294	3380.17
83677.2	2717.39	1673.13	78.0292	3380.17
83681.3	2718.14	1672.11	78.0291	3380.17
83685.4	2718.79	1671.23	78.0289	3380.17
83689.5	2719.45	1670.35	78.0288	3380.17
83693.6	2720.1	1669.46	78.0287	3380.17
83697.8	2720.71	1668.63	78.0285	3380.17
83701.9	2721.33	1667.8	78.0284	3380.17
83706	2721.94	1666.97	78.0282	3380.17
83710	2722.47	1666.25	78.0281	3380.17
83713.9	2723	1665.53	78.0279	3380.17
83717.8	2723.53	1664.81	78.0278	3380.17
83721.9	2724.04	1664.12	78.0276	3380.17
83726	2724.56	1663.42	78.0275	3380.17
83730.1	2725.07	1662.72	78.0273	3380.17
83734.2	2725.64	1661.96	78.0272	3380.17
83738.3	2726.2	1661.19	78.027	3380.17
83742.4	2726.77	1660.42	78.0269	3380.17
83746.6	2727.41	1659.55	78.0267	3380.17
83750.7	2728.06	1658.68	78.0266	3380.17
83754.8	2728.7	1657.81	78.0264	3380.17
83758.9	2729.33	1656.95	78.0263	3380.17
83763	2729.97	1656.1	78.0262	3380.17
83767.1	2730.6	1655.24	78.026	3380.17
83771.3	2731.28	1654.32	78.0259	3380.17
83775.4	2731.95	1653.41	78.0257	3380.17
83779.5	2732.63	1652.49	78.0256	3380.17
83783.6	2733.41	1651.44	78.0254	3380.17
83787.7	2734.18	1650.39	78.0253	3380.17
83791.8	2734.96	1649.35	78.0251	3380.17
83796	2735.85	1648.15	78.0249	3380.17
83800.1	2736.73	1646.95	78.0248	3380.17
83804.2	2737.62	1645.76	78.0246	3380.17
83808.3	2738.53	1644.53	78.0245	3380.17
83812.4	2739.44	1643.31	78.0243	3380.17
83816.5	2740.35	1642.08	78.0242	3380.17
83820.6	2741.2	1640.94	78.0241	3380.17
83824.7	2742.04	1639.79	78.0239	3380.17
83828.8	2742.89	1638.65	78.0238	3380.17
83832.9	2743.71	1637.54	78.0236	3380.17
83837	2744.54	1636.43	78.0235	3380.17
83841.1	2745.36	1635.32	78.0233	3380.17
83845.3	2746.16	1634.24	78.0232	3380.17
83849.4	2746.95	1633.17	78.0231	3380.17
83853.5	2747.75	1632.09	78.0229	3380.17

83857.6	2748.41	1631.2	78.0228	3380.17
83861.7	2749.07	1630.3	78.0226	3380.17
83865.9	2749.73	1629.41	78.0224	3380.17
83869.7	2750.33	1628.6	78.0223	3380.17
83873.6	2750.94	1627.78	78.0221	3380.17
83877.4	2751.54	1626.96	78.022	3380.17
83882.2	2752.22	1626.04	78.0218	3380.17
83887	2752.91	1625.11	78.0217	3380.17
83890.5	2753.38	1624.47	78.0215	3380.17
83894.6	2754.02	1623.61	78.0214	3380.17
83898.7	2754.66	1622.74	78.0212	3380.17
83902.8	2755.3	1621.87	78.0211	3380.17
83907	2756.18	1620.69	78.021	3380.17
83911.1	2757.06	1619.5	78.0208	3380.17
83915.2	2757.94	1618.31	78.0207	3380.17
83919.3	2758.97	1616.93	78.0205	3380.17
83923.4	2759.99	1615.55	78.0204	3380.17
83927.5	2761.02	1614.16	78.0202	3380.17
83931.7	2761.92	1612.95	78.0201	3380.17
83935.8	2762.83	1611.73	78.0199	3380.17
83939.9	2763.73	1610.51	78.0198	3380.17
83944	2764.62	1609.31	78.0196	3380.17
83948.2	2765.5	1608.12	78.0195	3380.17
83952.3	2766.39	1606.92	78.0193	3380.17
83956.4	2767.44	1605.51	78.0191	3380.17
83960.5	2768.49	1604.09	78.019	3380.17
83964.6	2769.54	1602.68	78.0188	3380.17
83968.7	2770.73	1601.08	78.0187	3380.17
83972.8	2771.92	1599.48	78.0186	3380.17
83976.9	2773.11	1597.88	78.0184	3380.17
83981	2774.48	1596.03	78.0183	3380.17
83985.1	2775.86	1594.19	78.0181	3380.17
83989.1	2777.23	1592.34	78.018	3380.17
83993.2	2778.75	1590.3	78.0179	3380.17
83997.3	2780.27	1588.26	78.0177	3380.17
84001.4	2781.79	1586.21	78.0176	3380.17
84005.6	2783.27	1584.23	78.0174	3380.17
84009.7	2784.75	1582.24	78.0173	3380.17
84013.9	2786.23	1580.25	78.0171	3380.17
84018	2787.72	1578.25	78.017	3380.17
84022.1	2789.21	1576.24	78.0168	3380.17
84026.3	2790.7	1574.24	78.0166	3380.17
84030.4	2792.32	1572.07	78.0165	3380.17
84034.5	2793.93	1569.9	78.0163	3380.17
84038.6	2795.55	1567.73	78.0162	3380.17
84042.7	2797.36	1565.3	78.016	3380.17
84046.8	2799.17	1562.87	78.0159	3380.17
84050.9	2800.98	1560.44	78.0158	3380.17
84054.9	2802.89	1557.88	78.0156	3380.17
84058.9	2804.8	1555.31	78.0155	3380.17
84062.9	2806.71	1552.75	78.0154	3380.17
84067	2808.82	1549.92	78.0152	3380.17
84071.1	2810.93	1547.09	78.0151	3380.17
84075.3	2813.04	1544.26	78.0149	3380.17
84079.4	2815.19	1541.38	78.0148	3380.17
84083.5	2817.33	1538.5	78.0146	3380.17

84087.7	2819.48	1535.62	78.0145	3380.17
84091.7	2821.63	1532.75	78.0143	3380.17
84095.6	2823.77	1529.87	78.0141	3380.17
84099.6	2825.91	1527	78.014	3380.17
84103.8	2828.19	1523.94	78.0138	3380.17
84107.9	2830.48	1520.88	78.0137	3380.17
84112	2832.76	1517.82	78.0135	3380.17
84116.2	2834.93	1514.9	78.0134	3380.17
84120.3	2837.1	1511.99	78.0133	3380.17
84124.4	2839.27	1509.08	78.0131	3380.17
84128.4	2841.21	1506.48	78.013	3380.17
84132.4	2843.15	1503.88	78.0128	3380.17
84136.5	2845.09	1501.28	78.0127	3380.17
84140.6	2846.48	1499.41	78.0126	3380.17
84144.7	2847.88	1497.53	78.0124	3380.17
84148.9	2849.27	1495.66	78.0123	3380.17
84153	2849.84	1494.89	78.0121	3380.17
84157.1	2850.41	1494.12	78.0119	3380.17
84161.3	2850.98	1493.35	78.0118	3380.17
84165.4	2851.17	1493.09	78.0116	3380.17
84169.5	2851.35	1492.83	78.0115	3380.17
84173.6	2851.54	1492.57	78.0113	3380.17
84177.2	2851.76	1492.27	78.0112	3380.17
84180.8	2851.97	1491.97	78.0111	3380.17
84184.4	2852.19	1491.67	78.011	3380.17
84188.6	2852.68	1491.01	78.0108	3380.17
84192.7	2853.17	1490.34	78.0107	3380.17
84196.8	2853.66	1489.67	78.0105	3380.17
84201	2854.74	1488.22	78.0104	3380.17
84205.1	2855.82	1486.77	78.0102	3380.17
84209.3	2856.9	1485.31	78.0101	3380.17
84213.3	2858.39	1483.31	78.0099	3380.17
84217.3	2859.89	1481.3	78.0098	3380.17
84221.4	2861.38	1479.3	78.0096	3380.17
84225.2	2862.84	1477.34	78.0095	3380.17
84229.1	2864.3	1475.37	78.0093	3380.17
84232.9	2865.76	1473.42	78.0092	3380.17
84237.1	2867.27	1471.39	78.0091	3380.17
84241.2	2868.78	1469.36	78.0089	3380.17
84245.4	2870.29	1467.33	78.0088	3380.17
84249.3	2871.72	1465.41	78.0087	3380.17
84253.3	2873.16	1463.48	78.0085	3380.17
84257.3	2874.59	1461.56	78.0083	3380.17
84261.2	2876.05	1459.6	78.0082	3380.17
84265.2	2877.51	1457.64	78.008	3380.17
84269.2	2878.97	1455.68	78.0079	3380.17
84273.3	2880.53	1453.59	78.0077	3380.17
84277.4	2882.09	1451.49	78.0076	3380.17
84281.5	2883.64	1449.41	78.0075	3380.17
84285.5	2885.22	1447.29	78.0073	3380.17
84289.5	2886.8	1445.17	78.0072	3380.17
84293.5	2888.37	1443.06	78.0071	3380.17
84297.4	2890.1	1440.73	78.0069	3380.17
84301.4	2891.83	1438.41	78.0068	3380.17
84305.4	2893.56	1436.09	78.0066	3380.17
84309.6	2895.46	1433.54	78.0065	3380.17

84313.7	2897.36	1430.99	78.0063	3380.17
84317.9	2899.27	1428.44	78.0061	3380.17
84321.8	2901.04	1426.06	78.006	3380.17
84325.8	2902.81	1423.68	78.0058	3380.17
84329.8	2904.59	1421.3	78.0057	3380.17
84333.9	2906.46	1418.8	78.0056	3380.17
84338	2908.32	1416.29	78.0054	3380.17
84342.2	2910.19	1413.79	78.0053	3380.17
84346.3	2911.78	1411.66	78.0051	3380.17
84350.5	2913.37	1409.52	78.005	3380.17
84354.6	2914.97	1407.37	78.0049	3380.17
84354.6	2914.97	1407.37	78.0049	2632.38
84358.7	2916.35	1405.52	78.0047	2632.38
84362.8	2917.73	1403.66	78.0046	2632.38
84366.9	2919.12	1401.8	78.0044	2632.38
84370.9	2920.37	1400.12	78.0043	2632.38
84375	2921.62	1398.44	78.0041	2632.38
84379.1	2922.87	1396.76	78.004	2632.38
84383.2	2924.05	1395.18	78.0038	2632.38
84387.3	2925.23	1393.59	78.0036	2632.38
84391.4	2926.4	1392.01	78.0035	2632.38
84395.6	2927.49	1390.55	78.0033	2632.38
84399.7	2928.58	1389.08	78.0032	2632.38
84403.9	2929.67	1387.61	78.003	2632.38
84408	2930.75	1386.17	78.0029	2632.38
84412.1	2931.82	1384.72	78.0027	2632.38
84416.2	2932.9	1383.27	78.0026	2632.38
84420.2	2933.88	1381.95	78.0024	2632.38
84424.3	2934.86	1380.63	78.0023	2632.38
84428.4	2935.84	1379.31	78.0022	2632.38
84432.5	2936.77	1378.06	78.002	2632.38
84436.6	2937.7	1376.81	78.0019	2632.38
84440.7	2938.63	1375.56	78.0017	2632.38
84444.8	2939.73	1374.08	78.0016	2632.38
84448.9	2940.83	1372.6	78.0014	2632.38
84453.1	2941.93	1371.12	78.0013	2632.38
84457.2	2943.13	1369.51	78.0011	2632.38
84461.3	2944.33	1367.9	78.001	2632.38
84465.4	2945.52	1366.29	78.0008	2632.38
84469.5	2946.47	1365.01	78.0007	2632.38
84473.6	2947.43	1363.72	78.0005	2632.38
84477.8	2948.38	1362.44	78.0004	2632.38
84481.9	2949.08	1361.49	78.0002	2632.38
84486	2949.79	1360.54	78	2632.38
84490.2	2950.49	1359.59	77.9999	2632.38
84494.3	2951.17	1358.68	77.9997	2632.38
84498.4	2951.84	1357.76	77.9996	2632.38
84502.5	2952.52	1356.85	77.9994	2632.38
84506.7	2953.2	1355.94	77.9993	2632.38
84510.8	2953.87	1355.02	77.9991	2632.38
84514.9	2954.55	1354.11	77.999	2632.38
84519.5	2955.29	1353.1	77.9988	2632.38
84524.1	2956.04	1352.09	77.9986	2632.38
84528.7	2956.33	1351.7	77.9985	2632.38
84533.2	2957.62	1349.96	77.9983	2632.38
84537.7	2958.43	1348.87	77.9982	2632.38

84541.8	2959.3	1347.7	77.998	2632.38
84545.8	2960.16	1346.53	77.9979	2632.38
84549.8	2961.03	1345.37	77.9977	2632.38
84553.9	2962.04	1344.01	77.9976	2632.38
84558	2963.04	1342.66	77.9974	2632.38
84562.2	2964.05	1341.3	77.9973	2632.38
84566.1	2965.17	1339.79	77.9971	2632.38
84570.1	2966.29	1338.29	77.997	2632.38
84574	2967.42	1336.77	77.9969	2632.38
84578.2	2968.96	1334.7	77.9967	2632.38
84582.3	2970.51	1332.63	77.9966	2632.38
84586.5	2972.05	1330.56	77.9964	2632.38
84590.6	2973.91	1328.06	77.9963	2632.38
84594.7	2975.77	1325.57	77.9961	2632.38
84598.8	2977.63	1323.08	77.996	2632.38
84602.9	2979.61	1320.42	77.9958	2632.38
84607	2981.59	1317.77	77.9957	2632.38
84611.1	2983.58	1315.1	77.9955	2632.38
84615.2	2985.63	1312.36	77.9953	2632.38
84619.3	2987.67	1309.62	77.9952	2632.38
84623.4	2989.72	1306.87	77.995	2632.38
84627.4	2991.71	1304.21	77.9949	2632.38
84631.5	2993.7	1301.54	77.9947	2632.38
84635.6	2995.69	1298.87	77.9946	2632.38
84639.6	2997.66	1296.23	77.9945	2632.38
84643.7	2999.64	1293.58	77.9943	2632.38
84647.8	3001.61	1290.94	77.9942	2632.38
84651.9	3003.58	1288.3	77.994	2632.38
84656	3005.55	1285.66	77.9939	2632.38
84660.2	3007.52	1283.02	77.9937	2632.38
84664.3	3009.42	1280.47	77.9936	2632.38
84668.4	3011.32	1277.92	77.9934	2632.38
84672.5	3013.22	1275.38	77.9933	2632.38
84676.7	3014.95	1273.05	77.9931	2632.38
84680.8	3016.69	1270.73	77.993	2632.38
84684.9	3018.42	1268.4	77.9928	2632.38
84689	3019.89	1266.43	77.9927	2632.38
84693.1	3021.37	1264.45	77.9925	2632.38
84697.2	3022.84	1262.47	77.9924	2632.38
84701.2	3023.91	1261.03	77.9922	2632.38
84705.3	3024.98	1259.6	77.9921	2632.38
84709.4	3026.05	1258.16	77.9919	2632.38
84713.6	3026.57	1257.46	77.9917	2632.38
84717.7	3027.08	1256.76	77.9916	2632.38
84721.9	3027.6	1256.06	77.9915	2632.38
84726	3027.76	1255.84	77.9913	2632.38
84730.1	3027.91	1255.62	77.9912	2632.38
84734.3	3028.07	1255.4	77.991	2632.38
84738.3	3028.03	1255.44	77.9909	2632.38
84742.4	3027.99	1255.48	77.9907	2632.38
84746.5	3027.95	1255.53	77.9906	2632.38
84750.7	3027.71	1255.84	77.9904	2632.38
84754.8	3027.47	1256.15	77.9903	2632.38
84758.9	3027.23	1256.46	77.9901	2632.38
84762.9	3026.8	1257.02	77.99	2632.38
84766.8	3026.36	1257.59	77.9899	2632.38

84770.8	3025.93	1258.16	77.9897	2632.38
84774.9	3025.42	1258.84	77.9895	2632.38
84779	3024.9	1259.51	77.9894	2632.38
84783.2	3024.39	1260.19	77.9892	2632.38
84787.3	3023.86	1260.89	77.9891	2632.38
84791.3	3023.32	1261.59	77.9889	2632.38
84795.4	3022.79	1262.29	77.9888	2632.38
84799.6	3022.3	1262.93	77.9886	2632.38
84803.7	3021.81	1263.58	77.9885	2632.38
84807.9	3021.32	1264.22	77.9883	2632.38
84812	3020.85	1264.83	77.9882	2632.38
84816.1	3020.39	1265.45	77.988	2632.38
84820.3	3019.92	1266.06	77.9879	2632.38
84824.3	3019.45	1266.68	77.9877	2632.38
84828.3	3018.97	1267.3	77.9876	2632.38
84832.4	3018.5	1267.92	77.9875	2632.38
84836.5	3018.03	1268.55	77.9873	2632.38
84840.6	3017.55	1269.17	77.9872	2632.38
84844.8	3017.08	1269.79	77.987	2632.38
84848.8	3016.7	1270.29	77.9869	2632.38
84852.9	3016.31	1270.79	77.9867	2632.38
84857	3015.93	1271.29	77.9866	2632.38
84861.2	3015.73	1271.55	77.9864	2632.38
84865.3	3015.53	1271.81	77.9863	2632.38
84869.4	3015.33	1272.06	77.9861	2632.38
84873.6	3015.3	1272.09	77.9859	2632.38
84877.7	3015.28	1272.11	77.9858	2632.38
84881.8	3015.25	1272.14	77.9856	2632.38
84885.9	3015.16	1272.25	77.9855	2632.38
84890	3015.07	1272.36	77.9853	2632.38
84894.2	3014.98	1272.47	77.9852	2632.38
84898.3	3014.78	1272.72	77.985	2632.38
84902.4	3014.58	1272.98	77.9849	2632.38
84906.5	3014.38	1273.24	77.9848	2632.38
84910.5	3014.12	1273.58	77.9846	2632.38
84914.4	3013.85	1273.92	77.9845	2632.38
84918.4	3013.59	1274.26	77.9843	2632.38
84922.6	3013.33	1274.6	77.9842	2632.38
84926.7	3013.07	1274.93	77.984	2632.38
84930.9	3012.81	1275.27	77.9839	2632.38
84935	3012.59	1275.56	77.9837	2632.38
84939.1	3012.36	1275.85	77.9836	2632.38
84943.2	3012.14	1276.14	77.9834	2632.38
84947	3011.98	1276.34	77.9833	2632.38
84950.8	3011.81	1276.55	77.9831	2632.38
84954.6	3011.65	1276.76	77.983	2632.38
84958.7	3011.5	1276.95	77.9828	2632.38
84962.8	3011.36	1277.13	77.9827	2632.38
84966.9	3011.21	1277.32	77.9825	2632.38
84971.1	3011.08	1277.48	77.9824	2632.38
84975.2	3010.94	1277.65	77.9823	2632.38
84979.4	3010.81	1277.82	77.9821	2632.38
84983.3	3010.45	1278.29	77.982	2632.38
84987.3	3010.1	1278.75	77.9818	2632.38
84991.3	3009.74	1279.22	77.9817	2632.38
84995.4	3009.1	1280.06	77.9816	2632.38

84999.5	3008.47	1280.9	77.9814	2632.38
85003.6	3007.83	1281.74	77.9812	2632.38
85007.7	3007.29	1282.45	77.9811	2632.38
85011.8	3006.74	1283.17	77.9809	2632.38
85016	3006.2	1283.88	77.9808	2632.38
85020.1	3006.16	1283.92	77.9806	2632.38
85024.2	3006.12	1283.97	77.9805	2632.38
85028.2	3006.08	1284.01	77.9803	2632.38
85032.4	3006.29	1283.72	77.9801	2632.38
85036.5	3006.51	1283.42	77.98	2632.38
85040.7	3006.72	1283.13	77.9799	2632.38
85044.7	3006.8	1283.01	77.9797	2632.38
85048.7	3006.88	1282.89	77.9796	2632.38
85052.8	3006.96	1282.77	77.9794	2632.38
85056.9	3006.97	1282.76	77.9793	2632.38
85061	3006.97	1282.74	77.9791	2632.38
85065.1	3006.98	1282.72	77.979	2632.38
85069.2	3007.36	1282.2	77.9789	2632.38
85073.3	3007.74	1281.68	77.9787	2632.38
85077.4	3008.12	1281.16	77.9786	2632.38
85081.6	3009.02	1279.95	77.9784	2632.38
85085.7	3009.93	1278.73	77.9783	2632.38
85089.9	3010.83	1277.51	77.9781	2632.38
85094	3012.09	1275.82	77.978	2632.38
85098.1	3013.35	1274.13	77.9778	2632.38
85102.2	3014.61	1272.44	77.9776	2632.38
85106.3	3015.99	1270.58	77.9775	2632.38
85110.4	3017.37	1268.73	77.9773	2632.38
85114.5	3018.75	1266.88	77.9772	2632.38
85118.6	3020.13	1265.03	77.977	2632.38
85122.7	3021.51	1263.18	77.9769	2632.38
85126.8	3022.89	1261.32	77.9767	2632.38
85130.9	3024.24	1259.51	77.9766	2632.38
85135	3025.59	1257.69	77.9764	2632.38
85139.1	3026.95	1255.87	77.9763	2632.38
85143.2	3028.16	1254.25	77.9762	2632.38
85147.3	3029.37	1252.63	77.976	2632.38
85151.4	3030.57	1251.01	77.9759	2632.38
85155.6	3031.58	1249.65	77.9757	2632.38
85159.7	3032.6	1248.28	77.9756	2632.38
85163.9	3033.61	1246.92	77.9754	2632.38
85168	3034.6	1245.59	77.9753	2632.38
85172.1	3035.59	1244.25	77.9751	2632.38
85176.2	3036.58	1242.92	77.975	2632.38
85179.8	3037.47	1241.72	77.9748	2632.38
85183.3	3038.37	1240.52	77.9747	2632.38
85186.8	3039.26	1239.32	77.9746	2632.38
85190.9	3040.29	1237.94	77.9744	2632.38
85195	3041.31	1236.56	77.9743	2632.38
85199.1	3042.34	1235.18	77.9741	2632.38
85203.2	3043.32	1233.85	77.974	2632.38
85207.3	3044.31	1232.53	77.9738	2632.38
85211.5	3045.29	1231.21	77.9737	2632.38
85215.6	3046.3	1229.85	77.9735	2632.38
85219.7	3047.32	1228.48	77.9734	2632.38
85223.8	3048.33	1227.12	77.9733	2632.38



85227.6	3049.24	1225.89	77.9731	2632.38
85231.4	3050.16	1224.66	77.9729	2632.38
85235.2	3051.07	1223.43	77.9728	2632.38
85239.2	3051.99	1222.19	77.9726	2632.38
85243.2	3052.92	1220.95	77.9725	2632.38
85247.2	3053.84	1219.71	77.9724	2632.38
85251.3	3054.71	1218.53	77.9722	2632.38
85255.4	3055.59	1217.36	77.9721	2632.38
85259.4	3056.46	1216.18	77.9719	2632.38
85263.6	3057.27	1215.09	77.9718	2632.38
85267.7	3058.07	1214	77.9716	2632.38
85271.8	3058.88	1212.92	77.9715	2632.38
85275.9	3059.67	1211.85	77.9714	2632.38
85280	3060.47	1210.78	77.9712	2632.38
85284.1	3061.26	1209.71	77.9711	2632.38
85288.3	3061.98	1208.73	77.9709	2632.38
85292.4	3062.71	1207.76	77.9707	2632.38
85296.5	3063.43	1206.78	77.9706	2632.38
85300.6	3064.19	1205.76	77.9704	2632.38
85304.7	3064.95	1204.73	77.9703	2632.38
85308.8	3065.71	1203.71	77.9701	2632.38
85312.9	3066.58	1202.54	77.97	2632.38
85316.9	3067.45	1201.37	77.9698	2632.38
85321	3068.32	1200.2	77.9697	2632.38
85325.2	3069.21	1199	77.9695	2632.38
85329.3	3070.1	1197.8	77.9694	2632.38
85333.4	3070.99	1196.6	77.9692	2632.38
85337.5	3071.67	1195.68	77.9691	2632.38
85341.6	3072.35	1194.77	77.969	2632.38
85345.7	3073.03	1193.85	77.9688	2632.38
85349.8	3073.42	1193.32	77.9687	2632.38
85353.8	3073.8	1192.8	77.9685	2632.38
85357.9	3074.19	1192.27	77.9684	2632.38
85362	3074.39	1191.99	77.9682	2632.38
85366	3074.59	1191.71	77.9681	2632.38
85370.1	3074.79	1191.44	77.9679	2632.38
85374.2	3074.85	1191.34	77.9678	2632.38
85378.3	3074.92	1191.25	77.9676	2632.38
85382.4	3074.98	1191.15	77.9675	2632.38
85386.6	3074.95	1191.18	77.9673	2632.38
85390.7	3074.93	1191.2	77.9671	2632.38
85394.9	3074.9	1191.23	77.967	2632.38
85399	3074.83	1191.32	77.9668	2632.38
85403.1	3074.75	1191.4	77.9667	2632.38
85407.2	3074.68	1191.49	77.9665	2632.38
85411.2	3074.5	1191.72	77.9664	2632.38
85415.2	3074.31	1191.96	77.9663	2632.38
85419.2	3074.13	1192.19	77.9661	2632.38
85423.3	3073.76	1192.68	77.966	2632.38
85427.4	3073.39	1193.16	77.9659	2632.38
85431.5	3073.02	1193.64	77.9657	2632.38
85435.6	3072.56	1194.24	77.9656	2632.38
85439.7	3072.11	1194.84	77.9654	2632.38
85443.9	3071.65	1195.44	77.9653	2632.38
85448.2	3071.3	1195.9	77.9651	2632.38
85452.6	3070.54	1196.9	77.965	2632.38

85457	3070	1197.61	77.9648	2632.38
85461	3069.37	1198.45	77.9646	2632.38
85465	3068.73	1199.28	77.9645	2632.38
85469	3068.1	1200.12	77.9643	2632.38
85473.1	3067.13	1201.4	77.9642	2632.38
85477.1	3066.16	1202.68	77.964	2632.38
85481.2	3065.19	1203.97	77.9639	2632.38
85485.3	3064.7	1204.61	77.9637	2632.38
85489.4	3064.21	1205.25	77.9636	2632.38
85493.5	3063.72	1205.9	77.9634	2632.38
85497.6	3063.42	1206.29	77.9633	2632.38
85501.7	3063.12	1206.68	77.9631	2632.38
85505.9	3062.82	1207.07	77.963	2632.38
85509.9	3063.11	1206.67	77.9628	2632.38
85514	3063.41	1206.27	77.9627	2632.38
85518.1	3063.7	1205.86	77.9626	2632.38
85522.1	3064.41	1204.91	77.9624	2632.38
85526.2	3065.12	1203.95	77.9623	2632.38
85530.3	3065.83	1202.99	77.9621	2632.38
85534.4	3066.69	1201.84	77.962	2632.38
85538.5	3067.54	1200.68	77.9618	2632.38
85542.6	3068.4	1199.53	77.9617	2632.38
85546.7	3069.48	1198.08	77.9615	2632.38
85550.8	3070.55	1196.64	77.9613	2632.38
85555	3071.63	1195.19	77.9612	2632.38
85559.1	3073.07	1193.26	77.961	2632.38
85563.2	3074.51	1191.32	77.9609	2632.38
85567.4	3075.95	1189.39	77.9607	2632.38
85571.5	3077.38	1187.48	77.9606	2632.38
85575.6	3078.8	1185.56	77.9604	2632.38
85579.8	3080.23	1183.65	77.9603	2632.38
85583.9	3081.46	1181.99	77.9602	2632.38
85588	3082.69	1180.34	77.96	2632.38
85592.1	3083.92	1178.69	77.9599	2632.38
85596.2	3085.06	1177.17	77.9597	2632.38
85600.3	3086.19	1175.64	77.9596	2632.38
85604.4	3087.33	1174.11	77.9594	2632.38
85608.5	3088.5	1172.53	77.9593	2632.38
85612.6	3089.68	1170.96	77.9591	2632.38
85616.7	3090.85	1169.38	77.959	2632.38
85620.8	3092.22	1167.55	77.9588	2632.38
85624.9	3093.58	1165.72	77.9587	2632.38
85629	3094.95	1163.88	77.9585	2632.38
85633.2	3096.43	1161.9	77.9584	2632.38
85637.3	3097.9	1159.92	77.9582	2632.38
85641.4	3099.38	1157.94	77.9581	2632.38
85645.5	3100.81	1156.01	77.9579	2632.38
85649.7	3102.25	1154.09	77.9578	2632.38
85653.8	3103.68	1152.17	77.9576	2632.38
85657.9	3105.11	1150.25	77.9575	2632.38
85662	3106.54	1148.33	77.9573	2632.38
85666.1	3107.97	1146.41	77.9572	2632.38
85670.3	3109.41	1144.48	77.957	2632.38
85674.4	3110.86	1142.54	77.9569	2632.38
85678.5	3112.3	1140.61	77.9567	2632.38
85682.7	3113.59	1138.87	77.9566	2632.38

85686.8	3114.89	1137.13	77.9564	2632.38
85690.9	3116.18	1135.4	77.9563	2632.38
85695.1	3117.47	1133.67	77.9562	2632.38
85699.2	3118.76	1131.93	77.956	2632.38
85703.3	3120.05	1130.2	77.9559	2632.38
85707.4	3121.22	1128.63	77.9557	2632.38
85711.5	3122.39	1127.06	77.9556	2632.38
85715.6	3123.56	1125.49	77.9554	2632.38
85719.7	3124.48	1124.25	77.9552	2632.38
85723.8	3125.41	1123.01	77.9551	2632.38
85727.8	3126.33	1121.76	77.9549	2632.38
85731.9	3127.31	1120.45	77.9548	2632.38
85736	3128.28	1119.14	77.9546	2632.38
85740.1	3129.26	1117.82	77.9545	2632.38
85744.2	3130.39	1116.31	77.9543	2632.38
85748.3	3131.52	1114.79	77.9542	2632.38
85752.4	3132.65	1113.27	77.9541	2632.38
85756.2	3133.87	1111.63	77.9539	2632.38
85760	3135.09	1109.99	77.9538	2632.38
85763.9	3136.32	1108.34	77.9537	2632.38
85768	3137.71	1106.48	77.9535	2632.38
85772.1	3139.11	1104.61	77.9534	2632.38
85776.3	3140.5	1102.74	77.9532	2632.38
85780.3	3141.76	1101.04	77.953	2632.38
85784.2	3143.02	1099.35	77.9529	2632.38
85788.2	3144.28	1097.66	77.9527	2632.38
85792.1	3145.16	1096.48	77.9526	2632.38
85796	3146.04	1095.3	77.9525	2632.38
85799.9	3146.92	1094.11	77.9523	2632.38
85804	3147.27	1093.64	77.9522	2632.38
85808.1	3147.61	1093.17	77.952	2632.38
85812.2	3147.96	1092.69	77.9519	2632.38
85816.4	3147.93	1092.72	77.9518	2632.38
85820.5	3147.9	1092.75	77.9516	2632.38
85824.7	3147.87	1092.78	77.9515	2632.38
85829.5	3147.79	1092.88	77.9513	2632.38
85834.4	3147.71	1092.97	77.9511	2632.38
85838.5	3147.51	1093.22	77.9509	2632.38
85842.6	3147.32	1093.48	77.9508	2632.38
85846.7	3147.12	1093.73	77.9507	2632.38
85850.8	3146.73	1094.23	77.9505	2632.38
85854.9	3146.35	1094.74	77.9504	2632.38
85858.9	3145.96	1095.24	77.9502	2632.38
85863.1	3145.6	1095.72	77.9501	2632.38
85867.2	3145.23	1096.19	77.9499	2632.38
85871.4	3144.87	1096.67	77.9498	2632.38
85875.4	3144.68	1096.91	77.9496	2632.38
85879.5	3144.5	1097.14	77.9494	2632.38
85883.6	3144.31	1097.38	77.9493	2632.38
85887.7	3144.05	1097.72	77.9491	2632.38
85891.8	3143.8	1098.05	77.949	2632.38
85895.9	3143.54	1098.38	77.9488	2632.38
85899.9	3143.05	1099.02	77.9487	2632.38
85903.9	3142.57	1099.66	77.9486	2632.38
85907.9	3142.08	1100.3	77.9484	2632.38
85911.9	3141.37	1101.24	77.9483	2632.38

85915.9	3140.65	1102.18	77.9482	2632.38
85919.9	3139.94	1103.12	77.948	2632.38
85924	3139.15	1104.16	77.9479	2632.38
85928.1	3138.36	1105.21	77.9477	2632.38
85932.1	3137.57	1106.25	77.9476	2632.38
85936.3	3136.83	1107.23	77.9474	2632.38
85940.4	3136.08	1108.21	77.9473	2632.38
85944.5	3135.34	1109.2	77.9471	2632.38
85948.6	3134.7	1110.04	77.9469	2632.38
85952.7	3134.06	1110.88	77.9468	2632.38
85956.8	3133.42	1111.73	77.9466	2632.38
85960.7	3132.96	1112.33	77.9465	2632.38
85964.5	3132.5	1112.93	77.9464	2632.38
85968.4	3132.04	1113.54	77.9462	2632.38
85972.6	3131.74	1113.93	77.9461	2632.38
85976.7	3131.43	1114.33	77.946	2632.38
85980.8	3131.13	1114.72	77.9458	2632.38
85984.9	3130.99	1114.9	77.9457	2632.38
85989	3130.85	1115.07	77.9455	2632.38
85993.1	3130.71	1115.25	77.9454	2632.38
85997.3	3130.77	1115.15	77.9452	2632.38
86001.4	3130.84	1115.06	77.9451	2632.38
86005.5	3130.9	1114.96	77.9449	2632.38
86009.6	3131.13	1114.64	77.9447	2632.38
86013.8	3131.37	1114.32	77.9446	2632.38
86017.9	3131.6	1114	77.9444	2632.38
86022	3131.93	1113.55	77.9443	2632.38
86026.1	3132.25	1113.11	77.9441	2632.38
86030.2	3132.58	1112.66	77.944	2632.38
86034.4	3132.95	1112.16	77.9438	2632.38
86038.5	3133.31	1111.66	77.9437	2632.38
86042.6	3133.68	1111.16	77.9435	2632.38
86046.6	3134.1	1110.59	77.9434	2632.38
86050.6	3134.52	1110.02	77.9433	2632.38
86054.5	3134.94	1109.45	77.9431	2632.38
86058.7	3135.48	1108.72	77.943	2632.38
86062.8	3136.03	1107.98	77.9428	2632.38
86066.9	3136.57	1107.25	77.9427	2632.38
86071.1	3137.19	1106.41	77.9426	2632.38
86075.2	3137.81	1105.57	77.9424	2632.38
86079.3	3138.43	1104.73	77.9422	2632.38
86083.5	3139.15	1103.76	77.9421	2632.38
86087.6	3139.87	1102.79	77.9419	2632.38
86091.7	3140.59	1101.82	77.9418	2632.38
86095.9	3141.3	1100.87	77.9416	2632.38
86100.1	3142	1099.91	77.9415	2632.38
86104.2	3142.71	1098.96	77.9413	2632.38
86108.3	3143.46	1097.95	77.9412	2632.38
86112.4	3144.21	1096.94	77.941	2632.38
86116.5	3144.96	1095.93	77.9409	2632.38
86120.5	3145.5	1095.2	77.9407	2632.38
86124.5	3146.04	1094.47	77.9406	2632.38
86128.5	3146.58	1093.74	77.9405	2632.38
86132.6	3146.95	1093.23	77.9403	2632.38
86136.7	3147.33	1092.72	77.9402	2632.38
86140.7	3147.7	1092.21	77.94	2632.38

86144.8	3147.91	1091.92	77.9399	2632.38
86148.9	3148.12	1091.63	77.9397	2632.38
86153	3148.33	1091.34	77.9396	2632.38
86157.1	3148.35	1091.31	77.9394	2632.38
86161.2	3148.36	1091.27	77.9393	2632.38
86165.3	3148.38	1091.24	77.9391	2632.38
86169.5	3148.15	1091.54	77.9389	2632.38
86173.6	3147.92	1091.83	77.9388	2632.38
86177.7	3147.69	1092.13	77.9386	2632.38
86181.8	3147.28	1092.66	77.9385	2632.38
86185.9	3146.88	1093.19	77.9384	2632.38
86190	3146.47	1093.73	77.9382	2632.38
86194.2	3145.92	1094.45	77.9381	2632.38
86198.3	3145.38	1095.16	77.9379	2632.38
86202.4	3144.83	1095.88	77.9378	2632.38
86206.6	3144.14	1096.79	77.9376	2632.38
86210.7	3143.45	1097.7	77.9375	2632.38
86214.8	3142.76	1098.61	77.9373	2632.38
86218.9	3141.94	1099.69	77.9372	2632.38
86223	3141.13	1100.77	77.9371	2632.38
86227.1	3140.31	1101.85	77.9369	2632.38
86231.1	3139.49	1102.94	77.9368	2632.38
86235.1	3138.66	1104.03	77.9366	2632.38
86239.1	3137.84	1105.12	77.9364	2632.38
86243.3	3137.09	1106.11	77.9363	2632.38
86247.4	3136.34	1107.1	77.9361	2632.38
86251.5	3135.59	1108.09	77.936	2632.38
86255.6	3135.06	1108.78	77.9358	2632.38
86259.7	3134.53	1109.48	77.9357	2632.38
86263.8	3134	1110.18	77.9355	2632.38
86267.9	3133.74	1110.51	77.9354	2632.38
86271.9	3133.48	1110.85	77.9353	2632.38
86275.9	3133.22	1111.19	77.9351	2632.38
86280	3133.09	1111.35	77.935	2632.38
86284.1	3132.96	1111.51	77.9348	2632.38
86288.2	3132.83	1111.68	77.9347	2632.38
86292.4	3132.75	1111.77	77.9346	2632.38
86296.5	3132.68	1111.86	77.9344	2632.38
86300.6	3132.6	1111.95	77.9342	2632.38
86304.7	3132.56	1111.99	77.9341	2632.38
86308.8	3132.52	1112.04	77.9339	2632.38
86312.9	3132.48	1112.08	77.9338	2632.38
86317.1	3132.45	1112.11	77.9336	2632.38
86321.2	3132.42	1112.14	77.9335	2632.38
86325.3	3132.39	1112.17	77.9333	2632.38
86329.5	3132.47	1112.05	77.9332	2632.38
86333.6	3132.56	1111.93	77.933	2632.38
86337.7	3132.64	1111.8	77.9329	2632.38
86341.8	3132.74	1111.66	77.9327	2632.38
86345.9	3132.85	1111.51	77.9326	2632.38
86350	3132.95	1111.36	77.9324	2632.38
86354.1	3132.62	1111.79	77.9323	2632.38
86358.2	3132.28	1112.23	77.9322	2632.38
86362.3	3131.95	1112.66	77.932	2632.38
86366.5	3131.47	1113.29	77.9319	2632.38
86370.6	3131	1113.91	77.9317	2632.38

86374.7	3130.52	1114.54	77.9316	2632.38
86378.9	3130.13	1115.05	77.9314	2632.38
86383	3129.73	1115.57	77.9313	2632.38
86387.1	3129.34	1116.08	77.9311	2632.38
86391.2	3128.93	1116.62	77.931	2632.38
86395.3	3128.51	1117.16	77.9308	2632.38
86399.4	3128.1	1117.7	77.9306	2632.38
86403.6	3127.69	1118.25	77.9305	2632.38
86407.7	3127.27	1118.79	77.9303	2632.38
86411.8	3126.86	1119.33	77.9302	2632.38
86416	3126.47	1119.83	77.93	2632.38
86420.1	3126.09	1120.34	77.9299	2632.38
86424.2	3125.7	1120.84	77.9297	2632.38
86428.1	3125.38	1121.26	77.9296	2632.38
86432	3125.06	1121.68	77.9295	2632.38
86435.9	3124.74	1122.09	77.9294	2632.38
86440.1	3124.5	1122.41	77.9292	2632.38
86444.2	3124.25	1122.72	77.9291	2632.38
86448.3	3124.01	1123.04	77.9289	2632.38
86452.4	3123.82	1123.28	77.9288	2632.38
86456.5	3123.62	1123.53	77.9286	2632.38
86460.6	3123.43	1123.78	77.9285	2632.38
86464.8	3123.22	1124.05	77.9283	2632.38
86468.9	3123	1124.33	77.9281	2632.38
86473	3122.79	1124.6	77.928	2632.38
86477.1	3122.56	1124.9	77.9278	2632.38
86481.2	3122.33	1125.2	77.9277	2632.38
86485.2	3122.1	1125.49	77.9275	2632.38
86489.4	3121.86	1125.8	77.9274	2632.38
86493.5	3121.62	1126.11	77.9273	2632.38
86497.6	3121.38	1126.42	77.9271	2632.38
86501.8	3121.18	1126.68	77.927	2632.38
86505.9	3120.97	1126.94	77.9268	2632.38
86510	3120.77	1127.2	77.9267	2632.38
86514.1	3120.65	1127.36	77.9265	2632.38
86518.2	3120.52	1127.51	77.9264	2632.38
86522.2	3120.4	1127.67	77.9263	2632.38
86526.2	3120.31	1127.78	77.9261	2632.38
86530.2	3120.21	1127.9	77.9259	2632.38
86534.2	3120.12	1128.01	77.9258	2632.38
86538.4	3120.05	1128.1	77.9256	2632.38
86542.5	3119.97	1128.19	77.9255	2632.38
86546.6	3119.9	1128.27	77.9253	2632.38
86550.7	3119.77	1128.44	77.9252	2632.38
86554.8	3119.63	1128.61	77.925	2632.38
86558.9	3119.5	1128.77	77.9249	2632.38
86563.1	3119.44	1128.84	77.9247	2632.38
86567.2	3119.39	1128.9	77.9246	2632.38
86571.3	3119.33	1128.97	77.9244	2632.38
86575.4	3119.37	1128.91	77.9243	2632.38
86579.5	3119.41	1128.84	77.9242	2632.38
86583.5	3119.45	1128.78	77.924	2632.38
86587.7	3119.55	1128.64	77.9239	2632.38
86591.8	3119.64	1128.5	77.9237	2632.38
86595.9	3119.74	1128.36	77.9236	2632.38
86600	3119.8	1128.27	77.9234	2632.38

86604.1	3119.86	1128.18	77.9233	2632.38
86608.2	3119.92	1128.09	77.9231	2632.38
86612.4	3120.33	1127.53	77.923	2632.38
86616.5	3120.75	1126.96	77.9228	2632.38
86620.6	3121.16	1126.4	77.9227	2632.38
86624.7	3122.19	1125.02	77.9225	2632.38
86628.8	3123.22	1123.64	77.9224	2632.38
86632.8	3124.25	1122.25	77.9222	2632.38
86636.9	3125.57	1120.48	77.9221	2632.38
86641	3126.89	1118.71	77.9219	2632.38
86645.1	3128.21	1116.94	77.9218	2632.38
86649.2	3129.63	1115.03	77.9216	2632.38
86653.3	3131.05	1113.13	77.9215	2632.38
86657.3	3132.47	1111.22	77.9214	2632.38
86661.4	3133.82	1109.4	77.9212	2632.38
86665.5	3135.18	1107.59	77.9211	2632.38
86669.5	3136.53	1105.77	77.9209	2632.38
86673.7	3137.8	1104.07	77.9208	2632.38
86677.8	3139.08	1102.36	77.9206	2632.38
86681.9	3140.35	1100.65	77.9205	2632.38
86686	3141.37	1099.27	77.9203	2632.38
86690.1	3142.4	1097.89	77.9202	2632.38
86694.2	3143.42	1096.52	77.92	2632.38
86698.4	3143.93	1095.82	77.9198	2632.38
86702.5	3144.45	1095.13	77.9197	2632.38
86706.6	3144.96	1094.43	77.9195	2632.38
86710.8	3145.45	1093.78	77.9194	2632.38
86714.9	3145.93	1093.12	77.9193	2632.38
86719	3146.42	1092.46	77.9191	2632.38
86723.1	3147.08	1091.57	77.919	2632.38
86727.2	3147.73	1090.68	77.9188	2632.38
86731.3	3148.39	1089.8	77.9187	2632.38
86735.3	3149.21	1088.69	77.9186	2632.38
86739.3	3150.04	1087.58	77.9184	2632.38
86743.3	3150.86	1086.47	77.9183	2632.38
86747.4	3151.84	1085.16	77.9181	2632.38
86751.5	3152.81	1083.85	77.918	2632.38
86755.6	3153.79	1082.53	77.9178	2632.38
86759.8	3155.22	1080.61	77.9176	2632.38
86763.9	3156.66	1078.68	77.9175	2632.38
86768	3158.09	1076.77	77.9173	2632.38
86772.1	3159.86	1074.4	77.9172	2632.38
86776.2	3161.62	1072.03	77.917	2632.38
86780.2	3163.39	1069.66	77.9169	2632.38
86784.4	3165.1	1067.37	77.9168	2632.38
86788.5	3166.81	1065.08	77.9166	2632.38
86792.6	3168.52	1062.79	77.9165	2632.38
86796.7	3170.29	1060.42	77.9163	2632.38
86800.8	3172.05	1058.06	77.9162	2632.38
86804.8	3173.82	1055.69	77.916	2632.38
86809	3175.59	1053.32	77.9159	2632.38
86813.1	3177.36	1050.95	77.9158	2632.38
86817.2	3179.13	1048.58	77.9156	2632.38
86821.4	3180.78	1046.37	77.9155	2632.38
86825.5	3182.42	1044.16	77.9153	2632.38
86829.6	3184.07	1041.96	77.9151	2632.38

86833.7	3185.72	1039.75	77.915	2632.38
86837.8	3187.36	1037.55	77.9148	2632.38
86841.9	3189.01	1035.34	77.9147	2632.38
86846.1	3190.76	1032.99	77.9145	2632.38
86850.2	3192.51	1030.65	77.9144	2632.38
86854.3	3194.26	1028.3	77.9142	2632.38
86858.4	3196.14	1025.78	77.9141	2632.38
86862.5	3198.02	1023.26	77.9139	2632.38
86866.6	3199.91	1020.74	77.9138	2632.38
86870.6	3201.77	1018.25	77.9137	2632.38
86874.6	3203.63	1015.75	77.9135	2632.38
86878.5	3205.5	1013.25	77.9134	2632.38
86882.6	3207.28	1010.87	77.9133	2632.38
86886.6	3209.06	1008.48	77.9131	2632.38
86890.6	3210.84	1006.1	77.9129	2632.38
86894.5	3212.6	1003.74	77.9128	2632.38
86898.4	3214.37	1001.37	77.9126	2632.38
86902.3	3216.14	999.005	77.9125	2632.38
86906.3	3217.88	996.675	77.9124	2632.38
86910.3	3219.62	994.344	77.9122	2632.38
86914.3	3221.36	992.014	77.9121	2632.38
86918.4	3223.13	989.65	77.9119	2632.38
86922.5	3224.89	987.285	77.9118	2632.38
86926.6	3226.66	984.916	77.9117	2632.38
86930.7	3228.23	982.808	77.9115	2632.38
86934.8	3229.81	980.7	77.9114	2632.38
86938.8	3231.38	978.592	77.9112	2632.38
86943	3232.99	976.43	77.9111	2632.38
86947.1	3234.61	974.268	77.9109	2632.38
86951.2	3236.22	972.107	77.9108	2632.38
86955.3	3237.83	969.956	77.9106	2632.38
86959.4	3239.43	967.805	77.9104	2632.38
86963.5	3241.04	965.649	77.9103	2632.38
86967.7	3242.57	963.603	77.9101	2632.38
86971.8	3244.09	961.557	77.91	2632.38
86975.9	3245.62	959.511	77.9098	2632.38
86980.1	3246.86	957.843	77.9097	2632.38
86984.2	3248.11	956.175	77.9096	2632.38
86988.3	3249.35	954.506	77.9094	2632.38
86992.5	3250.38	953.123	77.9093	2632.38
86996.6	3251.41	951.739	77.9091	2632.38
87000.7	3252.44	950.356	77.909	2632.38
87004.4	3253.3	949.206	77.9089	2632.38
87008	3254.15	948.055	77.9087	2632.38
87011.6	3255.01	946.902	77.9086	2632.38
87015.8	3255.82	945.816	77.9084	2632.38
87019.9	3256.62	944.73	77.9083	2632.38
87024	3257.43	943.644	77.9081	2632.38
87028.2	3258	942.878	77.908	2632.38
87032.3	3258.56	942.112	77.9078	2632.38
87036.4	3259.13	941.346	77.9077	2632.38
87040.4	3259.52	940.816	77.9075	2632.38
87044.4	3259.91	940.285	77.9074	2632.38
87048.3	3260.3	939.756	77.9073	2632.38
87052.5	3260.8	939.083	77.9071	2632.38
87056.6	3261.29	938.41	77.907	2632.38



87060.7	3261.79	937.739	77.9068	2632.38
87064.8	3262.26	937.097	77.9067	2632.38
87068.9	3262.74	936.456	77.9065	2632.38
87072.9	3263.21	935.815	77.9064	2632.38
87077	3263.64	935.227	77.9062	2632.38
87081.1	3264.08	934.639	77.9061	2632.38
87085.2	3264.51	934.05	77.9059	2632.38
87089.2	3264.91	933.507	77.9058	2632.38
87093.1	3265.31	932.964	77.9056	2632.38
87097	3265.71	932.421	77.9055	2632.38
87101.2	3266.23	931.717	77.9054	2632.38
87105.3	3266.75	931.014	77.9052	2632.38
87109.4	3267.27	930.31	77.9051	2632.38
87113.6	3267.93	929.42	77.9049	2632.38
87117.7	3268.59	928.529	77.9048	2632.38
87121.8	3269.25	927.639	77.9046	2632.38
87126	3269.96	926.687	77.9045	2632.38
87130.1	3270.66	925.734	77.9043	2632.38
87134.2	3271.37	924.781	77.9042	2632.38
87138.3	3272.01	923.919	77.904	2632.38
87142.4	3272.65	923.055	77.9039	2632.38
87146.5	3273.29	922.191	77.9037	2632.38
87150.7	3273.6	921.771	77.9035	2632.38
87154.8	3273.9	921.352	77.9034	2632.38
87158.9	3274.21	920.933	77.9033	2632.38
87163.1	3274.25	920.869	77.9031	2632.38
87167.2	3274.29	920.806	77.903	2632.38
87171.3	3274.33	920.742	77.9028	2632.38
87175.4	3274.57	920.411	77.9027	2632.38
87179.5	3274.81	920.082	77.9025	2632.38
87183.6	3275.05	919.751	77.9024	2632.38
87187.8	3275.4	919.273	77.9023	2632.38
87191.9	3275.75	918.796	77.9021	2632.38
87196	3276.1	918.319	77.902	2632.38
87200.1	3276.55	917.706	77.9018	2632.38
87204.2	3277.01	917.091	77.9017	2632.38
87208.3	3277.46	916.476	77.9015	2632.38
87212.5	3277.86	915.932	77.9014	2632.38
87216.6	3278.26	915.389	77.9012	2632.38
87220.7	3278.66	914.845	77.901	2632.38
87224.9	3278.7	914.781	77.9009	2632.38
87229	3278.74	914.717	77.9007	2632.38
87233.1	3278.78	914.653	77.9006	2632.38
87237.2	3278.66	914.807	77.9004	2632.38
87241.3	3278.53	914.961	77.9003	2632.38
87245.4	3278.41	915.115	77.9002	2632.38
87249.6	3278.31	915.234	77.9	2632.38
87253.7	3278.22	915.352	77.8999	2632.38
87257.8	3278.12	915.47	77.8997	2632.38
87261.9	3278.03	915.58	77.8996	2632.38
87266	3277.94	915.69	77.8995	2632.38
87270	3277.85	915.799	77.8993	2632.38
87274.1	3277.7	915.993	77.8992	2632.38
87278.2	3277.54	916.187	77.899	2632.38
87282.3	3277.39	916.381	77.8988	2632.38
87286.4	3277.33	916.451	77.8987	2632.38

87290.5	3277.27	916.521	77.8985	2632.38
87294.6	3277.21	916.59	77.8984	2632.38
87298.8	3277.51	916.184	77.8982	2632.38
87302.9	3277.8	915.777	77.8981	2632.38
87307	3278.1	915.372	77.8979	2632.38
87311.1	3278.63	914.65	77.8978	2632.38
87315.2	3279.17	913.929	77.8976	2632.38
87319.3	3279.7	913.208	77.8975	2632.38
87323.4	3280.49	912.148	77.8974	2632.38
87327.5	3281.27	911.089	77.8972	2632.38
87331.5	3282.06	910.031	77.8971	2632.38
87335.7	3282.69	909.181	77.8969	2632.38
87339.8	3283.32	908.331	77.8968	2632.38
87343.9	3283.95	907.481	77.8967	2632.38
87348.1	3284.27	907.049	77.8965	2632.38
87352.2	3284.58	906.616	77.8963	2632.38
87356.3	3284.9	906.183	77.8962	2632.38
87360.4	3285.21	905.764	77.896	2632.38
87364.5	3285.51	905.345	77.8959	2632.38
87368.6	3285.82	904.925	77.8957	2632.38
87372.8	3286.29	904.284	77.8956	2632.38
87376.9	3286.77	903.642	77.8954	2632.38
87381	3287.24	903.001	77.8953	2632.38
87384.9	3287.64	902.458	77.8951	2632.38
87388.8	3288.04	901.914	77.895	2632.38
87392.7	3288.44	901.372	77.8949	2632.38
87396.9	3288.48	901.304	77.8947	2632.38
87401	3288.53	901.236	77.8946	2632.38
87405.1	3288.57	901.168	77.8945	2632.38
87409.3	3288.2	901.651	77.8943	2632.38
87413.4	3287.83	902.134	77.8941	2632.38
87417.5	3287.46	902.616	77.894	2632.38
87422.2	3286.77	903.53	77.8938	2632.38
87426.8	3286.07	904.445	77.8937	2632.38
87431	3285.81	904.781	77.8935	2632.38
87435.1	3285.55	905.117	77.8934	2632.38
87439.2	3285.29	905.453	77.8932	2632.38
87443.3	3285.37	905.336	77.8931	2632.38
87447.4	3285.45	905.219	77.8929	2632.38
87451.5	3285.62	904.987	77.8927	2632.38
87455.6	3285.78	904.754	77.8926	2632.38
87459.7	3285.95	904.522	77.8924	2632.38
87463.9	3286.01	904.431	77.8923	2632.38
87468	3286.07	904.341	77.8922	2632.38
87472.1	3286.13	904.25	77.892	2632.38
87476.2	3285.98	904.445	77.8919	2632.38
87480.3	3285.82	904.639	77.8917	2632.38
87484.3	3285.67	904.833	77.8916	2632.38
87488.5	3285.31	905.297	77.8914	2632.38
87492.6	3284.96	905.762	77.8913	2632.38
87496.7	3284.6	906.227	77.8912	2632.38
87500.8	3283.8	907.287	77.891	2632.38
87504.9	3282.99	908.346	77.8909	2632.38
87509	3282.19	909.409	77.8907	2632.38
87513.2	3280.84	911.199	77.8905	2632.38
87517.3	3279.49	912.99	77.8904	2632.38

87521.4	3278.14	914.776	77.8902	2632.38
87525.6	3276.47	916.994	77.8901	2632.38
87529.7	3274.8	919.213	77.8899	2632.38
87533.8	3273.12	921.436	77.8898	2632.38
87538	3271.31	923.84	77.8896	2632.38
87542.1	3269.5	926.244	77.8895	2632.38
87546.2	3267.69	928.643	77.8894	2632.38
87550.3	3265.69	931.306	77.8892	2632.38
87554.4	3263.68	933.969	77.8891	2632.38
87558.5	3261.67	936.638	77.8889	2632.38
87562.7	3259.26	939.845	77.8888	2632.38
87566.8	3256.84	943.051	77.8886	2632.38
87570.9	3254.43	946.258	77.8885	2632.38
87575	3251.87	949.659	77.8884	2632.38
87579.1	3249.31	953.06	77.8882	2632.38
87583.2	3246.76	956.453	77.888	2632.38
87587.3	3244.2	959.857	77.8879	2632.38
87591.4	3241.64	963.262	77.8877	2632.38
87595.5	3239.07	966.674	77.8876	2632.38
87599.6	3236.66	969.877	77.8874	2632.38
87603.7	3234.25	973.08	77.8873	2632.38
87607.7	3231.84	976.284	77.8871	2632.38
87611.9	3229.66	979.184	77.887	2632.38
87616	3227.47	982.085	77.8868	2632.38
87620.1	3225.29	984.986	77.8867	2632.38
87624.3	3223.15	987.835	77.8866	2632.38
87628.4	3221	990.685	77.8864	2632.38
87632.5	3218.86	993.528	77.8863	2632.38
87636.7	3216.8	996.265	77.8861	2632.38
87640.8	3214.74	999.001	77.886	2632.38
87644.9	3212.68	1001.74	77.8858	2632.38
87648.9	3210.92	1004.07	77.8857	2632.38
87652.9	3209.16	1006.41	77.8855	2632.38
87656.8	3207.41	1008.74	77.8854	2632.38
87661	3205.72	1010.98	77.8852	2632.38
87665.1	3204.02	1013.23	77.8851	2632.38
87669.2	3202.33	1015.48	77.8849	2632.38
87673.3	3200.52	1017.88	77.8848	2632.38
87677.4	3198.71	1020.29	77.8846	2632.38
87681.5	3196.89	1022.7	77.8845	2632.38
87685.6	3195.21	1024.93	77.8843	2632.38
87689.7	3193.53	1027.17	77.8842	2632.38
87693.8	3191.85	1029.39	77.8841	2632.38
87698	3190.07	1031.76	77.8839	2632.38
87702.1	3188.29	1034.12	77.8838	2632.38
87706.2	3186.51	1036.48	77.8836	2632.38
87710.3	3184.65	1038.96	77.8835	2632.38
87714.4	3182.79	1041.43	77.8833	2632.38
87718.5	3180.92	1043.91	77.8832	2632.38
87722.7	3179.04	1046.41	77.883	2632.38
87726.8	3177.15	1048.91	77.8829	2632.38
87730.9	3175.27	1051.41	77.8827	2632.38
87735.1	3173.35	1053.96	77.8826	2632.38
87739.2	3171.43	1056.51	77.8824	2632.38
87743.3	3169.51	1059.06	77.8823	2632.38
87747.4	3167.66	1061.52	77.8821	2632.38

87751.5	3165.81	1063.97	77.882	2632.38
87755.6	3163.96	1066.43	77.8818	2632.38
87759.7	3162.16	1068.83	77.8817	2632.38
87763.8	3160.36	1071.22	77.8815	2632.38
87767.8	3158.55	1073.62	77.8814	2632.38
87771.9	3156.85	1075.88	77.8813	2632.38
87775.9	3155.15	1078.13	77.8811	2632.38
87779.9	3153.45	1080.39	77.881	2632.38
87784	3151.72	1082.69	77.8808	2632.38
87788.1	3149.99	1084.99	77.8807	2632.38
87792.2	3148.26	1087.28	77.8805	2632.38
87796.3	3146.59	1089.5	77.8804	2632.38
87800.4	3144.92	1091.71	77.8802	2632.38
87804.4	3143.26	1093.92	77.8801	2632.38
87808.6	3141.62	1096.09	77.8799	2632.38
87812.7	3139.99	1098.26	77.8798	2632.38
87816.8	3138.35	1100.44	77.8796	2632.38
87820.9	3136.66	1102.68	77.8795	2632.38
87825	3134.98	1104.92	77.8793	2632.38
87829.1	3133.29	1107.16	77.8792	2632.38
87833.3	3131.63	1109.37	77.8791	2632.38
87837.4	3129.96	1111.58	77.8789	2632.38
87841.5	3128.3	1113.79	77.8788	2632.38
87845.7	3126.7	1115.92	77.8786	2632.38
87849.8	3125.09	1118.05	77.8785	2632.38
87853.9	3123.49	1120.17	77.8783	2632.38
87858	3121.88	1122.3	77.8782	2632.38
87862.1	3120.28	1124.44	77.878	2632.38
87866.1	3118.67	1126.57	77.8779	2632.38
87870.3	3117.29	1128.4	77.8777	2632.38
87874.4	3115.91	1130.23	77.8775	2632.38
87878.5	3114.54	1132.05	77.8774	2632.38
87882.7	3113.73	1133.12	77.8773	2632.38
87886.8	3112.93	1134.18	77.8771	2632.38
87890.9	3112.12	1135.25	77.877	2632.38
87895	3111.92	1135.51	77.8768	2632.38
87899.1	3111.71	1135.77	77.8767	2632.38
87903.2	3111.51	1136.03	77.8765	2632.38
87907.4	3112.14	1135.17	77.8764	2632.38
87911.5	3112.78	1134.32	77.8763	2632.38
87915.6	3113.41	1133.46	77.8761	2632.38
87919.8	3114.51	1131.98	77.876	2632.38
87923.9	3115.62	1130.5	77.8758	2632.38
87928	3116.72	1129.02	77.8757	2632.38
87932.1	3117.13	1128.46	77.8755	2632.38
87936.2	3117.54	1127.9	77.8754	2632.38
87940.3	3117.95	1127.34	77.8752	2632.38
87944.5	3117.53	1127.89	77.875	2632.38
87948.6	3117.12	1128.43	77.8749	2632.38
87952.7	3116.7	1128.98	77.8747	2632.38
87956.8	3116	1129.9	77.8746	2632.38
87960.9	3115.31	1130.82	77.8744	2632.38
87965	3114.61	1131.74	77.8743	2632.38
87969.1	3113.73	1132.9	77.8742	2632.38
87973.2	3112.86	1134.05	77.874	2632.38
87977.3	3111.98	1135.22	77.8739	2632.38

87981.5	3111.24	1136.19	77.8737	2632.38
87985.6	3110.51	1137.16	77.8736	2632.38
87989.7	3109.77	1138.13	77.8735	2632.38
87993.8	3108.82	1139.39	77.8733	2632.38
87997.9	3107.86	1140.65	77.8732	2632.38
88002	3106.91	1141.92	77.873	2632.38
88006.1	3105.69	1143.54	77.8728	2632.38
88010.2	3104.47	1145.15	77.8727	2632.38
88014.3	3103.25	1146.77	77.8725	2632.38
88018.4	3102.19	1148.17	77.8724	2632.38
88022.5	3101.13	1149.58	77.8722	2632.38
88026.6	3100.07	1150.98	77.8721	2632.38
88030.8	3099.57	1151.64	77.8719	2632.38
88034.9	3099.06	1152.3	77.8718	2632.38
88039	3098.56	1152.96	77.8717	2632.38
88043.2	3098.2	1153.44	77.8715	2632.38
88047.3	3097.83	1153.91	77.8714	2632.38
88051.4	3097.47	1154.39	77.8712	2632.38
88055.4	3096.94	1155.09	77.8711	2632.38
88059.4	3096.4	1155.79	77.871	2632.38
88063.3	3095.87	1156.49	77.8708	2632.38
88067.5	3095.74	1156.65	77.8707	2632.38
88071.6	3095.62	1156.81	77.8705	2632.38
88075.7	3095.49	1156.97	77.8703	2632.38
88079.8	3096.01	1156.26	77.8702	2632.38
88083.9	3096.54	1155.55	77.87	2632.38
88088	3097.06	1154.84	77.8699	2632.38
88092.2	3097.44	1154.33	77.8697	2632.38
88096.3	3097.81	1153.82	77.8696	2632.38
88100.4	3098.19	1153.3	77.8694	2632.38
88104.5	3098.05	1153.48	77.8693	2632.38
88108.6	3097.91	1153.66	77.8692	2632.38
88112.7	3097.77	1153.83	77.869	2632.38
88116.8	3097.35	1154.39	77.8689	2632.38
88120.9	3096.92	1154.94	77.8687	2632.38
88125	3096.5	1155.5	77.8686	2632.38
88129.2	3095.82	1156.4	77.8685	2632.38
88133.3	3095.13	1157.3	77.8683	2632.38
88137.4	3094.45	1158.2	77.8681	2632.38
88141.6	3093.53	1159.41	77.868	2632.38
88145.7	3092.62	1160.62	77.8678	2632.38
88149.8	3091.7	1161.84	77.8677	2632.38
88154	3090.95	1162.83	77.8675	2632.38
88158.1	3090.19	1163.83	77.8674	2632.38
88162.2	3089.44	1164.82	77.8672	2632.38
88166.3	3089.49	1164.75	77.8671	2632.38
88170.4	3089.53	1164.68	77.8669	2632.38
88174.5	3089.58	1164.6	77.8668	2632.38
88178.7	3090.49	1163.37	77.8666	2632.38
88182.8	3091.41	1162.15	77.8665	2632.38
88186.9	3092.32	1160.92	77.8664	2632.38
88191	3093.48	1159.35	77.8662	2632.38
88195.1	3094.65	1157.79	77.8661	2632.38
88199.2	3095.81	1156.23	77.8659	2632.38
88203.4	3096.74	1154.97	77.8658	2632.38
88207.5	3097.68	1153.71	77.8656	2632.38

88211.6	3098.61	1152.46	77.8655	2632.38
88215.7	3099.12	1151.77	77.8653	2632.38
88219.8	3099.64	1151.07	77.8652	2632.38
88223.9	3100.15	1150.37	77.865	2632.38
88228	3100.49	1149.92	77.8649	2632.38
88232.2	3100.82	1149.46	77.8647	2632.38
88236.3	3101.16	1149	77.8646	2632.38
88240.4	3101.18	1148.96	77.8644	2632.38
88244.5	3101.19	1148.93	77.8643	2632.38
88248.5	3101.21	1148.9	77.8641	2632.38
88252.6	3101.01	1149.15	77.864	2632.38
88256.6	3100.81	1149.41	77.8639	2632.38
88260.6	3100.61	1149.67	77.8637	2632.38
88264.7	3100.14	1150.28	77.8636	2632.38
88268.8	3099.67	1150.9	77.8634	2632.38
88272.9	3099.2	1151.52	77.8633	2632.38
88277	3098.33	1152.67	77.8631	2632.38
88281.1	3097.47	1153.81	77.863	2632.38
88285.2	3096.6	1154.96	77.8628	2632.38
88289.3	3095.27	1156.71	77.8627	2632.38
88293.4	3093.95	1158.47	77.8625	2632.38
88297.5	3092.62	1160.24	77.8624	2632.38
88301.7	3091.05	1162.32	77.8622	2632.38
88305.8	3089.48	1164.4	77.8621	2632.38
88309.9	3087.92	1166.48	77.8619	2632.38
88314	3086.46	1168.41	77.8618	2632.38
88318.1	3085	1170.35	77.8617	2632.38
88322.1	3083.54	1172.29	77.8615	2632.38
88326.3	3082.04	1174.28	77.8614	2632.38
88330.4	3080.54	1176.27	77.8612	2632.38
88334.5	3079.05	1178.25	77.8611	2632.38
88338.6	3077.6	1180.17	77.8609	2632.38
88342.7	3076.15	1182.09	77.8608	2632.38
88346.8	3074.71	1184.01	77.8606	2632.38
88351	3073.61	1185.46	77.8605	2632.38
88355.1	3072.52	1186.92	77.8603	2632.38
88359.2	3071.42	1188.37	77.8602	2632.38
88363.3	3070.8	1189.18	77.86	2632.38
88367.4	3070.19	1189.99	77.8599	2632.38
88371.5	3069.57	1190.81	77.8597	2632.38
88375.7	3069.11	1191.42	77.8596	2632.38
88379.8	3068.64	1192.02	77.8594	2632.38
88383.9	3068.18	1192.63	77.8593	2632.38
88388	3067.18	1193.96	77.8591	2632.38
88392.1	3066.18	1195.28	77.859	2632.38
88396.2	3065.18	1196.6	77.8589	2632.38
88400.4	3064.25	1197.83	77.8587	2632.38
88404.5	3063.33	1199.06	77.8586	2632.38
88408.6	3062.4	1200.28	77.8584	2632.38
88412.8	3060.89	1202.29	77.8583	2632.38
88416.9	3059.37	1204.3	77.8581	2632.38
88421	3057.86	1206.31	77.858	2632.38
88425.2	3056.19	1208.53	77.8578	2632.38
88429.3	3054.51	1210.76	77.8577	2632.38
88433.4	3052.84	1212.98	77.8575	2632.38
88437.5	3051.15	1215.22	77.8573	2632.38

88441.5	3049.47	1217.46	77.8572	2632.38
88445.6	3047.78	1219.7	77.8571	2632.38
88449.7	3046.35	1221.6	77.8569	2632.38
88453.8	3044.92	1223.5	77.8568	2632.38
88457.9	3043.48	1225.41	77.8566	2632.38
88462	3042.52	1226.68	77.8565	2632.38
88466.2	3041.56	1227.95	77.8564	2632.38
88470.3	3040.6	1229.22	77.8562	2632.38
88474.5	3039.82	1230.25	77.8561	2632.38
88478.6	3039.05	1231.27	77.8559	2632.38
88482.7	3038.27	1232.3	77.8558	2632.38
88486.9	3037.65	1233.12	77.8556	2632.38
88491	3037.03	1233.94	77.8555	2632.38
88495.1	3036.41	1234.75	77.8553	2632.38
88499.2	3036.16	1235.08	77.8551	2632.38
88503.3	3035.9	1235.41	77.855	2632.38
88507.4	3035.65	1235.74	77.8548	2632.38
88511.6	3035.77	1235.56	77.8547	2632.38
88515.7	3035.89	1235.39	77.8545	2632.38
88519.8	3036.01	1235.22	77.8544	2632.38
88524	3035.81	1235.48	77.8543	2632.38
88528.1	3035.6	1235.75	77.8541	2632.38
88532.2	3035.4	1236.01	77.854	2632.38
88535.8	3035.2	1236.27	77.8539	2632.38
88539.3	3034.99	1236.53	77.8537	2632.38
88542.8	3034.79	1236.79	77.8536	2632.38
88546.9	3034.54	1237.11	77.8534	2632.38
88551	3034.3	1237.43	77.8533	2632.38
88555.1	3034.05	1237.75	77.8531	2632.38
88559.1	3033.87	1237.98	77.853	2632.38
88563.1	3033.69	1238.21	77.8529	2632.38
88567	3033.51	1238.44	77.8527	2632.38
88571.2	3033.11	1238.96	77.8526	2632.38
88575.3	3032.71	1239.49	77.8524	2632.38
88579.4	3032.31	1240.01	77.8523	2632.38
88583.6	3031.85	1240.61	77.8522	2632.38
88587.7	3031.4	1241.21	77.852	2632.38
88591.8	3030.94	1241.81	77.8519	2632.38
88595.4	3030.31	1242.64	77.8517	2632.38
88598.9	3029.68	1243.47	77.8516	2632.38
88602.4	3029.05	1244.3	77.8515	2632.38
88606.6	3028.13	1245.53	77.8513	2632.38
88610.7	3027.2	1246.75	77.8512	2632.38
88614.8	3026.28	1247.97	77.851	2632.38
88618.9	3025.38	1249.16	77.8509	2632.38
88623	3024.48	1250.35	77.8507	2632.38
88627.1	3023.58	1251.54	77.8506	2632.38
88631.3	3022.68	1252.74	77.8504	2632.38
88635.4	3021.77	1253.94	77.8503	2632.38
88639.5	3020.87	1255.13	77.8501	2632.38
88643.7	3019.86	1256.47	77.85	2632.38
88647.8	3018.84	1257.81	77.8498	2632.38
88651.9	3017.83	1259.16	77.8497	2632.38
88655.9	3016.72	1260.62	77.8495	2632.38
88659.9	3015.62	1262.09	77.8494	2632.38
88663.9	3014.51	1263.56	77.8492	2632.38

88668	3013.56	1264.82	77.8491	2632.38
88672.1	3012.6	1266.08	77.849	2632.38
88676.1	3011.65	1267.34	77.8488	2632.38
88680.2	3011.25	1267.86	77.8487	2632.38
88684.3	3010.86	1268.38	77.8485	2632.38
88688.4	3010.46	1268.9	77.8484	2632.38
88692.5	3010.24	1269.19	77.8483	2632.38
88696.6	3010.02	1269.47	77.8481	2632.38
88700.7	3009.8	1269.75	77.8479	2632.38
88704.9	3009.39	1270.28	77.8478	2632.38
88709	3008.99	1270.82	77.8476	2632.38
88713.1	3008.58	1271.35	77.8475	2632.38
88717.3	3007.93	1272.2	77.8473	2632.38
88721.4	3007.29	1273.05	77.8472	2632.38
88725.5	3006.64	1273.91	77.847	2632.38
88729.5	3005.92	1274.86	77.8469	2632.38
88733.5	3005.2	1275.81	77.8468	2632.38
88737.5	3004.48	1276.76	77.8466	2632.38
88741.7	3003.67	1277.84	77.8465	2632.38
88745.8	3002.85	1278.91	77.8463	2632.38
88749.9	3002.04	1279.99	77.8462	2632.38
88754.1	3001.15	1281.17	77.8461	2632.38
88758.2	3000.25	1282.35	77.8459	2632.38
88762.3	2999.36	1283.53	77.8457	2632.38
88766.4	2998.5	1284.67	77.8456	2632.38
88770.5	2997.63	1285.82	77.8454	2632.38
88774.6	2996.77	1286.96	77.8453	2632.38
88778.8	2995.87	1288.15	77.8451	2632.38
88782.9	2994.97	1289.34	77.845	2632.38
88787	2994.07	1290.53	77.8448	2632.38
88791.2	2993.31	1291.53	77.8447	2632.38
88795.3	2992.56	1292.53	77.8445	2632.38
88799.4	2991.8	1293.53	77.8444	2632.38
88803.6	2991.26	1294.24	77.8443	2632.38
88807.7	2990.73	1294.94	77.8441	2632.38
88811.8	2990.19	1295.65	77.844	2632.38
88815.9	2989.77	1296.21	77.8438	2632.38
88820	2989.34	1296.76	77.8437	2632.38
88824.1	2988.92	1297.32	77.8435	2632.38
88828.3	2988.37	1298.03	77.8434	2632.38
88832.4	2987.83	1298.75	77.8432	2632.38
88836.5	2987.28	1299.47	77.8431	2632.38
88840.7	2986.44	1300.59	77.8429	2632.38
88844.8	2985.59	1301.71	77.8428	2632.38
88848.9	2984.75	1302.82	77.8426	2632.38
88853	2983.5	1304.48	77.8425	2632.38
88857.1	2982.25	1306.14	77.8423	2632.38
88861.2	2981	1307.8	77.8422	2632.38
88865.4	2979.5	1309.79	77.842	2632.38
88869.5	2978	1311.78	77.8419	2632.38
88873.6	2976.5	1313.77	77.8417	2632.38
88877.7	2974.87	1315.94	77.8416	2632.38
88881.8	2973.23	1318.11	77.8415	2632.38
88885.8	2971.6	1320.28	77.8413	2632.38
88890	2969.91	1322.54	77.8412	2632.38
88894.1	2968.21	1324.79	77.841	2632.38



88898.2	2966.52	1327.04	77.8409	2632.38
88902.2	2964.88	1329.22	77.8407	2632.38
88906.2	2963.24	1331.4	77.8406	2632.38
88910.2	2961.6	1333.58	77.8404	2632.38
88914.4	2960	1335.7	77.8403	2632.38
88918.5	2958.41	1337.82	77.8401	2632.38
88922.6	2956.81	1339.94	77.84	2632.38
88926.8	2955.51	1341.67	77.8398	2632.38
88930.9	2954.2	1343.4	77.8397	2632.38
88935	2952.9	1345.13	77.8395	2632.38
88938.8	2951.98	1346.35	77.8394	2632.38
88942.6	2951.07	1347.56	77.8393	2632.38
88946.4	2950.15	1348.77	77.8392	2632.38
88950.5	2949.65	1349.43	77.839	2632.38
88954.6	2949.15	1350.09	77.8389	2632.38
88958.7	2948.65	1350.75	77.8387	2632.38
88961.2	2948.65	1350.74	77.8386	2632.38
88963.7	2948.22	1351.31	77.8385	2632.38
88967.8	2948.4	1351.06	77.8384	2632.38
88971.9	2948.57	1350.82	77.8382	2632.38
88976	2948.75	1350.57	77.8381	2632.38
88980.2	2949.96	1348.94	77.8379	2632.38
88984.3	2951.18	1347.31	77.8378	2632.38
88988.4	2952.39	1345.68	77.8376	2632.38
88992.5	2954.16	1343.3	77.8375	2632.38
88996.6	2955.93	1340.92	77.8373	2632.38
89000.7	2957.7	1338.55	77.8372	2632.38
89005	2959.54	1336.09	77.837	2632.38
89009.2	2961.38	1333.62	77.8369	2632.38
89013.3	2963.14	1331.26	77.8367	2632.38
89017.4	2964.9	1328.9	77.8366	2632.38
89021.4	2966.66	1326.54	77.8365	2632.38
89025.6	2967.87	1324.91	77.8363	2632.38
89029.7	2969.07	1323.29	77.8362	2632.38
89033.8	2970.28	1321.67	77.836	2632.38
89037.9	2970.28	1321.66	77.8359	2632.38
89042	2970.28	1321.65	77.8357	2632.38
89046.1	2970.28	1321.64	77.8356	2632.38
89050.3	2968.87	1323.51	77.8354	2632.38
89054.4	2967.46	1325.38	77.8353	2632.38
89058.5	2966.05	1327.26	77.8351	2632.38
89062.1	2964.66	1329.1	77.835	2632.38
89065.7	2963.27	1330.95	77.8349	2632.38
89069.2	2961.88	1332.8	77.8348	2632.38
89073.4	2961.24	1333.65	77.8346	2632.38
89077.5	2960.59	1334.5	77.8345	2632.38
89081.6	2959.95	1335.34	77.8343	2632.38
89085.7	2959.92	1335.37	77.8342	2632.38
89089.8	2959.9	1335.39	77.834	2632.38
89093.9	2959.87	1335.42	77.8338	2632.38
89098.7	2959.9	1335.37	77.8337	2632.38
89103.5	2960.75	1334.22	77.8335	2632.38
89108.2	2961.32	1333.45	77.8334	2632.38
89112.4	2961.81	1332.78	77.8332	2632.38
89116.5	2962.31	1332.11	77.8331	2632.38
89120.6	2962.8	1331.44	77.8329	2632.38

89125	2962.8	1331.43	77.8327	2632.38
89129.4	2962.8	1331.42	77.8326	2632.38
89133.7	2962.8	1331.41	77.8324	2632.38
89137.2	2962.8	1331.4	77.8323	2632.38

# ANEXO E

Longitud	Elevacion	Presion	MAOP	Temperatura
m	m	psig	psig	Deg F
0	2962.84	64.93	2122.29	60
14.77	2960.8	67.4328	2122.29	60
28	2958.81	69.8926	2122.29	60
35.48	2958.84	69.7381	2122.29	60
47.84	2960.94	66.7402	2122.29	60
59.86	2966.33	59.3468	2122.29	60
72.21	2971.59	52.1221	2122.29	60
84.02	2972.87	50.2296	2122.29	60
94.08	2971.93	51.3331	2122.29	60
106.01	2971.83	51.2846	2122.29	60
118.38	2972.16	50.6544	2122.29	60
130.75	2974.08	47.8969	2122.29	60
143.09	2977.69	42.8799	2122.29	60
155.32	2981.51	37.5836	2122.29	60
167.73	2984.81	32.9805	2122.29	60
180.09	2987.64	29.0068	2122.29	60
192.3	2990.61	24.8476	2122.29	60
204.7	2993.54	20.7397	2122.29	60
217.09	2996.79	16.2037	2122.29	60
229.3	2999.03	13.0215	2122.29	60
241.58	3000.36	11.0548	2122.29	60
253.95	2999.55	11.9489	2122.29	60
266.3	2997.26	14.8228	2122.29	60
278.64	2995.2	17.3893	2122.29	60
290.98	2992.51	20.7981	2122.29	60
303.22	2989.11	25.1579	2122.29	60
315.57	2985.45	29.8645	2122.29	60
327.93	2981.74	34.6375	2122.29	60
340.18	2978.07	39.3585	2122.29	60
352.39	2975.8	42.2082	2122.29	60
364.35	2974.45	43.8309	2122.29	60
376.32	2972.53	46.2158	2122.29	60
388.67	2972.23	46.4283	2122.29	60
401.04	2973.65	44.3402	2122.29	60
413.41	2973.39	44.4991	2122.29	60
425.79	2970.95	47.5732	2122.29	60
438.06	2966.94	52.7493	2122.29	60
450.41	2963.55	57.0945	2122.29	60
462.74	2960.35	61.1864	2122.29	60
474.68	2956.98	65.5118	2122.29	60
487.04	2953.35	70.1784	2122.29	60
499.41	2949.9	74.6044	2122.29	60
511.68	2946.57	78.8712	2122.29	60
522.68	2943.92	82.2481	2122.29	60
529.33	2942.53	84.0059	2122.29	60
541.67	2941.45	85.2619	2122.29	60
553.45	2940.23	86.714	2122.29	60
565.8	2937.81	89.7625	2122.29	60
578.14	2935.25	92.9988	2122.29	60

590.51	2930.74	98.8429	2122.29	60
602.8	2926.07	104.903	2122.29	60
615.14	2922.93	108.915	2122.29	60
627.35	2921.6	110.508	2122.29	60
633	2921.45	110.622	2122.29	60
645.38	2921.27	110.674	2122.29	60
657.58	2921.01	110.835	2122.29	60
669.82	2918.88	113.498	2122.29	60
682.2	2915.83	117.389	2122.29	60
694.57	2913.05	120.919	2122.29	60
706.92	2910.58	124.035	2122.29	60
719.28	2907.82	127.539	2122.29	60
731.54	2905.16	130.911	2122.29	60
743.5	2904.78	131.236	2122.29	60
755.52	2905.98	129.447	2122.29	60
767.91	2905.86	129.418	2122.29	60
780.13	2903.1	132.924	2122.29	60
792.34	2898.75	138.558	2122.29	60
804.71	2895.01	143.373	2122.29	60
817.06	2892.87	146.048	2122.29	60
829.4	2891.98	147.05	2122.29	60
841.68	2890.04	149.458	2122.29	60
853.94	2886.89	153.486	2122.29	60
866.29	2883.1	158.368	2122.29	60
878.45	2879.15	163.468	2122.29	60
890.58	2875.01	168.823	2122.29	60
902.83	2870.13	175.166	2122.29	60
915.14	2865.23	181.536	2122.29	60
927.37	2861.24	186.688	2122.29	60
932.37	2858.74	189.957	2122.29	60
944.76	2855.42	194.211	2122.29	60
956.84	2851.54	199.219	2122.29	60
969.19	2846.99	205.12	2122.29	60
981.48	2843.19	210.018	2122.29	60
993.86	2840.6	213.295	2122.29	60
1006.23	2838.24	216.265	2122.29	60
1018.38	2835.3	220.014	2122.29	60
1030.72	2831.9	224.377	2122.29	60
1043.11	2827.87	229.581	2122.29	60
1055.49	2825.23	232.926	2122.29	60
1067.7	2823.6	234.921	2122.29	60
1080.05	2821.65	237.342	2122.29	60
1086.6	2819.55	240.053	2122.29	60
1098.98	2816.82	243.518	2122.29	60
1111.15	2814.25	246.773	2122.29	60
1123.53	2811.83	249.823	2122.29	60
1135.8	2808.45	254.16	2122.29	60
1148.02	2804.17	259.703	2122.29	60
1159.95	2800.35	264.634	2122.29	60
1172.32	2795.36	271.125	2122.29	60
1184.66	2792.02	275.408	2122.29	60

1196.63	2788.97	279.308	2122.29	60
1208.67	2785.48	283.797	2122.29	60
1220.76	2781.45	289.007	2122.29	60
1233.11	2777.68	293.866	2122.29	60
1244.98	2773.92	298.719	2122.29	60
1256.56	2770.16	303.576	2122.29	60
1268.08	2766.81	307.885	2122.29	60
1278.12	2764.15	311.293	2122.29	60
1290.48	2761.89	314.131	2122.29	60
1302.86	2759.12	317.65	2122.29	60
1315.23	2755.47	322.348	2122.29	60
1327.53	2750.86	328.333	2122.29	60
1339.88	2746.27	334.291	2122.29	60
1352.25	2741.87	339.994	2122.29	60
1364.63	2736.2	347.397	2122.29	60
1377	2730.03	355.471	2122.29	60
1389.36	2723.29	364.308	2122.29	60
1401.72	2716.61	373.065	2122.29	60
1414.02	2710.77	380.699	2122.29	60
1426.03	2704.65	388.712	2122.29	60
1438.38	2698.84	396.305	2122.29	60
1450.65	2693.27	403.578	2122.29	60
1462.83	2686.97	411.83	2122.29	60
1474.99	2679.89	421.128	2122.29	60
1487.39	2672.96	430.222	2122.29	60
1499.63	2666.44	438.769	2122.29	60
1511.9	2661.71	444.918	2122.29	60
1524.17	2654.87	453.893	2122.29	60
1536.55	2648.07	462.815	2122.29	60
1548.92	2641.95	470.825	2122.29	60
1561.12	2635.72	478.986	2122.29	60
1573.41	2629.77	486.77	2122.29	60
1585.36	2624.2	494.051	2122.29	60
1597.61	2618.81	501.085	2122.29	60
1609.98	2611.19	511.107	2122.29	60
1622.14	2604.2	520.288	2122.29	60
1634.4	2597.55	529.012	2122.29	60
1646.63	2591.67	536.705	2122.29	60
1658.87	2586.87	542.951	2122.29	60
1671.25	2580.25	551.634	2122.29	60
1683.63	2573.42	560.599	2122.29	60
1695.71	2566.94	569.099	2122.29	60
1708.03	2561.19	576.618	2122.29	60
1720.36	2553.47	586.777	2122.29	60
1732.33	2545.84	596.821	2122.29	60
1744.72	2538.69	606.217	2122.29	60
1757.1	2533.16	613.441	2122.29	60
1769.36	2527.91	620.292	2122.29	60
1781.64	2523.15	626.485	2122.29	60
1794.01	2517.92	633.308	2122.29	60
1805.97	2511.83	641.29	2122.29	60

1818.28	2504.71	650.647	2122.29	60
1830.58	2498.82	658.357	2122.29	60
1842.61	2490.87	668.832	2122.29	60
1854.98	2484.84	676.729	2122.29	60
1865.36	2480.01	683.047	2122.29	60
1877.72	2474.2	690.649	2122.29	60
1889.95	2469.14	697.248	2122.29	60
1902.2	2462.13	706.461	2122.29	60
1914.57	2456.21	714.211	2122.29	60
1926.65	2452.01	719.659	2122.29	60
1938.83	2448.7	723.912	2122.29	60
1951	2445.5	728.018	2122.29	60
1962.95	2441.03	733.83	2122.29	60
1975.09	2438.21	737.427	2122.29	60
1987.34	2435.39	741.023	2122.29	60
1997.95	2433.14	743.879	2122.29	60
2010.33	2432.25	744.883	2122.29	60
2022.31	2433.2	743.426	2122.29	60
2034.28	2433.21	743.23	2122.29	60
2046.61	2431.3	745.604	2122.29	60
2058.96	2429.19	748.245	2122.29	60
2071.29	2428.04	749.599	2122.29	60
2083.68	2426.8	751.073	2122.29	60
2096.03	2423.94	754.721	2122.29	60
2108.25	2418.78	761.455	2122.29	60
2120.16	2412.95	769.094	2122.29	60
2125.26	2410.63	772.128	2122.29	60
2137.61	2405.86	778.337	2122.29	60
2149.89	2402.16	783.114	2122.29	60
2162.24	2398.98	787.191	2122.29	60
2174.54	2395.6	791.537	2122.29	60
2186.93	2392.35	795.708	2122.29	60
2198.95	2388.31	800.944	2122.29	60
2211.31	2384.87	805.37	2122.29	60
2223.68	2381.3	809.971	2122.29	60
2235.87	2378.02	814.185	2122.29	60
2248.25	2375.59	817.256	2122.29	60
2255.35	2372.71	821.012	2122.29	60
2267.7	2369.25	825.466	2122.29	60
2280.08	2365.32	830.549	2122.29	60
2292.44	2361.91	834.936	2122.29	60
2304.47	2357.78	840.293	2122.29	60
2316.77	2352.58	847.083	2122.29	60
2316.77	2352.58	847.083	2800	60
2329.15	2347.02	854.354	2800	60
2341.53	2341.55	861.505	2800	60
2353.9	2335.83	868.992	2800	60
2366.27	2329.86	876.814	2800	60
2378.58	2324.13	884.315	2800	60
2390.79	2318.19	892.101	2800	60
2402.83	2312.96	898.936	2800	60

2415.15	2308.28	905.028	2800	60
2427.45	2302.81	912.182	2800	60
2439.74	2296.67	920.235	2800	60
2452.01	2290.6	928.194	2800	60
2464.39	2284.72	935.898	2800	60
2476.77	2279.26	943.037	2800	60
2489.14	2275.11	948.419	2800	60
2501.51	2272.23	952.096	2800	60
2513.88	2269.99	954.914	2800	60
2526.1	2267.25	958.406	2800	60
2538.48	2263.83	962.807	2800	60
2551.82	2260.05	967.678	2800	60
2564.14	2255.78	973.222	2800	60
2576.68	2250.22	980.495	2800	60
2589.61	2244.1	988.514	2800	60
2601.91	2237.62	997.025	2800	60
2613.68	2230.44	1006.49	2800	60
2624.72	2223.79	1015.25	2800	60
2636.48	2216.51	1024.84	2800	60
2647.75	2209.72	1033.79	2800	60
2660.05	2202.79	1042.9	2800	60
2672.37	2195.35	1052.71	2800	60
2684.57	2187.92	1062.5	2800	60
2696.77	2180.42	1072.38	2800	60
2709.89	2173	1082.15	2800	60
2722.19	2165.58	1091.93	2800	60
2734.5	2157.7	1102.32	2800	60
2746.39	2150.24	1112.16	2800	60
2758.72	2142.72	1122.07	2800	60
2771.01	2134.6	1132.79	2800	60
2783.32	2126.77	1143.12	2800	60
2795.74	2118.72	1153.75	2800	60
2807.24	2111.36	1163.46	2800	60
2815.54	2106.06	1170.45	2800	60
2823.14	2105.26	1171.41	2800	60
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2837.34	2105.26	1171.2	2800	60
2837.34	2105.26	1171.18	2800	60
2841.74	2105.16	1171.25	2800	60
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2858.18	2097.82	1180.86	2800	60
2866.06	2097.42	1181.28	2800	60
2877.83	2099.45	1178.37	2800	60
2890.16	2105.42	1170.16	2800	60
2902.44	2112.36	1160.65	2800	60
2914.7	2119.58	1150.76	2800	60
2927.08	2126.86	1140.8	2800	60
2939.39	2133.55	1131.62	2800	60
2951.68	2140.15	1122.57	2800	60
2964	2147.33	1112.74	2800	60
2976.21	2153.57	1104.17	2800	60



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3018.39	2168.34	1083.67	2800	60
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3039.88	2180.15	1067.49	2800	60
3051.34	2186.59	1058.66	2800	60
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3076.09	2198.44	1042.37	2800	60
3088.46	2203.95	1034.78	2800	60
3100.84	2208.79	1028.1	2800	60
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3117.09	2214.72	1019.89	2800	60
3129.38	2219.68	1013.04	2800	60
3132.76	2221.58	1010.44	2800	60
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3157.19	2234.3	992.986	2800	60
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3216.29	2254.46	965.019	2800	60
3216.29	2254.46	965.019	2122.29	60
3227.75	2259.7	957.81	2122.29	60
3239.77	2265.24	950.19	2122.29	60
3244.01	2267.39	947.24	2122.29	60
3255.52	2272.89	939.682	2122.29	60
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3275.5	2282.61	926.33	2122.29	60
3287.85	2287.55	919.512	2122.29	60
3300.24	2292.98	912.035	2122.29	60
3312.6	2298.36	904.625	2122.29	60
3324.97	2303.54	897.485	2122.29	60
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3350.21	2314.82	881.962	2122.29	60
3362.56	2319.18	875.923	2122.29	60
3367.34	2321.16	873.193	2122.29	60
3379.73	2326.84	865.382	2122.29	60
3391.6	2332.81	857.19	2122.29	60
3403.06	2337.41	850.843	2122.29	60
3415.29	2341.12	845.678	2122.29	60
3427.49	2344.97	840.326	2122.29	60
3439.64	2349.55	833.996	2122.29	60
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3459.08	2353.24	828.749	2122.29	60
3471.21	2355.62	825.37	2122.29	60
3483.57	2357.74	822.337	2122.29	60
3496.11	2357.98	821.824	2122.29	60
3508.38	2359.58	819.49	2122.29	60
3520.61	2360.68	817.828	2122.29	60

3533	2364.05	813.117	2122.29	60
3546.01	2369.8	805.205	2122.29	60
3558.44	2378.82	792.914	2122.29	60
3570.85	2388.08	780.303	2122.29	60
3583.86	2397.06	768.059	2122.29	60
3596.87	2405.46	756.593	2122.29	60
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3644.87	2430.51	722.264	2122.29	60
3657.48	2437.48	712.724	2122.29	60
3669.99	2443.92	703.897	2122.29	60
3682.4	2449.88	695.715	2122.29	60
3697.91	2457.52	685.234	2122.29	60
3710.61	2463.87	676.525	2122.29	60
3722.99	2470.69	667.192	2122.29	60
3735.54	2478.06	657.118	2122.29	60
3747.78	2484.65	648.096	2122.29	60
3760.79	2489.3	641.663	2122.29	60
3767.85	2491.76	638.257	2122.29	60
3773.02	2493.13	636.342	2122.29	60
3786.04	2496.86	631.142	2122.29	60
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3810.53	2503.95	621.264	2122.29	60
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3835.25	2509.44	613.527	2122.29	60
3847.61	2512.22	609.611	2122.29	60
3859.97	2515.22	605.401	2122.29	60
3872.24	2519.64	599.289	2122.29	60
3884.63	2524.08	593.148	2122.29	60
3896.98	2529.85	585.225	2122.29	60
3908.91	2535.22	577.845	2122.29	60
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3933.62	2547.01	561.666	2122.29	60
3945.89	2552.92	553.558	2122.29	60
3958.26	2558.74	545.569	2122.29	60
3970.49	2563.51	538.99	2122.29	60
3982.85	2567.09	534.003	2122.29	60
3995.21	2570.68	529.003	2122.29	60
4006.63	2574.15	524.179	2122.29	60
4018.98	2578.17	518.604	2122.29	60
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4043.68	2587.4	505.858	2122.29	60
4056.03	2592.44	498.916	2122.29	60
4069.03	2596.61	493.13	2122.29	60
4081.25	2602.1	485.587	2122.29	60
4086.73	2604.92	481.726	2122.29	60
4099.08	2610.28	474.355	2122.29	60
4111.24	2614.06	469.105	2122.29	60
4123.41	2618.65	462.77	2122.29	60
4135.8	2625.22	453.779	2122.29	60

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4160.33	2637.31	437.208	2122.29	60
4167.13	2639.99	433.514	2122.29	60
4179.5	2646.07	425.18	2122.29	60
4191.89	2653.05	415.641	2122.29	60
4198.25	2657.02	410.227	2122.29	60
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4222.75	2670.99	391.141	2122.29	60
4235.04	2676.43	383.667	2122.29	60
4244.29	2679.91	378.865	2122.29	60
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4266.68	2678.76	380.063	2122.29	60
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4291.11	2672.85	387.605	2122.29	60
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4309.26	2668.44	393.234	2122.29	60
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4346.16	2667.8	393.528	2122.29	60
4358.34	2668.22	392.779	2122.29	60
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4487.43	2715.06	328.079	2122.29	60
4499.73	2716.5	325.963	2122.29	60
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4524.42	2719.54	321.516	1772.83	60
4536.2	2720.46	320.104	1772.83	60
4548.5	2719.62	321.04	1772.83	60
4560.78	2718.01	323.009	1772.83	60
4573.26	2716.41	324.96	1772.83	60
4585.46	2714.77	326.97	1772.83	60
4597.78	2713.39	328.63	1772.83	60
4610.07	2712.02	330.276	1772.83	60
4622.41	2708.87	334.306	1772.83	60
4635.24	2704.31	340.216	1772.83	60
4648.07	2698.68	347.559	1772.83	60
4660.98	2693.01	354.955	1772.83	60
4672.47	2687.76	361.81	1772.83	60
4685.36	2682.22	369.032	1772.83	60
4692.8	2681.35	370.084	1772.83	60
4705.73	2676.97	375.752	1772.83	60

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17254	2096.71	962.173	2122.29	60
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19787.9	1881.3	1212.81	2800	60
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19813.1	1881.12	1212.67	2800	60
19825.6	1880.94	1212.72	2800	60
19838	1878.82	1215.38	2800	60
19850.4	1876.42	1218.42	2800	60
19863.3	1874.6	1220.67	2800	60
19875.2	1873.84	1221.5	2800	60
19888.1	1873.86	1221.28	2800	60
19900.3	1873.36	1221.77	2800	60
19913	1872.41	1222.85	2800	60
19925.9	1872.13	1223.03	2800	60
19938.5	1871.72	1223.39	2800	60
19950.9	1871.41	1223.61	2800	60
19963.8	1870.65	1224.44	2800	60
19976.4	1868.99	1226.48	2800	60
19989.3	1866.69	1229.37	2800	60
20002.2	1864.43	1232.21	2800	60
20015.1	1861.55	1235.89	2800	60
20025.9	1859	1239.15	2800	60
20038.8	1856.55	1242.24	2800	60
20051.2	1854.37	1244.98	2800	60
20063.6	1850.65	1249.79	2800	60
20076.4	1844.53	1257.82	2800	60
20089.4	1838.59	1265.61	2800	60
20102	1833.76	1271.91	2800	60
20114.3	1829.26	1277.77	2800	60
20126.7	1824.93	1283.4	2800	60
20139.2	1820.21	1289.55	2800	60
20152.1	1815.34	1295.9	2800	60
20165	1812.49	1299.53	2800	60
20177.5	1812.36	1299.52	2800	60
20190.4	1811.97	1299.85	2800	60
20202.8	1810.55	1301.57	2800	60
20215.7	1809.46	1302.83	2800	60



20228.7	1808.71	1303.64	2800	60
20241.3	1807.95	1304.47	2800	60
20254.3	1808.26	1303.86	2800	60
20266.6	1808.66	1303.13	2800	60
20278.2	1807.85	1304.04	2800	60
20291.2	1805.33	1307.23	2800	60
20304.1	1801.89	1311.66	2800	60
20316.6	1798.65	1315.83	2800	60
20329.1	1795.45	1319.94	2800	60
20341.4	1792.37	1323.89	2800	60
20353.1	1788.87	1328.42	2800	60
20364.8	1783.93	1334.88	2800	60
20376.4	1778.76	1341.65	2800	60
20376.4	1778.76	1341.65	3130.66	60
20388.6	1774.99	1346.53	3130.66	60
20401	1772.13	1350.19	3130.66	60
20413.3	1769.56	1353.46	3130.66	60
20425.6	1766.71	1357.1	3130.66	60
20438	1762.73	1362.26	3130.66	60
20450.4	1760.04	1365.69	3130.66	60
20462.7	1758.27	1367.88	3130.66	60
20475.1	1756.05	1370.68	3130.66	60
20487.5	1753.92	1373.35	3130.66	60
20499.9	1751.62	1376.26	3130.66	60
20513.9	1748.95	1379.63	3130.66	60
20513.9	1749.27	1379.63	3466.38	60
20527.3	1746.92	1382.59	3466.38	60
20539.7	1745.04	1384.93	3466.38	60
20551.1	1742.04	1388.79	3466.38	60
20563.5	1738.16	1393.81	3466.38	60
20575.9	1736.14	1396.34	3466.38	60
20588.3	1735.51	1397	3466.38	60
20600.7	1734.88	1397.66	3466.38	60
20613	1734.32	1398.22	3466.38	60
20625.4	1734.72	1397.5	3466.38	60
20625.4	1734.72	1397.5	3130.66	60
20637.1	1735.12	1396.78	3130.66	60
20649.1	1734.64	1397.24	3130.66	60
20661.5	1733.39	1398.73	3130.66	60
20673.6	1731.56	1401.01	3130.66	60
20685.9	1729.44	1403.67	3130.66	60
20698.3	1728.35	1404.95	3130.66	60
20710.5	1727.77	1405.54	3130.66	60
20722.8	1727.83	1405.28	3130.66	60
20735.2	1727.9	1404.99	3130.66	60
20747.6	1726.76	1406.34	3130.66	60
20759.9	1727.11	1405.68	3130.66	60
20771.9	1732.15	1398.72	3130.66	60
20784.3	1736.53	1392.64	3130.66	60
20796.7	1739.06	1389.05	3130.66	60
20809.1	1738.17	1390.05	3130.66	60

20821.3	1735.94	1392.87	3130.66	60
20833.6	1733.01	1396.62	3130.66	60
20846	1732.44	1397.2	3130.66	60
20857.5	1732.38	1397.1	3130.66	60
20869.8	1730.71	1399.16	3130.66	60
20882	1727.68	1403.05	3130.66	60
20894.4	1724.14	1407.62	3130.66	60
20906.7	1721.29	1411.26	3130.66	60
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20932.9	1718.53	1414.58	3130.66	60
20945.1	1720.78	1411.36	3130.66	60
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20969.7	1727.75	1401.62	3130.66	60
20982	1731.22	1396.76	3130.66	60
20994.4	1734.99	1391.5	3130.66	60
21006.6	1737.19	1388.36	3130.66	60
21019	1739.8	1384.66	3130.66	60
21031.4	1743.19	1379.91	3130.66	60
21043.8	1745.49	1376.63	3130.66	60
21055.9	1745.42	1376.54	3130.66	60
21068.3	1744.04	1378.21	3130.66	60
21080.6	1741.37	1381.61	3130.66	60
21092.9	1739.76	1383.59	3130.66	60
21105.3	1740.1	1382.94	3130.66	60
21117.7	1740.51	1382.2	3130.66	60
21126.8	1740.75	1381.74	3130.66	60
21139.2	1740.85	1381.41	3130.66	60
21151.4	1740.81	1381.28	3130.66	60
21163.7	1740.71	1381.23	3130.66	60
21176	1740.98	1380.68	3130.66	60
21188.4	1742.88	1377.93	3130.66	60
21200.7	1745.95	1373.62	3130.66	60
21213.1	1747.68	1371.1	3130.66	60
21225.4	1748.04	1370.43	3130.66	60
21237.7	1748.68	1369.38	3130.66	60
21249.9	1750.44	1366.83	3130.66	60
21262.3	1751.86	1364.73	3130.66	60
21274.6	1752.21	1364.07	3130.66	60
21287	1751.92	1364.28	3130.66	60
21299.3	1751.68	1364.41	3130.66	60
21311.7	1751.62	1364.3	3130.66	60
21324.1	1751.51	1364.26	3130.66	60
21336.5	1751.05	1364.69	3130.66	60
21348.8	1749.97	1365.95	3130.66	60
21361	1748.33	1367.97	3130.66	60
21373.4	1746.44	1370.32	3130.66	60
21385.7	1744.47	1372.79	3130.66	60
21397.8	1742.87	1374.75	3130.66	60
21410.2	1742.14	1375.54	3130.66	60
21422.6	1742.38	1375.03	3130.66	60
21435.3	1743.36	1373.52	3130.66	60

21447.7	1743.96	1372.53	3130.66	60
21460.1	1742.86	1373.82	3130.66	60
21472.5	1740.8	1376.4	3130.66	60
21484.4	1738.73	1379	3130.66	60
21496.6	1736.88	1381.3	3130.66	60
21508.9	1735.47	1383.01	3130.66	60
21521.3	1734.7	1383.85	3130.66	60
21533.7	1734.19	1384.35	3130.66	60
21546.1	1733.32	1385.33	3130.66	60
21558.4	1732.15	1386.72	3130.66	60
21570.8	1731.38	1387.56	3130.66	60
21583.2	1731.74	1386.89	3130.66	60
21595.6	1731.9	1386.48	3130.66	60
21607.9	1731.82	1386.4	3130.66	60
21620.3	1731.7	1386.38	3130.66	60
21632.7	1731.57	1386.36	3130.66	60
21645.1	1731.93	1385.69	3130.66	60
21656.8	1732.82	1384.31	3130.66	60
21669.1	1733.46	1383.27	3130.66	60
21681.5	1733.28	1383.32	3130.66	60
21693.9	1732.38	1384.34	3130.66	60
21706.2	1731.05	1385.94	3130.66	60
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21730.9	1729.47	1387.69	3130.66	60
21741.1	1729.03	1388.12	3130.66	60
21753.4	1728.87	1388.15	3130.66	60
21765.8	1729.03	1387.75	3130.66	60
21778.1	1729.16	1387.38	3130.66	60
21790.5	1729.26	1387.06	3130.66	60
21802.7	1729.2	1386.96	3130.66	60
21815.1	1728.51	1387.69	3130.66	60
21827.5	1726.9	1389.67	3130.66	60
21839.9	1725.2	1391.77	3130.66	60
21852.2	1723.79	1393.47	3130.66	60
21864.6	1723.1	1394.21	3130.66	60
21876.6	1722.68	1394.59	3130.66	60
21888.8	1722.26	1394.97	3130.66	60
21901.2	1722.12	1394.97	3130.66	60
21913.6	1722.26	1394.59	3130.66	60
21926	1722.56	1394	3130.66	60
21937.5	1723.11	1393.09	3130.66	60
21949.8	1723.84	1391.92	3130.66	60
21962	1724.31	1391.1	3130.66	60
21974	1724.33	1390.89	3130.66	60
21986.4	1723.55	1391.75	3130.66	60
21998.7	1721.42	1394.43	3130.66	60
22011.1	1718.66	1397.95	3130.66	60
22023	1716.38	1400.83	3130.66	60
22035.3	1714.45	1403.24	3130.66	60
22046.1	1713.25	1404.69	3130.66	60
22058.5	1712.76	1405.16	3130.66	60

22070.9	1712.36	1405.51	3130.66	60
22083.3	1713.02	1404.43	3130.66	60
22095.6	1713.93	1403.02	3130.66	60
22108	1714.27	1402.37	3130.66	60
22120.4	1714.49	1401.89	3130.66	60
22132.8	1714.81	1401.27	3130.66	60
22145.2	1714.98	1400.85	3130.66	60
22157.6	1714.84	1400.85	3130.66	60
22170	1714.36	1401.31	3130.66	60
22182.3	1713.28	1402.57	3130.66	60
22194.7	1712.77	1403.07	3130.66	60
22207.1	1712.66	1403.03	3130.66	60
22219.5	1713.17	1402.15	3130.66	60
22231.9	1713.26	1401.84	3130.66	60
22244.3	1712.71	1402.39	3130.66	60
22256.6	1711.52	1403.8	3130.66	60
22269	1710.29	1405.27	3130.66	60
22281.3	1709.21	1406.53	3130.66	60
22292.8	1708.42	1407.42	3130.66	60
22305	1708.16	1407.58	3130.66	60
22317.4	1706.83	1409.18	3130.66	60
22329.8	1704.15	1412.6	3130.66	60
22342.1	1701.55	1415.91	3130.66	60
22354.5	1699.59	1418.35	3130.66	60
22366.9	1698.36	1419.82	3130.66	60
22379.3	1698.04	1420.06	3130.66	60
22391.6	1697.61	1420.45	3130.66	60
22403.7	1696.07	1422.34	3130.66	60
22415.6	1693.13	1426.11	3130.66	60
22428	1690.1	1429.99	3130.66	60
22440.4	1689.57	1430.52	3130.66	60
22452.8	1690.07	1429.66	3130.66	60
22465.2	1689.53	1430.19	3130.66	60
22477.6	1687.91	1432.18	3130.66	60
22490	1686.29	1434.17	3130.66	60
22502.4	1685.09	1435.6	3130.66	60
22514.7	1683.95	1436.94	3130.66	60
22522.6	1683.09	1437.98	3130.66	60
22534.8	1682.08	1439.15	3130.66	60
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22559.5	1681.43	1439.65	3130.66	60
22571.9	1682.21	1438.41	3130.66	60
22584.3	1682.98	1437.18	3130.66	60
22596.7	1683.26	1436.62	3130.66	60
22609	1682.04	1438.07	3130.66	60
22621.4	1679.37	1441.47	3130.66	60
22633.8	1676.05	1445.75	3130.66	60
22645.3	1673.17	1449.45	3130.66	60
22657.7	1671.34	1451.72	3130.66	60
22670.1	1670.81	1452.24	3130.66	60
22682.4	1670.78	1452.1	3130.66	60

22694.3	1670.89	1451.77	3130.66	60
22705.2	1671.14	1451.26	3130.66	60
22717.6	1672.39	1449.39	3130.66	60
22726.7	1673.23	1448.13	3130.66	60
22739.1	1673.4	1447.71	3130.66	60
22751.5	1672.63	1448.55	3130.66	60
22763.6	1670.56	1451.15	3130.66	60
22775.5	1667.19	1455.5	3130.66	60
22787.9	1663.29	1460.56	3130.66	60
22800.3	1658.3	1467.08	3130.66	60
22812.5	1651.15	1476.51	3130.66	60
22824.9	1644.56	1485.19	3130.66	60
22837.3	1642.16	1488.23	3130.66	60
22849.7	1644.41	1485.01	3130.66	60
22862.1	1649.18	1478.41	3130.66	60
22874.4	1652.53	1473.71	3130.66	60
22886.8	1653.63	1472.04	3130.66	60
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22932.4	1649.31	1477.16	3130.66	60
22944.8	1649.6	1476.58	3130.66	60
22956.3	1650.12	1475.71	3130.66	60
22968.6	1652.11	1472.84	3130.66	60
22981	1652.33	1472.36	3130.66	60
22993.4	1650.85	1474.16	3130.66	60
23005.8	1648.58	1477.02	3130.66	60
23009.6	1647.86	1477.93	3130.66	60
23021.8	1646.47	1479.62	3130.66	60
23034.2	1648.41	1476.82	3130.66	60
23046.2	1652.2	1471.54	3130.66	60
23058.6	1656.12	1466.07	3130.66	60
23071	1659.85	1460.87	3130.66	60
23083.4	1662.29	1457.4	3130.66	60
23095.6	1663.59	1455.46	3130.66	60
23108	1664.79	1453.66	3130.66	60
23115.9	1665.52	1452.56	3130.66	60
23128.3	1665.87	1451.9	3130.66	60
23140.6	1665.03	1452.84	3130.66	60
23153	1663.95	1454.1	3130.66	60
23165.4	1663.56	1454.44	3130.66	60
23177.8	1663.21	1454.72	3130.66	60
23189.9	1662.86	1455.01	3130.66	60
23202.2	1663.23	1454.32	3130.66	60
23214.6	1664.56	1452.34	3130.66	60
23227	1665.49	1450.9	3130.66	60
23239.4	1665.65	1450.5	3130.66	60
23251.7	1664.91	1451.31	3130.66	60
23264.1	1663.25	1453.35	3130.66	60
23275.9	1661.62	1455.36	3130.66	60
23288.3	1661.05	1455.94	3130.66	60

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23312.8	1660.56	1456.22	3130.66	60
23325.2	1660.27	1456.43	3130.66	60
23336.7	1659.78	1456.91	3130.66	60
23349.1	1659.1	1457.63	3130.66	60
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23373.8	1657.94	1458.82	3130.66	60
23386.2	1657.74	1458.9	3130.66	60
23398.6	1658.49	1457.7	3130.66	60
23410.9	1659.18	1456.58	3130.66	60
23423	1658.95	1456.71	3130.66	60
23435	1658.03	1457.76	3130.66	60
23447.4	1657.34	1458.5	3130.66	60
23459.8	1656.49	1459.46	3130.66	60
23472.1	1655.39	1460.75	3130.66	60
23484.5	1654.22	1462.13	3130.66	60
23496.6	1652.6	1464.13	3130.66	60
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23536.9	1648.67	1468.8	3130.66	60
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23554.2	1648.49	1468.76	3130.66	60
23566.6	1648.65	1468.36	3130.66	60
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23603.1	1645.19	1472.46	3130.66	60
23615.5	1642.69	1475.63	3130.66	60
23627.9	1641.27	1477.35	3130.66	60
23640.2	1640.84	1477.74	3130.66	60
23652.6	1640.71	1477.73	3130.66	60
23664.6	1640.46	1477.88	3130.66	60
23676.8	1640.17	1478.08	3130.66	60
23689.2	1639.75	1478.46	3130.66	60
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23725.3	1639.29	1478.53	3130.66	60
23737.7	1639.31	1478.31	3130.66	60
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23774.8	1639.09	1478.04	3130.66	60
23787.1	1637.8	1479.59	3130.66	60
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23811.9	1636.9	1480.42	3130.66	60
23824.2	1637.06	1480.02	3130.66	60
23836.6	1637.65	1479.04	3130.66	60
23849	1638.65	1477.5	3130.66	60
23861.4	1639.63	1475.99	3130.66	60
23873.8	1640.22	1475.01	3130.66	60
23886.1	1640.1	1474.99	3130.66	60

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23910.1	1636.52	1479.43	3130.66	60
23922	1634.39	1482.12	3130.66	60
23934.1	1633.03	1483.76	3130.66	60
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23958.9	1634.16	1481.86	3130.66	60
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23998.2	1634.55	1480.74	3130.66	60
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24022.1	1633.69	1481.53	3130.66	60
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24046.9	1633.25	1481.75	3130.66	60
24059.3	1632.51	1482.55	3130.66	60
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24095.5	1629.12	1486.56	3130.66	60
24107.3	1627.85	1488.09	3130.66	60
24118.9	1626.1	1490.27	3130.66	60
24131.2	1625.42	1490.99	3130.66	60
24142.7	1626.34	1489.58	3130.66	60
24155.1	1626.63	1489	3130.66	60
24167.5	1625.93	1489.75	3130.66	60
24179.9	1624.33	1491.72	3130.66	60
24192.3	1622.86	1493.5	3130.66	60
24204.6	1622.97	1493.17	3130.66	60
24217	1623.61	1492.12	3130.66	60
24229	1623.57	1491.99	3130.66	60
24241.4	1623.37	1492.07	3130.66	60
24253.8	1624.02	1491.01	3130.66	60
24266.1	1624.31	1490.43	3130.66	60
24278.5	1624.08	1490.55	3130.66	60
24290.9	1623.32	1491.38	3130.66	60
24303.3	1621.87	1493.14	3130.66	60
24315.7	1620.37	1494.97	3130.66	60
24328.1	1620.03	1495.24	3130.66	60
24340.4	1620.08	1494.98	3130.66	60
24352.8	1619.57	1495.48	3130.66	60
24365.2	1618.51	1496.72	3130.66	60
24377.6	1617.07	1498.47	3130.66	60
24388.3	1616.13	1499.57	3130.66	60
24399.6	1615.46	1500.3	3130.66	60
24412	1615.3	1500.32	3130.66	60
24424.4	1615.44	1499.94	3130.66	60
24436.8	1615.4	1499.81	3130.66	60
24449.1	1614.31	1501.09	3130.66	60
24461.4	1612.35	1503.54	3130.66	60
24473.8	1611.56	1504.41	3130.66	60
24486.2	1610.82	1505.22	3130.66	60
24498.6	1609.93	1506.23	3130.66	60

24510.9	1609.2	1507.02	3130.66	60
24523.3	1608.49	1507.79	3130.66	60
24535.7	1607.84	1508.47	3130.66	60
24548.1	1607.6	1508.6	3130.66	60
24563.3	1607.64	1508.32	3130.66	60
24575.6	1607.68	1508.08	3130.66	60
24588	1607.17	1508.57	3130.66	60
24600.3	1606.35	1509.49	3130.66	60
24612.7	1605.6	1510.31	3130.66	60
24625.1	1604.09	1512.15	3130.66	60
24637	1602.28	1514.41	3130.66	60
24649.4	1601.12	1515.78	3130.66	60
24661.8	1600.54	1516.37	3130.66	60
24674	1600.71	1515.95	3130.66	60
24686	1601.54	1514.65	3130.66	60
24698.3	1602.49	1513.19	3130.66	60
24710.7	1603	1512.31	3130.66	60
24723	1603.4	1511.59	3130.66	60
24735.4	1603.11	1511.79	3130.66	60
24747.8	1602.32	1512.66	3130.66	60
24760.2	1600.96	1514.3	3130.66	60
24772.5	1599.34	1516.29	3130.66	60
24784.9	1597.86	1518.1	3130.66	60
24795	1596.66	1519.56	3130.66	60
24807.4	1595.51	1520.91	3130.66	60
24819.7	1594.79	1521.69	3130.66	60
24832.1	1594	1522.57	3130.66	60
24844.4	1592.75	1524.06	3130.66	60
24856.3	1591.59	1525.44	3130.66	60
24868.7	1591.38	1525.53	3130.66	60
24881.1	1592.01	1524.5	3130.66	60
24893.4	1592.17	1524.1	3130.66	60
24905.8	1591.73	1524.5	3130.66	60
24918.2	1590.78	1525.59	3130.66	60
24930.6	1589.45	1527.19	3130.66	60
24943	1588.52	1528.25	3130.66	60
24955.3	1587.94	1528.84	3130.66	60
24967.7	1587	1529.92	3130.66	60
24980	1585.38	1531.91	3130.66	60
24991.6	1583.73	1533.95	3130.66	60
25004	1583.18	1534.5	3130.66	60
25016.4	1583.88	1533.37	3130.66	60
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25041.2	1586	1530.14	3130.66	60
25053.4	1585.91	1530.08	3130.66	60
25065.8	1585.37	1530.61	3130.66	60
25077.8	1584.42	1531.71	3130.66	60
25090.1	1582.95	1533.5	3130.66	60
25102.4	1581.43	1535.36	3130.66	60
25114.7	1579.89	1537.24	3130.66	60
25127.1	1578.52	1538.89	3130.66	60



25139.2	1577.3	1540.35	3130.66	60
25151.6	1576.49	1541.25	3130.66	60
25164	1576.1	1541.59	3130.66	60
25176.2	1575.89	1541.68	3130.66	60
25188.6	1575.91	1541.47	3130.66	60
25200.9	1575.69	1541.58	3130.66	60
25213.3	1574.67	1542.76	3130.66	60
25225.7	1573.64	1543.96	3130.66	60
25238.1	1573.32	1544.2	3130.66	60
25250	1573.22	1544.15	3130.66	60
25262.4	1572.84	1544.47	3130.66	60
25274.8	1572.24	1545.09	3130.66	60
25287.1	1571.67	1545.67	3130.66	60
25299.5	1571.11	1546.23	3130.66	60
25311.7	1570.72	1546.57	3130.66	60
25324.1	1570.39	1546.83	3130.66	60
25336.4	1569.43	1547.93	3130.66	60
25348.8	1566.89	1551.16	3130.66	60
25361.2	1564.53	1554.15	3130.66	60
25373.6	1562.88	1556.18	3130.66	60
25385.8	1561.87	1557.35	3130.66	60
25395.5	1561.53	1557.66	3130.66	60
25407.9	1560.68	1558.61	3130.66	60
25420.2	1559.41	1560.14	3130.66	60
25432.5	1557.82	1562.09	3130.66	60
25444.8	1555.33	1565.25	3130.66	60
25457.2	1553.98	1566.88	3130.66	60
25469.6	1553.81	1566.92	3130.66	60
25482	1554.62	1565.64	3130.66	60
25494.4	1556	1563.59	3130.66	60
25506.7	1556.38	1562.89	3130.66	60
25519.1	1554.99	1564.57	3130.66	60
25531.3	1553.15	1566.86	3130.66	60
25543.6	1551.55	1568.83	3130.66	60
25555.9	1549.94	1570.81	3130.66	60
25568.3	1548.98	1571.91	3130.66	60
25568.3	1548.98	1571.91	3466.38	60
25580.4	1548.5	1572.37	3466.38	60
25592.3	1548.43	1572.28	3466.38	60
25604.7	1548.11	1572.53	3466.38	60
25617.1	1546.8	1574.1	3466.38	60
25629.5	1544.31	1577.26	3466.38	60
25641.9	1541.53	1580.81	3466.38	60
25654.3	1540.9	1581.47	3466.38	60
25666.6	1542.52	1579.1	3466.38	60
25679	1543.96	1576.98	3466.38	60
25691.4	1543.41	1577.53	3466.38	60
25703.8	1541.38	1580.07	3466.38	60
25716.2	1538.69	1583.5	3466.38	60
25728.5	1536.33	1586.49	3466.38	60
25740.7	1536.71	1585.79	3466.38	60

25755.9	1538.59	1583.03	3466.38	60
25768.2	1539.34	1581.83	3466.38	60
25780.3	1538.97	1582.15	3466.38	60
25792.6	1535.09	1587.18	3466.38	60
25804.9	1528.56	1595.78	3466.38	60
25816.8	1522.1	1604.29	3466.38	60
25829.2	1515.93	1612.41	3466.38	60
25841.2	1509	1621.55	3466.38	60
25853.6	1501.26	1631.78	3466.38	60
25866	1497.01	1637.31	3466.38	60
25878.3	1497.01	1637.12	3466.38	60
25890.7	1501.24	1631.24	3466.38	60
25903.1	1507.51	1622.61	3466.38	60
25915.5	1512.77	1615.34	3466.38	60
25927.9	1517.12	1609.3	3466.38	60
25940.3	1520.34	1604.78	3466.38	60
25952.6	1522.67	1601.45	3466.38	60
25962.7	1524.7	1598.57	3466.38	60
25975	1526.98	1595.31	3466.38	60
25987.3	1527.41	1594.54	3466.38	60
25999.7	1525.44	1597.01	3466.38	60
26012.1	1522.42	1600.88	3466.38	60
26024.5	1520.28	1603.57	3466.38	60
26036.8	1518.48	1605.81	3466.38	60
26049.2	1515.8	1609.22	3466.38	60
26061.6	1516.09	1608.65	3466.38	60
26073.9	1520.2	1602.93	3466.38	60
26086.3	1524.27	1597.26	3466.38	60
26098.7	1524.86	1596.28	3466.38	60
26111.1	1523.72	1597.62	3466.38	60
26122.9	1522.63	1598.91	3466.38	60
26135.3	1522.02	1599.54	3466.38	60
26147.5	1522.6	1598.57	3466.38	60
26159.9	1523.93	1596.59	3466.38	60
26172.2	1526.64	1592.76	3466.38	60
26184.6	1530.18	1587.81	3466.38	60
26196.7	1533.62	1582.99	3466.38	60
26209.1	1534.82	1581.19	3466.38	60
26221.4	1533.58	1582.67	3466.38	60
26233.4	1532.23	1584.3	3466.38	60
26245.8	1531.96	1584.48	3466.38	60
26258.1	1532.43	1583.66	3466.38	60
26270.2	1533.57	1581.94	3466.38	60
26282.6	1535.8	1578.75	3466.38	60
26295	1537.5	1576.27	3466.38	60
26307.4	1537.75	1575.75	3466.38	60
26319.7	1536.5	1577.24	3466.38	60
26332	1534.32	1579.99	3466.38	60
26344.1	1532.48	1582.28	3466.38	60
26356.5	1531.91	1582.86	3466.38	60
26368.9	1532.19	1582.29	3466.38	60

26380.9	1532.41	1581.81	3466.38	60
26393.3	1531.95	1582.24	3466.38	60
26405.6	1531.05	1583.26	3466.38	60
26418	1530	1584.49	3466.38	60
26430.4	1529.39	1585.12	3466.38	60
26442.7	1528.44	1586.21	3466.38	60
26455.1	1526.49	1588.65	3466.38	60
26467.5	1524.35	1591.34	3466.38	60
26479.8	1523.2	1592.7	3466.38	60
26490.5	1522.52	1593.45	3466.38	60
26502.9	1520.82	1595.55	3466.38	60
26515.2	1518.23	1598.84	3466.38	60
26527.6	1515.27	1602.64	3466.38	60
26540	1513.08	1605.4	3466.38	60
26552.2	1512.34	1606.21	3466.38	60
26564.5	1512.87	1605.31	3466.38	60
26576.8	1514.8	1602.52	3466.38	60
26588.9	1516.88	1599.54	3466.38	60
26601.3	1518.24	1597.52	3466.38	60
26613.7	1518.43	1597.07	3466.38	60
26626.1	1517.53	1598.09	3466.38	60
26638.4	1516.3	1599.56	3466.38	60
26650.5	1515.53	1600.41	3466.38	60
26662.9	1515.25	1600.6	3466.38	60
26675.1	1514.95	1600.82	3466.38	60
26689	1514.78	1600.84	3466.38	60
26701.1	1514.86	1600.54	3466.38	60
26713.5	1514.89	1600.31	3466.38	60
26725.7	1514.55	1600.58	3466.38	60
26738.1	1513.58	1601.7	3466.38	60
26750.5	1511.69	1604.06	3466.38	60
26762.9	1509.55	1606.75	3466.38	60
26775.3	1508.18	1608.4	3466.38	60
26787.6	1507.4	1609.26	3466.38	60
26800	1506.84	1609.83	3466.38	60
26812.4	1506.34	1610.31	3466.38	60
26824.8	1505.68	1611.01	3466.38	60
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26861.4	1502.42	1614.84	3466.38	60
26873.8	1501.01	1616.55	3466.38	60
26886.2	1499.33	1618.62	3466.38	60
26898.2	1497.72	1620.6	3466.38	60
26910.6	1496.1	1622.59	3466.38	60
26922.9	1495.15	1623.69	3466.38	60
26935	1495.68	1622.79	3466.38	60
26947.4	1496.22	1621.87	3466.38	60
26959.8	1496.74	1620.98	3466.38	60
26972.2	1495.58	1622.35	3466.38	60
26984.6	1493.65	1624.76	3466.38	60
26996.7	1492.37	1626.3	3466.38	60

27004.5	1491.89	1626.83	3466.38	60
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27041.3	1484.69	1635.96	3466.38	60
27055.3	1484.12	1636.51	3466.38	60
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27080.1	1478.07	1644.28	3466.38	60
27088.4	1473.98	1649.65	3466.38	60
27100.7	1467.89	1657.66	3466.38	60
27113.1	1461.04	1666.7	3466.38	60
27125.4	1453.53	1676.62	3466.38	60
27137.8	1446.59	1685.77	3466.38	60
27150.1	1442.45	1691.16	3466.38	60
27165.2	1448.51	1682.77	3466.38	60
27176.7	1456.46	1671.89	3466.38	60
27181.1	1459.53	1667.69	3466.38	60
27193.5	1467.26	1657.1	3466.38	60
27205.8	1472.81	1649.44	3466.38	60
27217.8	1477.64	1642.75	3466.38	60
27230.2	1481.62	1637.21	3466.38	60
27241.7	1483.46	1634.56	3466.38	60
27252.7	1484.49	1633	3466.38	60
27264.2	1485.12	1631.98	3466.38	60
27275.9	1485.83	1630.84	3466.38	60
27287.5	1486.36	1629.95	3466.38	60
27299.1	1486.51	1629.58	3466.38	60
27310.4	1485.96	1630.14	3466.38	60
27322.8	1485.56	1630.49	3466.38	60
27335.1	1485.26	1630.71	3466.38	60
27347.5	1485.69	1629.94	3466.38	60
27359.7	1487.09	1627.87	3466.38	60
27372.1	1489.27	1624.75	3466.38	60
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27396.8	1495.37	1616.16	3466.38	60
27407.1	1497.19	1613.55	3466.38	60
27419.5	1497.52	1612.92	3466.38	60
27431.8	1495.5	1615.45	3466.38	60
27444	1492.65	1619.1	3466.38	60
27456.4	1490.56	1621.72	3466.38	60
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27493.6	1488.44	1624.01	3466.38	60
27506	1488.31	1624	3466.38	60
27518.1	1486.98	1625.6	3466.38	60
27530.5	1486.3	1626.33	3466.38	60
27542.9	1487.26	1624.85	3466.38	60
27555.1	1488.41	1623.11	3466.38	60
27567.5	1488.54	1622.75	3466.38	60
27579.9	1487.74	1623.64	3466.38	60
27591	1486.66	1624.92	3466.38	60
27603.4	1485.91	1625.74	3466.38	60

27615.8	1484.82	1627.02	3466.38	60
27628	1483.54	1628.55	3466.38	60
27640.4	1482.57	1629.67	3466.38	60
27652.8	1482.62	1629.41	3466.38	60
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27689.6	1484.98	1625.68	3466.38	60
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27714.1	1483.97	1626.66	3466.38	60
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27751.3	1479.96	1631.49	3466.38	60
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27775.7	1478.87	1632.59	3466.38	60
27788.1	1478.56	1632.81	3466.38	60
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27812.9	1477.87	1633.37	3466.38	60
27825.3	1477.45	1633.74	3466.38	60
27837.6	1477.1	1634.02	3466.38	60
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27862.2	1476.24	1634.81	3466.38	60
27874.6	1475.75	1635.28	3466.38	60
27886.9	1475.61	1635.28	3466.38	60
27899	1475.65	1635.04	3466.38	60
27911.4	1475.66	1634.84	3466.38	60
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27948.5	1473.22	1637.56	3466.38	60
27960.7	1471.27	1639.99	3466.38	60
27973.1	1469.3	1642.46	3466.38	60
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27997.9	1467.52	1644.47	3466.38	60
28010.3	1467.24	1644.66	3466.38	60
28017.2	1467.06	1644.8	3466.38	60
28029.5	1466.64	1645.18	3466.38	60
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28079	1465.3	1646.22	3466.38	60
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28128.5	1465.29	1645.48	3466.38	60
28140.8	1464.76	1646.01	3466.38	60
28153.2	1465.85	1644.35	3466.38	60
28165.6	1466.91	1642.74	3466.38	60
28177.9	1465.84	1643.99	3466.38	60
28190.3	1463.5	1646.95	3466.38	60
28202.7	1462.83	1647.66	3466.38	60
28215.1	1463.51	1646.56	3466.38	60
28227.5	1464.47	1645.08	3466.38	60

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28252.3	1464.3	1644.93	3466.38	60
28264.6	1462.67	1646.93	3466.38	60
28277	1461.03	1648.95	3466.38	60
28289.4	1459.94	1650.23	3466.38	60
28300.2	1459.4	1650.79	3466.38	60
28312.6	1458.84	1651.36	3466.38	60
28325	1458.92	1651.06	3466.38	60
28337.2	1459.85	1649.62	3466.38	60
28349.6	1460.41	1648.68	3466.38	60
28361.9	1460.17	1648.81	3466.38	60
28374.3	1459.7	1649.26	3466.38	60
28386.7	1459.33	1649.57	3466.38	60
28399	1458.99	1649.84	3466.38	60
28411.2	1458.71	1650.03	3466.38	60
28423.6	1458.4	1650.25	3466.38	60
28436	1458.02	1650.58	3466.38	60
28448.4	1457.64	1650.9	3466.38	60
28460.8	1457.59	1650.78	3466.38	60
28473.2	1457.2	1651.11	3466.38	60
28485.6	1456.67	1651.64	3466.38	60
28497.9	1456.14	1652.16	3466.38	60
28511.9	1455.28	1653.11	3466.38	60
28523.9	1453.25	1655.66	3466.38	60
28536.3	1450.5	1659.17	3466.38	60
28548.6	1448.55	1661.61	3466.38	60
28561	1447.41	1662.95	3466.38	60
28573.1	1446.66	1663.78	3466.38	60
28585.1	1445.87	1664.66	3466.38	60
28597.5	1445.73	1664.66	3466.38	60
28609.9	1446.23	1663.79	3466.38	60
28622.3	1446.09	1663.79	3466.38	60
28634.5	1445.26	1664.72	3466.38	60
28646.8	1445	1664.89	3466.38	60
28659	1445.89	1663.5	3466.38	60
28671.3	1446.73	1662.18	3466.38	60
28683.2	1446.35	1662.51	3466.38	60
28695.6	1445.03	1664.1	3466.38	60
28707.9	1443.44	1666.05	3466.38	60
28720.2	1442.22	1667.51	3466.38	60
28732.6	1441.64	1668.1	3466.38	60
28744.9	1441.27	1668.41	3466.38	60
28757.1	1440.85	1668.79	3466.38	60
28769.5	1440.49	1669.09	3466.38	60
28780.6	1440.25	1669.24	3466.38	60
28792.5	1439.95	1669.46	3466.38	60
28804.9	1439.45	1669.95	3466.38	60
28817.3	1439.07	1670.27	3466.38	60
28829.6	1438.91	1670.3	3466.38	60
28842	1438.52	1670.63	3466.38	60
28853.3	1436.75	1672.84	3466.38	60

28865.2	1434.51	1675.68	3466.38	60
28877.6	1431.82	1679.11	3466.38	60
28889.5	1429.56	1681.97	3466.38	60
28901.4	1428.16	1683.67	3466.38	60
28913.6	1427.39	1684.52	3466.38	60
28926	1426.62	1685.37	3466.38	60
28938.4	1425.48	1686.72	3466.38	60
28950.8	1424.11	1688.37	3466.38	60
28962.9	1423.17	1689.45	3466.38	60
28974.8	1423.67	1688.6	3466.38	60
28987.2	1424.58	1687.18	3466.38	60
28999.4	1424.45	1687.17	3466.38	60
29011.8	1424.12	1687.43	3466.38	60
29024.2	1423.67	1687.84	3466.38	60
29036.6	1423.07	1688.46	3466.38	60
29048.9	1422.44	1689.12	3466.38	60
29061.3	1421.96	1689.58	3466.38	60
29073.7	1421.75	1689.67	3466.38	60
29085.9	1421.25	1690.16	3466.38	60
29097.2	1420.16	1691.45	3466.38	60
29109.4	1418.99	1692.84	3466.38	60
29121.8	1419.04	1692.59	3466.38	60
29134.2	1418.76	1692.78	3466.38	60
29146.5	1417.37	1694.46	3466.38	60
29158.8	1415.59	1696.67	3466.38	60
29171.2	1414.08	1698.51	3466.38	60
29183.6	1412.71	1700.17	3466.38	60
29196	1411.39	1701.75	3466.38	60
29208.4	1410.43	1702.86	3466.38	60
29220.6	1410.25	1702.91	3466.38	60
29233	1410.75	1702.05	3466.38	60
29245.4	1411.44	1700.93	3466.38	60
29257.2	1411.44	1700.75	3466.38	60
29269.6	1411.13	1700.98	3466.38	60
29281.9	1411	1700.97	3466.38	60
29294.3	1411.14	1700.59	3466.38	60
29306.6	1411.22	1700.3	3466.38	60
29319	1411.19	1700.15	3466.38	60
29331.1	1411.57	1699.45	3466.38	60
29343.5	1412.01	1698.67	3466.38	60
29355.8	1411.86	1698.68	3466.38	60
29368.1	1410.77	1699.96	3466.38	60
29377.7	1409.31	1701.78	3466.38	60
29390.1	1407.8	1703.63	3466.38	60
29402.3	1407.39	1703.99	3466.38	60
29413.9	1408.2	1702.73	3466.38	60
29426	1408.28	1702.43	3466.38	60
29438.4	1406.04	1705.26	3466.38	60
29450.7	1404.96	1706.53	3466.38	60
29463.1	1404.35	1707.16	3466.38	60
29475.5	1402.8	1709.06	3466.38	60

29487.8	1400.36	1712.15	3466.38	60
29500.2	1398.85	1714	3466.38	60
29512.6	1398.6	1714.14	3466.38	60
29524.9	1398.26	1714.41	3466.38	60
29537.3	1397.91	1714.7	3466.38	60
29549.7	1397.83	1714.62	3466.38	60
29562.1	1398.85	1713.05	3466.38	60
29574.5	1399.57	1711.89	3466.38	60
29586.9	1399.56	1711.72	3466.38	60
29599.2	1399.29	1711.89	3466.38	60
29611.6	1399.04	1712.04	3466.38	60
29623.9	1398.87	1712.08	3466.38	60
29636.2	1398.54	1712.34	3466.38	60
29648.6	1397.82	1713.12	3466.38	60
29661	1396.85	1714.24	3466.38	60
29673.2	1396.21	1714.91	3466.38	60
29685.6	1395.97	1715.05	3466.38	60
29697.8	1396.07	1714.73	3466.38	60
29710.2	1396.68	1713.72	3466.38	60
29722.5	1397.85	1711.95	3466.38	60
29734.9	1399.02	1710.19	3466.38	60
29747.2	1399.67	1709.13	3466.38	60
29759.6	1399.57	1709.07	3466.38	60
29772	1398.93	1709.74	3466.38	60
29784.4	1398.25	1710.47	3466.38	60
29796.6	1397.88	1710.78	3466.38	60
29809	1397.41	1711.23	3466.38	60
29821.4	1396.35	1712.46	3466.38	60
29833.8	1394.3	1715.03	3466.38	60
29846.2	1391.94	1718.02	3466.38	60
29858.6	1390.25	1720.11	3466.38	60
29870.9	1389.62	1720.77	3466.38	60
29882.1	1389.4	1720.89	3466.38	60
29894.5	1389.33	1720.8	3466.38	60
29906.9	1389.3	1720.65	3466.38	60
29919.2	1389.27	1720.5	3466.38	60
29931.6	1389.21	1720.4	3466.38	60
29943.8	1388.77	1720.8	3466.38	60
29956.1	1387.92	1721.76	3466.38	60
29968.6	1388.33	1721.02	3466.38	60
29980.9	1389.09	1719.8	3466.38	60
29993.2	1388.36	1720.6	3466.38	60
30005.6	1386.95	1722.31	3466.38	60
30018	1386.15	1723.2	3466.38	60
30030.3	1386.77	1722.17	3466.38	60
30042.7	1387.59	1720.88	3466.38	60
30054.9	1387.78	1720.44	3466.38	60
30067.3	1387.51	1720.61	3466.38	60
30079.5	1386.85	1721.32	3466.38	60
30091.9	1385.82	1722.51	3466.38	60
30104.3	1385.24	1723.11	3466.38	60



30116.6	1385.44	1722.65	3466.38	60
30129	1384.97	1723.09	3466.38	60
30141.4	1383.4	1725.02	3466.38	60
30153.8	1381.78	1727.01	3466.38	60
30166.2	1380.66	1728.33	3466.38	60
30178.5	1379.79	1729.31	3466.38	60
30189.5	1378.9	1730.34	3466.38	60
30201.9	1377.75	1731.7	3466.38	60
30214.2	1376.38	1733.36	3466.38	60
30226.6	1375.39	1734.5	3466.38	60
30238.9	1375.64	1733.98	3466.38	60
30251.3	1376.34	1732.85	3466.38	60
30263.7	1376.17	1732.89	3466.38	60
30276.1	1375.56	1733.52	3466.38	60
30288.5	1374.49	1734.77	3466.38	60
30300.9	1373.09	1736.47	3466.38	60
30313.1	1373.07	1736.31	3466.38	60
30325.4	1374.19	1734.61	3466.38	60
30337.8	1375.02	1733.3	3466.38	60
30350	1374.29	1734.1	3466.38	60
30362.4	1371.63	1737.49	3466.38	60
30374.8	1369	1740.85	3466.38	60
30387.1	1367.48	1742.71	3466.38	60
30399.5	1365.99	1744.52	3466.38	60
30411.8	1363.79	1747.3	3466.38	60
30424.2	1361.28	1750.49	3466.38	60
30436.6	1359.6	1752.56	3466.38	60
30449	1359.86	1752.02	3466.38	60
30460.2	1361.2	1750.05	3466.38	60
30472.6	1361.52	1749.43	3466.38	60
30485	1360.43	1750.71	3466.38	60
30497.4	1358.57	1753.02	3466.38	60
30509.8	1357.56	1754.19	3466.38	60
30522.2	1359.13	1751.89	3466.38	60
30534.6	1360.49	1749.87	3466.38	60
30547	1359.33	1751.24	3466.38	60
30559.3	1356.37	1755.04	3466.38	60
30571.7	1354.5	1757.37	3466.38	60
30584	1354.28	1757.48	3466.38	60
30596.4	1355.07	1756.22	3466.38	60
30608.8	1357	1753.44	3466.38	60
30621.1	1359.19	1750.3	3466.38	60
30633.5	1360.12	1748.86	3466.38	60
30645.9	1358.91	1750.3	3466.38	60
30658.2	1355.87	1754.2	3466.38	60
30670.6	1353.26	1757.53	3466.38	60
30683	1352.12	1758.88	3466.38	60
30695.4	1352.16	1758.63	3466.38	60
30707.7	1353.44	1756.72	3466.38	60
30720.1	1354.28	1755.4	3466.38	60
30732.5	1352.06	1758.2	3466.38	60

30744.9	1348.17	1763.25	3466.38	60
30757.3	1344.96	1767.38	3466.38	60
30769.6	1343.42	1769.27	3466.38	60
30781.9	1342.85	1769.85	3466.38	60
30794.1	1342.45	1770.2	3466.38	60
30806.5	1341.78	1770.92	3466.38	60
30818.7	1341.22	1771.48	3466.38	60
30830.8	1341.16	1771.38	3466.38	60
30842.8	1341.55	1770.67	3466.38	60
30854.8	1341.89	1770.03	3466.38	60
30867.2	1342.08	1769.59	3466.38	60
30867.2	1342.08	1769.59	3796.7	60
30879.6	1340.68	1771.28	3796.7	60
30891.9	1338.67	1773.8	3796.7	60
30904.3	1338.32	1774.08	3796.7	60
30916.6	1338.6	1773.52	3796.7	60
30928.9	1336.44	1776.24	3796.7	60
30941.2	1334.32	1778.91	3796.7	60
30953.6	1334.53	1778.43	3796.7	60
30966	1336.23	1775.96	3796.7	60
30978.4	1338.43	1772.8	3796.7	60
30990.7	1341.1	1769.02	3796.7	60
31003.1	1343.97	1764.97	3796.7	60
31015.4	1345.11	1763.24	3796.7	60
31027.8	1343.18	1765.65	3796.7	60
31040.2	1340.16	1769.53	3796.7	60
31052.6	1337.55	1772.86	3796.7	60
31064.9	1335.59	1775.31	3796.7	60
31077.2	1334.21	1776.98	3796.7	60
31089.6	1333.06	1778.34	3796.7	60
31102	1332.05	1779.51	3796.7	60
31114.4	1331.56	1779.98	3796.7	60
31126.7	1332.02	1779.17	3796.7	60
31139.1	1331.82	1779.25	3796.7	60
31151.5	1330.98	1780.2	3796.7	60
31163.9	1330.19	1781.07	3796.7	60
31170.6	1329.95	1781.29	3796.7	60
31182.9	1330.6	1780.23	3796.7	60
31195.2	1332.23	1777.85	3796.7	60
31207.6	1334.08	1775.17	3796.7	60
31219.9	1336.39	1771.87	3796.7	60
31232.3	1337.68	1769.94	3796.7	60
31244.6	1336.11	1771.87	3796.7	60
31256.9	1332.74	1776.22	3796.7	60
31269.3	1329.03	1781.03	3796.7	60
31281.7	1325.91	1785.04	3796.7	60
31294.1	1324.19	1787.17	3796.7	60
31306.5	1324.03	1787.19	3796.7	60
31318.9	1324.93	1785.79	3796.7	60
31326.4	1325.99	1784.25	3796.7	60
31338.8	1327.22	1782.4	3796.7	60

31351.1	1326.48	1783.21	3796.7	60
31363.5	1326.48	1783.02	3796.7	60
31375.9	1328.83	1779.67	3796.7	60
31388.2	1330	1777.91	3796.7	60
31400.6	1327.25	1781.42	3796.7	60
31413	1323.37	1786.46	3796.7	60
31425.3	1320.53	1790.09	3796.7	60
31437.7	1318.64	1792.45	3796.7	60
31450.1	1319.78	1790.72	3796.7	60
31462.4	1321.77	1787.86	3796.7	60
31474.7	1322.23	1787.05	3796.7	60
31487.1	1322.04	1787.12	3796.7	60
31499.5	1321.58	1787.55	3796.7	60
31511.9	1321.44	1787.55	3796.7	60
31524.3	1321.54	1787.22	3796.7	60
31536.6	1320.35	1788.64	3796.7	60
31549	1317.82	1791.86	3796.7	60
31561.4	1315.91	1794.24	3796.7	60
31573.8	1314.29	1796.23	3796.7	60
31586.2	1313.11	1797.63	3796.7	60
31598.4	1312.05	1798.87	3796.7	60
31610.7	1311.4	1799.56	3796.7	60
31623.1	1310.52	1800.56	3796.7	60
31635.2	1309.95	1801.14	3796.7	60
31647.6	1309.8	1801.15	3796.7	60
31659.9	1309.69	1801.11	3796.7	60
31672.3	1309.61	1801.03	3796.7	60
31684.7	1308.47	1802.38	3796.7	60
31697	1305.92	1805.62	3796.7	60
31709.3	1303.93	1808.12	3796.7	60
31721.6	1303.81	1808.09	3796.7	60
31733.9	1305	1806.3	3796.7	60
31746.3	1306.08	1804.66	3796.7	60
31758.6	1306.64	1803.71	3796.7	60
31770.9	1306.58	1803.61	3796.7	60
31783.3	1306.11	1804.05	3796.7	60
31797.3	1306.48	1803.34	3796.7	60
31809.7	1308.35	1800.63	3796.7	60
31822	1309.29	1799.18	3796.7	60
31834.4	1307.67	1801.17	3796.7	60
31846.8	1303.99	1805.94	3796.7	60
31859.2	1302.32	1808	3796.7	60
31871.6	1304.07	1805.45	3796.7	60
31883.9	1306.16	1802.45	3796.7	60
31896.2	1305.33	1803.38	3796.7	60
31908.6	1302.35	1807.2	3796.7	60
31921	1299.47	1810.89	3796.7	60
31933.4	1297.57	1813.26	3796.7	60
31945.8	1296.51	1814.5	3796.7	60
31958.1	1296.74	1814.01	3796.7	60
31970.5	1298.61	1811.3	3796.7	60

31982.8	1301.9	1806.68	3796.7	60
31995.2	1305.62	1801.48	3796.7	60
32007	1307.36	1798.96	3796.7	60
32019.4	1305.52	1801.24	3796.7	60
32031.7	1303.05	1804.38	3796.7	60
32044.1	1303.37	1803.76	3796.7	60
32056.5	1304.72	1801.76	3796.7	60
32068.9	1303.67	1802.98	3796.7	60
32081.2	1300.57	1806.97	3796.7	60
32093.6	1297.32	1811.16	3796.7	60
32105.9	1294.69	1814.51	3796.7	60
32118.3	1293.05	1816.53	3796.7	60
32130.1	1292.2	1817.5	3796.7	60
32142.5	1292.16	1817.36	3796.7	60
32154.8	1292.97	1816.08	3796.7	60
32167.2	1294.69	1813.58	3796.7	60
32179.5	1295.33	1812.53	3796.7	60
32191.9	1294.83	1813.01	3796.7	60
32204.3	1295.12	1812.43	3796.7	60
32216.6	1295.73	1811.42	3796.7	60
32229	1295.74	1811.22	3796.7	60
32241.3	1295.02	1812	3796.7	60
32253.7	1293.73	1813.55	3796.7	60
32266.1	1293.24	1814.02	3796.7	60
32278.5	1293.46	1813.54	3796.7	60
32290.9	1293.78	1812.91	3796.7	60
32303.3	1293.09	1813.66	3796.7	60
32315.6	1291.36	1815.8	3796.7	60
32328	1289.99	1817.45	3796.7	60
32340.4	1288.64	1819.08	3796.7	60
32352.8	1286.64	1821.59	3796.7	60
32365.1	1285.19	1823.35	3796.7	60
32377.5	1284.38	1824.25	3796.7	60
32389.8	1284.11	1824.43	3796.7	60
32402.2	1284.27	1824.03	3796.7	60
32414.6	1284.05	1824.13	3796.7	60
32426.8	1283.51	1824.67	3796.7	60
32439.1	1282.72	1825.55	3796.7	60
32451.5	1282.48	1825.69	3796.7	60
32463.9	1283.28	1824.42	3796.7	60
32476.3	1284.64	1822.4	3796.7	60
32488.7	1285.49	1821.06	3796.7	60
32500.9	1285.55	1820.8	3796.7	60
32513.3	1285.04	1821.29	3796.7	60
32524.9	1284.37	1822.02	3796.7	60
32537.3	1284.12	1822.17	3796.7	60
32548.7	1283.79	1822.44	3796.7	60
32560.9	1282.69	1823.73	3796.7	60
32572.5	1282.08	1824.38	3796.7	60
32584.9	1281.74	1824.65	3796.7	60
32597.1	1281.14	1825.27	3796.7	60

32611	1280.36	1826.11	3796.7	60
32623.4	1279.96	1826.46	3796.7	60
32635.7	1280.03	1826.18	3796.7	60
32648	1280.01	1826.01	3796.7	60
32660.4	1279.88	1826	3796.7	60
32672.7	1280.1	1825.52	3796.7	60
32685.1	1280.42	1824.9	3796.7	60
32697.4	1280.13	1825.1	3796.7	60
32709.8	1278.41	1827.23	3796.7	60
32722.2	1276.37	1829.79	3796.7	60
32734.3	1274.69	1831.86	3796.7	60
32746.7	1273.63	1833.1	3796.7	60
32759	1272.99	1833.78	3796.7	60
32771.4	1272.76	1833.9	3796.7	60
32783.6	1272.51	1834.05	3796.7	60
32795.9	1272.21	1834.26	3796.7	60
32808.3	1271.54	1834.98	3796.7	60
32820.5	1270.37	1836.37	3796.7	60
32832.9	1269.15	1837.82	3796.7	60
32845.3	1268.79	1838.12	3796.7	60
32857.6	1268.4	1838.46	3796.7	60
32870	1267.74	1839.16	3796.7	60
32882.4	1267.92	1838.72	3796.7	60
32894.8	1267.64	1838.91	3796.7	60
32907.2	1267	1839.58	3796.7	60
32919.5	1266.26	1840.39	3796.7	60
32931.9	1264.91	1842.02	3796.7	60
32944.2	1263.57	1843.64	3796.7	60
32956.6	1262.62	1844.73	3796.7	60
32969	1262.09	1845.26	3796.7	60
32981.4	1261.08	1846.43	3796.7	60
32993.7	1259.09	1848.92	3796.7	60
32996.8	1258.53	1849.63	3796.7	60
33009.2	1256.91	1851.62	3796.7	60
33021.5	1255.36	1853.52	3796.7	60
33033.9	1254	1855.16	3796.7	60
33046.2	1253.67	1855.42	3796.7	60
33058.6	1255.04	1853.39	3796.7	60
33071	1257.47	1849.92	3796.7	60
33083.4	1259.79	1846.61	3796.7	60
33095.8	1260.39	1845.61	3796.7	60
33108.1	1259.6	1846.49	3796.7	60
33120.5	1257.61	1848.98	3796.7	60
33132.9	1254.6	1852.85	3796.7	60
33145.2	1251.55	1856.77	3796.7	60
33157.6	1250.24	1858.34	3796.7	60
33170	1250.91	1857.25	3796.7	60
33182.4	1252.91	1854.37	3796.7	60
33194.8	1255.99	1850.03	3796.7	60
33207.1	1259.09	1845.66	3796.7	60
33219.4	1261.38	1842.39	3796.7	60

33231.8	1261.89	1841.52	3796.7	60
33244.2	1260.03	1843.83	3796.7	60
33256.6	1256.91	1847.85	3796.7	60
33269	1254.32	1851.15	3796.7	60
33281.3	1252.78	1853.03	3796.7	60
33293.7	1253.15	1852.35	3796.7	60
33306.1	1254.39	1850.49	3796.7	60
33318.5	1254.42	1850.26	3796.7	60
33330.9	1251.74	1853.68	3796.7	60
33343.2	1248.21	1858.25	3796.7	60
33355.6	1244.98	1862.41	3796.7	60
33368	1243.63	1864.04	3796.7	60
33380.4	1243.57	1863.93	3796.7	60
33390.8	1243.07	1864.44	3796.7	60
33403.2	1243.01	1864.33	3796.7	60
33415.5	1244.97	1861.51	3796.7	60
33427.9	1247.09	1858.46	3796.7	60
33440.3	1246.58	1858.96	3796.7	60
33452.7	1244.93	1860.99	3796.7	60
33465	1243.16	1863.19	3796.7	60
33477.4	1241.36	1865.43	3796.7	60
33489.8	1241.36	1865.24	3796.7	60
33502.1	1243.59	1862.04	3796.7	60
33514.5	1246.35	1858.14	3796.7	60
33526.9	1249.07	1854.28	3796.7	60
33539	1251.27	1851.14	3796.7	60
33551.4	1252.36	1849.48	3796.7	60
33563.7	1252.78	1848.72	3796.7	60
33576.1	1252.76	1848.56	3796.7	60
33588.5	1252.39	1848.87	3796.7	60
33600.9	1251.86	1849.4	3796.7	60
33613.2	1251.33	1849.92	3796.7	60
33625.6	1250.85	1850.38	3796.7	60
33638	1250.23	1851.03	3796.7	60
33650.4	1249.25	1852.16	3796.7	60
33662.7	1248.51	1852.97	3796.7	60
33675.1	1247.82	1853.71	3796.7	60
33679	1247.57	1853.98	3796.7	60
33691.4	1246.13	1855.74	3796.7	60
33703.7	1244.12	1858.26	3796.7	60
33716.1	1242.8	1859.84	3796.7	60
33728.5	1242.39	1860.21	3796.7	60
33740.9	1242.78	1859.49	3796.7	60
33753.2	1242.51	1859.67	3796.7	60
33765.6	1240.95	1861.58	3796.7	60
33778	1238.67	1864.46	3796.7	60
33790.4	1237.15	1866.32	3796.7	60
33802.8	1236.6	1866.87	3796.7	60
33815.1	1236.55	1866.75	3796.7	60
33827.5	1236.59	1866.51	3796.7	60
33839.9	1237.06	1865.69	3796.7	60

33852.2	1238.07	1864.14	3796.7	60
33864.5	1238.39	1863.52	3796.7	60
33876.9	1236.93	1865.3	3796.7	60
33889.3	1234.14	1868.87	3796.7	60
33901.7	1230.98	1872.94	3796.7	60
33914	1227.77	1877.07	3796.7	60
33926.4	1225.52	1879.92	3796.7	60
33938.8	1225.54	1879.7	3796.7	60
33951.2	1226.79	1877.83	3796.7	60
33963.5	1227.58	1876.57	3796.7	60
33975.8	1227.46	1876.55	3796.7	60
33988.2	1227.65	1876.1	3796.7	60
34000.5	1228.05	1875.38	3796.7	60
34012.9	1228.26	1874.9	3796.7	60
34025.2	1227.11	1876.27	3796.7	60
34037.6	1225.57	1878.15	3796.7	60
34049.9	1225.69	1877.8	3796.7	60
34062.3	1227.23	1875.54	3796.7	60
34074.7	1228.66	1873.42	3796.7	60
34087.1	1229.24	1872.45	3796.7	60
34099.4	1229.44	1872	3796.7	60
34111.8	1228.27	1873.38	3796.7	60
34124.1	1225.93	1876.35	3796.7	60
34136.5	1224.15	1878.56	3796.7	60
34149.4	1223.01	1879.9	3796.7	60
34161.8	1221.49	1881.75	3796.7	60
34174.1	1219.33	1884.48	3796.7	60
34186.4	1218.81	1884.99	3796.7	60
34198.7	1219.83	1883.43	3796.7	60
34211.1	1219.65	1883.48	3796.7	60
34223.5	1218	1885.51	3796.7	60
34235.9	1217.86	1885.51	3796.7	60
34248.3	1220.07	1882.35	3796.7	60
34260.6	1221.17	1880.68	3796.7	60
34272.9	1219.91	1882.19	3796.7	60
34285.3	1217.34	1885.46	3796.7	60
34297.7	1215.26	1888.07	3796.7	60
34310.1	1215.39	1887.71	3796.7	60
34322.4	1216.73	1885.72	3796.7	60
34334.8	1215.24	1887.54	3796.7	60
34347.2	1213.22	1890.07	3796.7	60
34359.6	1213.81	1889.08	3796.7	60
34372	1216.68	1885.03	3796.7	60
34384.4	1219.49	1881.05	3796.7	60
34396.7	1220.55	1879.44	3796.7	60
34409.1	1218.73	1881.7	3796.7	60
34421.5	1215.42	1885.97	3796.7	60
34433.3	1211.02	1891.72	3796.7	60
34445.6	1205.99	1898.31	3796.7	60
34457.9	1204.11	1900.65	3796.7	60
34470.1	1205.16	1899.05	3796.7	60

34482.4	1208.05	1894.97	3796.7	60
34494.6	1211.76	1889.79	3796.7	60
34506.9	1215.43	1884.65	3796.7	60
34519.3	1218.53	1880.29	3796.7	60
34531.3	1219.61	1878.65	3796.7	60
34543.6	1219.28	1878.91	3796.7	60
34555.5	1219	1879.1	3796.7	60
34567.3	1218.9	1879.06	3796.7	60
34579.3	1218.9	1878.87	3796.7	60
34591.3	1218.56	1879.15	3796.7	60
34603.5	1216.81	1881.32	3796.7	60
34615.7	1215.18	1883.33	3796.7	60
34627.7	1215.34	1882.93	3796.7	60
34639.1	1216.91	1880.64	3796.7	60
34650.5	1218.13	1878.83	3796.7	60
34662.1	1217.81	1879.08	3796.7	60
34673.5	1217.05	1879.93	3796.7	60
34685.3	1216.24	1880.84	3796.7	60
34697.2	1215.12	1882.17	3796.7	60
34708.7	1214.12	1883.34	3796.7	60
34720.6	1214.55	1882.58	3796.7	60
34733	1215.57	1881.02	3796.7	60
34745.2	1215.1	1881.46	3796.7	60
34757.5	1213.85	1882.96	3796.7	60
34769.9	1212.99	1883.93	3796.7	60
34782.3	1212.48	1884.43	3796.7	60
34794.7	1212.13	1884.71	3796.7	60
34806.9	1211.38	1885.53	3796.7	60
34818.4	1209.84	1887.43	3796.7	60
34830.4	1207.24	1890.75	3796.7	60
34842.4	1204.21	1894.65	3796.7	60
34854.3	1201.28	1898.42	3796.7	60
34865.9	1198.99	1901.33	3796.7	60
34877.9	1196.97	1903.87	3796.7	60
34889.7	1194.9	1906.48	3796.7	60
34901.9	1192.14	1910.01	3796.7	60
34913.5	1188.54	1914.68	3796.7	60
34925.5	1183.65	1921.09	3796.7	60
34937.6	1181.4	1923.94	3796.7	60
34949.9	1183.74	1920.59	3796.7	60
34958.7	1187.04	1916.01	3796.7	60
34970.9	1190.89	1910.64	3796.7	60
34983	1192.31	1908.54	3796.7	60
34994.7	1191.78	1909.08	3796.7	60
35006.9	1191.1	1909.81	3796.7	60
35018.4	1190.51	1910.43	3796.7	60
35030.5	1191.22	1909.29	3796.7	60
35042.4	1192.66	1907.16	3796.7	60
35055.6	1193.15	1906.3	3796.7	60
35067.5	1192.66	1906.78	3796.7	60
35079.9	1192.53	1906.77	3796.7	60



35092.3	1192.63	1906.44	3796.7	60
35103.4	1192.37	1906.62	3796.7	60
35115.1	1191.83	1907.17	3796.7	60
35127.4	1189.09	1910.68	3796.7	60
35139.4	1185.25	1915.67	3796.7	60
35151.4	1181.77	1920.18	3796.7	60
35163.7	1180.13	1922.2	3796.7	60
35175.9	1182.3	1919.09	3796.7	60
35185.3	1185.55	1914.56	3796.7	60
35197.5	1189.16	1909.51	3796.7	60
35209.7	1192	1905.5	3796.7	60
35221.8	1194.79	1901.56	3796.7	60
35233.7	1197.39	1897.87	3796.7	60
35246	1199.18	1895.27	3796.7	60
35258.1	1200.48	1893.34	3796.7	60
35270.5	1200.95	1892.52	3796.7	60
35282.9	1200.07	1893.51	3796.7	60
35294.9	1198.86	1894.96	3796.7	60
35307.2	1198.15	1895.73	3796.7	60
35319.6	1198.84	1894.61	3796.7	60
35332	1200.35	1892.39	3796.7	60
35344.4	1201.59	1890.53	3796.7	60
35356.6	1201.65	1890.26	3796.7	60
35368.9	1200.93	1891.04	3796.7	60
35381	1199.83	1892.34	3796.7	60
35393.3	1198.77	1893.58	3796.7	60
35405.5	1198.07	1894.34	3796.7	60
35417.8	1197.43	1895.01	3796.7	60
35430	1196.5	1896.08	3796.7	60
35442.4	1194.61	1898.44	3796.7	60
35454.8	1191.9	1901.9	3796.7	60
35467.2	1190.56	1903.51	3796.7	60
35479.5	1191.4	1902.19	3796.7	60
35491.9	1193.52	1899.15	3796.7	60
35504.3	1193.83	1898.54	3796.7	60
35516.7	1192.49	1900.16	3796.7	60
35528.8	1191.88	1900.8	3796.7	60
35540.9	1191.3	1901.39	3796.7	60
35553.4	1191.02	1901.58	3796.7	60
35565.5	1191.2	1901.15	3796.7	60
35577.5	1191.45	1900.63	3796.7	60
35589.6	1190.77	1901.36	3796.7	60
35601	1189.59	1902.78	3796.7	60
35611.2	1188.32	1904.34	3796.7	60
35621.3	1186.7	1906.36	3796.7	60
35632	1184.71	1908.88	3796.7	60
35641	1183.06	1910.97	3796.7	60
35653.3	1182.78	1911.16	3796.7	60
35665.3	1183.45	1910.07	3796.7	60
35677.5	1182.54	1911.11	3796.7	60
35689.4	1182.67	1910.76	3796.7	60

35700.1	1183.95	1908.87	3796.7	60
35712.4	1184.4	1908.07	3796.7	60
35724.4	1183.49	1909.12	3796.7	60
35736.7	1181.98	1910.96	3796.7	60
35748.4	1179.77	1913.76	3796.7	60
35758.9	1176.39	1918.16	3796.7	60
35771.1	1171.53	1924.52	3796.7	60
35783.2	1168.82	1927.99	3796.7	60
35795.3	1170.62	1925.38	3796.7	60
35806.2	1173.83	1920.88	3796.7	60
35817	1175.72	1918.17	3796.7	60
35827.2	1176.4	1917.1	3796.7	60
35839.1	1176.87	1916.29	3796.7	60
35851.1	1177.47	1915.3	3796.7	60
35863.3	1178.37	1913.9	3796.7	60
35875.5	1179.42	1912.3	3796.7	60
35884.7	1180.35	1910.9	3796.7	60
35884.7	1180.35	1910.9	4117.65	60
35890.8	1181.08	1909.83	4117.65	60
35902.6	1181.59	1908.96	4117.65	60
35914.4	1181.1	1909.44	4117.65	60
35926.8	1180.02	1910.7	4117.65	60
35939	1178.63	1912.39	4117.65	60
35951.4	1177.14	1914.21	4117.65	60
35962.9	1175.82	1915.81	4117.65	60
35975.3	1174.45	1917.47	4117.65	60
35987.2	1173.77	1918.2	4117.65	60
35999.4	1173.5	1918.38	4117.65	60
36011.8	1173.14	1918.68	4117.65	60
36023.4	1173.09	1918.57	4117.65	60
36035.3	1172.82	1918.75	4117.65	60
36046.8	1171.5	1920.35	4117.65	60
36052.4	1170.32	1921.86	4117.65	60
36064.6	1168.47	1924.17	4117.65	60
36077	1169.7	1922.32	4117.65	60
36089	1171.77	1919.35	4117.65	60
36101.4	1172.64	1917.98	4117.65	60
36113.8	1173.01	1917.3	4117.65	60
36125.2	1172.1	1918.35	4117.65	60
36137.1	1171.11	1919.5	4117.65	60
36149.4	1170.94	1919.54	4117.65	60
36161.6	1171.44	1918.68	4117.65	60
36174	1172.39	1917.21	4117.65	60
36186.2	1173.01	1916.19	4117.65	60
36198.6	1172.31	1916.95	4117.65	60
36210.9	1171.24	1918.2	4117.65	60
36223.2	1170.69	1918.75	4117.65	60
36235.3	1171.29	1917.76	4117.65	60
36247.5	1172.82	1915.51	4117.65	60
36259.9	1173.77	1914.04	4117.65	60
36272.2	1173.51	1914.21	4117.65	60

36284.6	1173.38	1914.19	4117.65	60
36297	1173.81	1913.42	4117.65	60
36307.5	1173.87	1913.18	4117.65	60
36319.9	1172.4	1914.97	4117.65	60
36332.2	1169.78	1918.32	4117.65	60
36344.6	1167.72	1920.9	4117.65	60
36357	1166.34	1922.57	4117.65	60
36369.2	1163.28	1926.51	4117.65	60
36372.7	1161.99	1928.2	4117.65	60
36384.9	1158.19	1933.13	4117.65	60
36397.3	1156.39	1935.37	4117.65	60
36412.7	1163.5	1925.55	4117.65	60
36422.4	1168.03	1919.3	4117.65	60
36434.8	1173.07	1912.32	4117.65	60
36441.4	1174.7	1910.02	4117.65	60
36453.7	1176.54	1907.35	4117.65	60
36466	1176.09	1907.77	4117.65	60
36478.3	1174.12	1910.24	4117.65	60
36490.7	1171.86	1913.1	4117.65	60
36503.1	1169.46	1916.14	4117.65	60
36515.5	1168.59	1917.12	4117.65	60
36527.7	1167.9	1917.87	4117.65	60
36539.5	1167.73	1917.92	4117.65	60
36551.3	1168.07	1917.28	4117.65	60
36563.5	1167.8	1917.46	4117.65	60
36575.9	1165.85	1919.89	4117.65	60
36587.2	1163.42	1923	4117.65	60
36599.6	1161	1926.07	4117.65	60
36611.5	1158.81	1928.84	4117.65	60
36623.2	1156.64	1931.58	4117.65	60
36634.7	1155.46	1933	4117.65	60
36646.2	1154.69	1933.86	4117.65	60
36657.6	1153.25	1935.63	4117.65	60
36668.7	1151.69	1937.56	4117.65	60
36681	1152.26	1936.6	4117.65	60
36693.3	1153.41	1934.87	4117.65	60
36705.1	1155.69	1931.61	4117.65	60
36716.7	1157.59	1928.88	4117.65	60
36728.5	1158.12	1927.98	4117.65	60
36740.4	1158.49	1927.3	4117.65	60
36752.8	1158.61	1926.95	4117.65	60
36765	1158.6	1926.78	4117.65	60
36776.8	1158.19	1927.15	4117.65	60
36784.8	1158.15	1927.08	4117.65	60
36797.1	1158.2	1926.83	4117.65	60
36809.2	1158.53	1926.2	4117.65	60
36821.6	1158.77	1925.69	4117.65	60
36834	1159.83	1924.07	4117.65	60
36846.3	1161.18	1922.06	4117.65	60
36858.5	1160.42	1922.9	4117.65	60
36870.9	1158.23	1925.66	4117.65	60

36883.1	1156.86	1927.32	4117.65	60
36895.4	1156.3	1927.89	4117.65	60
36907.8	1156.53	1927.39	4117.65	60
36919.8	1156.78	1926.87	4117.65	60
36932.1	1156.2	1927.46	4117.65	60
36944.5	1155.35	1928.42	4117.65	60
36956.9	1155.68	1927.79	4117.65	60
36969.3	1157.61	1925	4117.65	60
36981.4	1159.67	1922.04	4117.65	60
36993.6	1160.9	1920.19	4117.65	60
37005.2	1161.02	1919.85	4117.65	60
37016.8	1159.73	1921.41	4117.65	60
37029.2	1158.45	1922.95	4117.65	60
37036	1158.24	1923.13	4117.65	60
37048.3	1157.42	1924.05	4117.65	60
37057	1156.35	1925.36	4117.65	60
37069.4	1155.23	1926.68	4117.65	60
37081.7	1154.92	1926.91	4117.65	60
37094.1	1154.95	1926.68	4117.65	60
37106.5	1154.58	1926.99	4117.65	60
37118.9	1153.76	1927.9	4117.65	60
37131.3	1152.75	1929.07	4117.65	60
37143.7	1152.08	1929.79	4117.65	60
37156.1	1152.11	1929.56	4117.65	60
37168.4	1152.28	1929.14	4117.65	60
37180.8	1152.27	1928.96	4117.65	60
37193.2	1152.24	1928.82	4117.65	60
37205.5	1152.02	1928.92	4117.65	60
37217.8	1151.55	1929.37	4117.65	60
37230.2	1150.65	1930.39	4117.65	60
37242.6	1149.88	1931.24	4117.65	60
37254.9	1149.88	1931.05	4117.65	60
37267.3	1151.33	1928.91	4117.65	60
37271.8	1152.08	1927.83	4117.65	60
37284.2	1153.32	1925.97	4117.65	60
37296.5	1153.3	1925.81	4117.65	60
37308.8	1151.93	1927.47	4117.65	60
37321.2	1150.44	1929.29	4117.65	60
37333.5	1149.03	1931	4117.65	60
37345.9	1147.48	1932.9	4117.65	60
37358.2	1146.5	1934.03	4117.65	60
37370.6	1146.06	1934.44	4117.65	60
37382.8	1145.14	1935.49	4117.65	60
37395.1	1143.33	1937.74	4117.65	60
37407.3	1141.95	1939.42	4117.65	60
37419.7	1141.9	1939.29	4117.65	60
37431.9	1143.09	1937.5	4117.65	60
37444.3	1145.14	1934.55	4117.65	60
37456.7	1145.24	1934.23	4117.65	60
37469	1143.45	1936.45	4117.65	60
37473.4	1142.85	1937.19	4117.65	60

37485.8	1142.38	1937.64	4117.65	60
37498.1	1142.76	1936.94	4117.65	60
37508.6	1142.89	1936.6	4117.65	60
37521	1142.66	1936.72	4117.65	60
37533.4	1142.15	1937.22	4117.65	60
37545.7	1141.47	1937.95	4117.65	60
37558.1	1140.89	1938.54	4117.65	60
37570.1	1140.43	1938.98	4117.65	60
37582.3	1139.94	1939.45	4117.65	60
37594.4	1139.97	1939.23	4117.65	60
37606.7	1140.99	1937.67	4117.65	60
37618.8	1141.2	1937.2	4117.65	60
37631.1	1139.41	1939.42	4117.65	60
37643.3	1136.85	1942.69	4117.65	60
37655.5	1135.5	1944.32	4117.65	60
37667.9	1135.55	1944.06	4117.65	60
37680.3	1136.03	1943.23	4117.65	60
37692.7	1136.58	1942.3	4117.65	60
37705	1136.27	1942.53	4117.65	60
37717.3	1135.75	1943.04	4117.65	60
37729.7	1134.65	1944.33	4117.65	60
37741.9	1133.38	1945.86	4117.65	60
37754.2	1132.5	1946.86	4117.65	60
37766.6	1131.33	1948.25	4117.65	60
37779	1130.25	1949.51	4117.65	60
37791.4	1130.83	1948.54	4117.65	60
37803.8	1132.77	1945.74	4117.65	60
37816.1	1134.48	1943.25	4117.65	60
37828.3	1134.26	1943.36	4117.65	60
37840.7	1132.04	1946.16	4117.65	60
37853	1130.49	1948.06	4117.65	60
37865.4	1131.39	1946.66	4117.65	60
37877.8	1133.23	1943.99	4117.65	60
37890.2	1134.65	1941.89	4117.65	60
37901.5	1134.57	1941.82	4117.65	60
37913.2	1133.65	1942.88	4117.65	60
37925.4	1131.73	1945.28	4117.65	60
37937.5	1130.02	1947.4	4117.65	60
37949.7	1128.56	1949.18	4117.65	60
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37967.9	1125.86	1952.55	4117.65	60
37979.5	1123.22	1955.93	4117.65	60
37991.9	1120.34	1959.62	4117.65	60
38002.2	1118.91	1961.39	4117.65	60
38014.5	1118.81	1961.34	4117.65	60
38025.9	1120.36	1959.07	4117.65	60
38038.2	1122.9	1955.46	4117.65	60
38050.5	1124.04	1953.74	4117.65	60
38063	1124.81	1952.51	4117.65	60
38075.3	1125.56	1951.31	4117.65	60
38087.6	1125.65	1951	4117.65	60

38100	1125.52	1950.99	4117.65	60
38112.3	1125.29	1951.11	4117.65	60
38124.6	1124.7	1951.72	4117.65	60
38137	1123.77	1952.78	4117.65	60
38149.4	1123.04	1953.58	4117.65	60
38164.6	1122.96	1953.45	4117.65	60
38174.1	1123.91	1952.03	4117.65	60
38184.1	1125.64	1949.54	4117.65	60
38196.5	1127.43	1946.94	4117.65	60
38208.7	1128.5	1945.31	4117.65	60
38220.5	1128.61	1944.99	4117.65	60
38232.9	1126.73	1947.33	4117.65	60
38238.3	1125.55	1948.84	4117.65	60
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38261.6	1120.88	1954.78	4117.65	60
38274	1118.77	1957.43	4117.65	60
38286.4	1116.13	1960.8	4117.65	60
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38554.9	1106.57	1969.59	4117.65	60
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38687.8	1092.03	1987.16	4117.65	60
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38724.3	1092.82	1985.53	4117.65	60
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38749	1092.24	1985.94	4117.65	60
38761.4	1088.81	1990.37	4117.65	60
38773.7	1085.86	1994.16	4117.65	60
38786.1	1082.94	1997.91	4117.65	60
38796.8	1077.81	2004.66	4117.65	60
38808.2	1072.55	2011.58	4117.65	60
38820.4	1066.69	2019.29	4117.65	60
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38986.5	1007.89	2096.03	4117.65	60
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39172.7	973.43	2139.66	4117.65	60
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39210.5	990.91	2115.51	4117.65	60
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39345.8	1070.79	2005.75	4435.5	60
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39495.3	1099.69	1964.52	4117.65	60
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39569	1094.98	1969.74	4117.65	60
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40111.1	1083.1	1977.48	4117.65	60
40122.9	1082.92	1977.55	4117.65	60
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40205.8	1076.48	1984.96	4117.65	60
40218.1	1076.69	1984.49	4117.65	60
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40267.1	1076.87	1983.5	4117.65	60
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40620.4	1077.62	1977.1	4117.65	60
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40719.1	1067.86	1988.75	4117.65	60
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40767.9	1066.93	1989.26	4117.65	60
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40853	1062.16	1994.39	4117.65	60
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41119.4	1053.62	2001.83	4117.65	60
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41202.1	1049.16	2006.58	4117.65	60
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41308.8	1050.67	2002.92	4117.65	60
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41333.5	1048.92	2004.9	4117.65	60
41345.6	1048.65	2005.08	4117.65	60
41357.8	1048.46	2005.15	4117.65	60
41369.8	1048.24	2005.27	4117.65	60
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41441.5	1048.71	2003.54	4117.65	60
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41503.4	1043.67	2009.39	4117.65	60
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41662.6	1042.98	2007.89	4117.65	60
41675	1043.32	2007.24	4117.65	60
41687.3	1042.7	2007.89	4117.65	60
41699.6	1041.08	2009.89	4117.65	60
41712	1038.65	2012.97	4117.65	60
41724.4	1036.89	2015.16	4117.65	60
41736.8	1036.53	2015.45	4117.65	60
41749.1	1036.67	2015.08	4117.65	60
41761.5	1036.12	2015.63	4117.65	60

41773.9	1034.74	2017.3	4117.65	60
41786.2	1032.44	2020.21	4117.65	60
41798.6	1029.43	2024.08	4117.65	60
41810.9	1027.12	2027.01	4117.65	60
41822.8	1026.46	2027.71	4117.65	60
41833.4	1026.32	2027.74	4117.65	60
41842.8	1024.84	2029.59	4117.65	60
41855.2	1023.36	2031.4	4117.65	60
41867.5	1025.43	2028.42	4117.65	60
41879.9	1026.98	2026.14	4117.65	60
41892.1	1027.27	2025.57	4117.65	60
41904.5	1029.1	2022.91	4117.65	60
41916.9	1031.28	2019.78	4117.65	60
41929.1	1033.26	2016.93	4117.65	60
41941.1	1034.22	2015.45	4117.65	60
41953.5	1033.79	2015.84	4117.65	60
41965.8	1032.2	2017.8	4117.65	60
41978.2	1031.06	2019.14	4117.65	60
41990.5	1031.13	2018.86	4117.65	60
42002.9	1031.43	2018.27	4117.65	60
42011.9	1031.66	2017.82	4117.65	60
42024.3	1031.35	2018.05	4117.65	60
42034.6	1030.64	2018.85	4117.65	60
42046.6	1030.12	2019.37	4117.65	60
42057.8	1030.19	2019.1	4117.65	60
42070.1	1030.55	2018.43	4117.65	60
42082.5	1030.12	2018.82	4117.65	60
42094.9	1029.32	2019.71	4117.65	60
42104.8	1029.1	2019.85	4117.65	60
42116.8	1029.44	2019.21	4117.65	60
42128.8	1029.83	2018.5	4117.65	60
42141.2	1029.28	2019.06	4117.65	60
42153.5	1027.54	2021.21	4117.65	60
42165.9	1025.94	2023.18	4117.65	60
42178.3	1025.4	2023.72	4117.65	60
42190.7	1025.66	2023.18	4117.65	60
42203.1	1026.48	2021.89	4117.65	60
42215.4	1027.65	2020.12	4117.65	60
42227.4	1028.46	2018.85	4117.65	60
42239.2	1028.67	2018.38	4117.65	60
42252.5	1028.32	2018.65	4117.65	60
42261	1028.04	2018.9	4117.65	60
42273.4	1027.52	2019.41	4117.65	60
42285.8	1026.88	2020.08	4117.65	60
42297.8	1026.02	2021.06	4117.65	60
42310.1	1024.6	2022.79	4117.65	60
42322.5	1022.35	2025.63	4117.65	60
42334.9	1020.7	2027.67	4117.65	60
42347.3	1019.72	2028.8	4117.65	60
42359	1019.12	2029.43	4117.65	60
42371.3	1018.79	2029.69	4117.65	60

42383.6	1018.89	2029.36	4117.65	60
42396	1019.26	2028.68	4117.65	60
42408.3	1019.56	2028.08	4117.65	60
42420.6	1019.73	2027.67	4117.65	60
42433	1019.77	2027.42	4117.65	60
42444.8	1020.05	2026.87	4117.65	60
42457.1	1020.68	2025.83	4117.65	60
42469.5	1020.83	2025.44	4117.65	60
42481.8	1019.86	2026.56	4117.65	60
42494.1	1017.72	2029.25	4117.65	60
42506.4	1015.66	2031.84	4117.65	60
42516.9	1014.61	2033.1	4117.65	60
42528.3	1014.76	2032.72	4117.65	60
42540.6	1016.72	2029.89	4117.65	60
42553	1018.8	2026.9	4117.65	60
42565.3	1020.58	2024.31	4117.65	60
42577.7	1022.47	2021.58	4117.65	60
42590.1	1023.3	2020.27	4117.65	60
42602.5	1023.34	2020.03	4117.65	60
42613.9	1023.2	2020.04	4117.65	60
42626.3	1022.19	2021.21	4117.65	60
42638.7	1020.14	2023.79	4117.65	60
42650.7	1018.13	2026.31	4117.65	60
42663	1018.94	2025.03	4117.65	60
42673.6	1020.63	2022.59	4117.65	60
42685.8	1020.37	2022.76	4117.65	60
42696.4	1019.83	2023.32	4117.65	60
42708.8	1018.76	2024.58	4117.65	60
42721.2	1016.79	2027.04	4117.65	60
42733.5	1015.25	2028.93	4117.65	60
42745.8	1013.61	2030.96	4117.65	60
42757.9	1012.01	2032.93	4117.65	60
42770.1	1010.56	2034.7	4117.65	60
42782.4	1009.7	2035.67	4117.65	60
42792.6	1010	2035.11	4117.65	60
42804.8	1011.67	2032.67	4117.65	60
42817.2	1012.53	2031.32	4117.65	60
42829	1011.63	2032.36	4117.65	60
42841.4	1009.95	2034.43	4117.65	60
42853.8	1008.34	2036.41	4117.65	60
42866.1	1006.7	2038.44	4117.65	60
42878.5	1004.69	2040.96	4117.65	60
42890.8	1003.49	2042.39	4117.65	60
42903.2	1004.03	2041.47	4117.65	60
42915.6	1006.01	2038.61	4117.65	60
42927.3	1008.93	2034.5	4117.65	60
42939.7	1012.33	2029.72	4117.65	60
42951.9	1014.1	2027.15	4117.65	60
42964.3	1011.89	2029.94	4117.65	60
42976.7	1008.84	2033.86	4117.65	60
42989.1	1008.53	2034.09	4117.65	60

43001.2	1009.48	2032.63	4117.65	60
43012	1010.18	2031.52	4117.65	60
43026.9	1011.07	2030.09	4117.65	60
43039.2	1012.68	2027.73	4117.65	60
43051.4	1013.87	2025.94	4117.65	60
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43076.1	1010.68	2029.87	4117.65	60
43088.5	1009.24	2031.62	4117.65	60
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43113.3	1007.32	2033.83	4117.65	60
43125.6	1006.05	2035.35	4117.65	60
43138	1005.08	2036.47	4117.65	60
43150.4	1004.5	2037.06	4117.65	60
43162.7	1004.53	2036.84	4117.65	60
43175.1	1005.1	2035.88	4117.65	60
43187.5	1005.87	2034.65	4117.65	60
43199.9	1006.51	2033.6	4117.65	60
43211.8	1007.26	2032.41	4117.65	60
43224.2	1008.59	2030.43	4117.65	60
43236.6	1009.81	2028.59	4117.65	60
43249	1010.13	2027.97	4117.65	60
43261.3	1009.08	2029.2	4117.65	60
43273.7	1007.41	2031.26	4117.65	60
43286.1	1006.78	2031.92	4117.65	60
43298.4	1008.17	2029.86	4117.65	60
43310.8	1009.19	2028.3	4117.65	60
43320.4	1009.16	2028.19	4117.65	60
43332.8	1008.53	2028.85	4117.65	60
43345.2	1006.77	2031.03	4117.65	60
43357.5	1004.76	2033.55	4117.65	60
43366.4	1003.05	2035.72	4117.65	60
43378.8	1000.51	2038.96	4117.65	60
43391.1	998.69	2041.22	4117.65	60
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43415.9	999.7	2039.49	4117.65	60
43428.2	1000.59	2038.1	4117.65	60
43440.6	1000.78	2037.65	4117.65	60
43452.5	1000.04	2038.47	4117.65	60
43462.1	998.26	2040.72	4117.65	60
43474.4	995.6	2044.12	4117.65	60
43486.8	992.84	2047.65	4117.65	60
43499.2	990.08	2051.18	4117.65	60
43511.6	988.73	2052.81	4117.65	60
43523.9	989.65	2051.39	4117.65	60
43535.6	991.21	2049.1	4117.65	60
43548	993.38	2045.99	4117.65	60
43559.6	995.56	2042.87	4117.65	60
43571.6	996.94	2040.83	4117.65	60
43584	996.7	2040.97	4117.65	60
43596.3	995.77	2042.03	4117.65	60
43608.6	993.47	2044.94	4117.65	60

43621	991.52	2047.38	4117.65	60
43633.4	990.17	2049.01	4117.65	60
43645.8	989.27	2050.04	4117.65	60
43658.1	988.56	2050.81	4117.65	60
43670.5	986.62	2053.23	4117.65	60
43682.9	985.24	2054.91	4117.65	60
43695.3	985.55	2054.3	4117.65	60
43707.7	987.12	2051.99	4117.65	60
43719.8	988.75	2049.61	4117.65	60
43732.2	989.78	2048.03	4117.65	60
43744.6	989.25	2048.56	4117.65	60
43754.5	987.4	2050.9	4117.65	60
43766.8	983.94	2055.38	4117.65	60
43779.1	981.86	2058	4117.65	60
43791.5	984.03	2054.88	4117.65	60
43803.8	985.91	2052.16	4117.65	60
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43839.8	985.23	2052.53	4117.65	60
43852.2	984	2054	4117.65	60
43864.6	982.82	2055.4	4117.65	60
43876.7	981.74	2056.67	4117.65	60
43888.8	980.65	2057.95	4117.65	60
43900.8	979.42	2059.43	4117.65	60
43912.8	978.19	2060.9	4117.65	60
43925.1	977.53	2061.61	4117.65	60
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43973.6	982	2054.84	4117.65	60
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44120.1	976.28	2060.32	4117.65	60
44132	977.37	2058.67	4117.65	60
44144.4	977.6	2058.17	4117.65	60
44156.6	977.8	2057.71	4117.65	60
44168.9	977.48	2057.95	4117.65	60
44181.3	974.94	2061.19	4117.65	60
44193.7	971.64	2065.45	4117.65	60
44205.8	970.27	2067.11	4117.65	60
44218.2	970.91	2066.06	4117.65	60
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44254.6	970.49	2066.07	4117.65	60
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44301	965.35	2072.29	4117.65	60
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44377.1	961.48	2076.35	4117.65	60
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44413.4	964.07	2072.3	4117.65	60
44422	965.18	2070.68	4117.65	60
44434	966.54	2068.66	4117.65	60
44446.4	967.24	2067.53	4117.65	60
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44507.6	961.06	2074.93	4117.65	60
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44532.3	959.35	2076.85	4117.65	60
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44557	959.61	2076.13	4117.65	60
44568.8	959.21	2076.49	4117.65	60
44581.2	958.14	2077.74	4117.65	60
44593.6	957.58	2078.31	4117.65	60
44605.8	957.36	2078.42	4117.65	60
44618.1	957.29	2078.32	4117.65	60
44630.5	956.92	2078.63	4117.65	60
44642.5	955.95	2079.76	4117.65	60
44654	955.39	2080.34	4117.65	60
44666	955.27	2080.32	4117.65	60
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44689.7	956.99	2077.64	4117.65	60
44701.3	958.53	2075.38	4117.65	60
44709.9	959.36	2074.13	4117.65	60
44722.3	959.94	2073.16	4117.65	60
44734.6	959.5	2073.57	4117.65	60
44746.9	958.48	2074.75	4117.65	60
44759	957.86	2075.41	4117.65	60
44771.4	957.73	2075.39	4117.65	60
44783.5	956.74	2076.54	4117.65	60
44795.7	954.3	2079.65	4117.65	60
44808	950.89	2084.06	4117.65	60
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44845.1	945.74	2090.43	4117.65	60



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44926	946.23	2088.54	4435.5	60
44938	945.37	2089.52	4435.5	60
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44975.1	947.27	2086.39	4435.5	60
44987.4	948.94	2083.95	4435.5	60
44999.8	950.24	2082.01	4435.5	60
45012	950.75	2081.13	4435.5	60
45024.4	950.78	2080.9	4435.5	60
45036.8	951.17	2080.19	4435.5	60
45049.1	952.46	2078.26	4435.5	60
45061.4	953.76	2076.32	4435.5	60
45073.5	954.75	2074.8	4435.5	60
45085.9	955.26	2073.92	4435.5	60
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45110.6	956.46	2071.93	4435.5	60
45123	956.9	2071.15	4435.5	60
45135.4	956.41	2071.62	4435.5	60
45147.7	954.64	2073.82	4435.5	60
45159.7	951.98	2077.22	4435.5	60
45172.1	949.31	2080.63	4435.5	60
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45209.2	944.33	2086.78	4435.5	60
45221.6	945.05	2085.62	4435.5	60
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45246	946.36	2083.48	4435.5	60
45257.5	946.18	2083.55	4435.5	60
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45307.8	941.02	2089.74	4435.5	60
45320.1	938.37	2093.12	4435.5	60
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45393.8	934.21	2097.61	4435.5	60
45406.2	934.42	2097.14	4435.5	60
45418.5	935.08	2096.06	4435.5	60
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45443.1	938.91	2090.52	4435.5	60
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45479.7	938.06	2091.11	4435.5	60
45491.7	937.66	2091.46	4435.5	60
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45538.8	939.8	2087.86	4435.5	60
45551.2	937.96	2090.15	4435.5	60
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45575	932.11	2097.68	4435.5	60
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45599.5	927.88	2103.01	4435.5	60
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45919.1	928.72	2097	4435.5	60
45931.5	926.74	2099.48	4435.5	60
45943.9	925.12	2101.47	4435.5	60
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45981	923.02	2103.74	4435.5	60
45993.3	923.82	2102.47	4435.5	60
46005.4	924.76	2101.02	4435.5	60
46018.1	925.64	2099.64	4435.5	60
46029.8	926.41	2098.42	4435.5	60
46042.2	926.92	2097.55	4435.5	60
46054.6	926.87	2097.43	4435.5	60
46066.9	926.14	2098.22	4435.5	60
46079.3	924.51	2100.23	4435.5	60

46090.9	923.24	2101.77	4435.5	60
46100.7	922.41	2102.74	4435.5	60
46113	919.95	2105.87	4435.5	60
46125.4	918.48	2107.66	4435.5	60
46137.2	918.02	2108.1	4435.5	60
46149.5	917.78	2108.23	4435.5	60
46161.9	917.3	2108.69	4435.5	60
46174.3	915.24	2111.28	4435.5	60
46186.6	912.7	2114.52	4435.5	60
46199	911.11	2116.47	4435.5	60
46211.4	911.23	2116.12	4435.5	60
46223.1	912.85	2113.76	4435.5	60
46235.4	914.74	2111.02	4435.5	60
46247.8	915.98	2109.16	4435.5	60
46259.5	916.7	2108.01	4435.5	60
46271.3	917.45	2106.82	4435.5	60
46283.7	917.97	2105.93	4435.5	60
46296	917.63	2106.2	4435.5	60
46308.3	916.39	2107.69	4435.5	60
46320.7	914.05	2110.65	4435.5	60
46333.1	910.8	2114.85	4435.5	60
46345.5	907.77	2118.74	4435.5	60
46357.7	906.56	2120.19	4435.5	60
46368.8	906.81	2119.68	4435.5	60
46380.9	907.96	2117.95	4435.5	60
46393.3	909.48	2115.71	4435.5	60
46405.1	910.55	2114.08	4435.5	60
46416.4	910.4	2114.11	4435.5	60
46427.8	910.06	2114.4	4435.5	60
46440.2	910.15	2114.09	4435.5	60
46452.6	910.72	2113.13	4435.5	60
46464.9	912.5	2110.54	4435.5	60
46476.6	914.78	2107.29	4435.5	60
46488.4	916.13	2105.29	4435.5	60
46500.2	916.32	2104.85	4435.5	60
46511.6	916.11	2104.96	4435.5	60
46524	914.79	2106.55	4435.5	60
46536.3	912.63	2109.28	4435.5	60
46548.7	910.79	2111.57	4435.5	60
46561.1	910.21	2112.16	4435.5	60
46573.4	910.59	2111.46	4435.5	60
46585.8	910.63	2111.22	4435.5	60
46598.2	909.23	2112.92	4435.5	60
46610.4	907.09	2115.62	4435.5	60
46620.7	905.44	2117.69	4435.5	60
46633	904.99	2118.11	4435.5	60
46645.2	906.52	2115.86	4435.5	60
46657.2	908.35	2113.21	4435.5	60
46669.6	908.71	2112.53	4435.5	60
46681.9	907.64	2113.79	4435.5	60
46694.2	905.89	2115.96	4435.5	60

46706.6	904.54	2117.59	4435.5	60
46719	904.07	2118.03	4435.5	60
46731.1	904.03	2117.9	4435.5	60
46743.4	904.16	2117.54	4435.5	60
46755.8	903.55	2118.17	4435.5	60
46768.1	901.7	2120.48	4435.5	60
46780.3	900.24	2122.26	4435.5	60
46792.2	899.61	2122.93	4435.5	60
46804.6	899.48	2122.92	4435.5	60
46816.9	899.53	2122.66	4435.5	60
46829.2	899.74	2122.19	4435.5	60
46841.5	900.28	2121.28	4435.5	60
46854.3	900.92	2120.22	4435.5	60
46866.6	901.31	2119.5	4435.5	60
46878.7	901.36	2119.25	4435.5	60
46891.1	901.44	2118.96	4435.5	60
46903.4	901.47	2118.73	4435.5	60
46915.3	901.49	2118.52	4435.5	60
46927.6	900.58	2119.56	4435.5	60
46938.8	899.65	2120.64	4435.5	60
46951	900.44	2119.39	4435.5	60
46963.3	902.56	2116.34	4435.5	60
46975.4	904.58	2113.43	4435.5	60
46987.7	907.05	2109.92	4435.5	60
47000	908.75	2107.44	4435.5	60
47012.4	908.39	2107.73	4435.5	60
47024.4	907.96	2108.13	4435.5	60
47034.8	907.94	2108	4435.5	60
47047	908.18	2107.49	4435.5	60
47059.4	908.24	2107.22	4435.5	60
47071.7	907.18	2108.46	4435.5	60
47083.7	906.03	2109.83	4435.5	60
47096	905.77	2109.99	4435.5	60
47108.3	905.95	2109.56	4435.5	60
47119.6	905.4	2110.13	4435.5	60
47131.6	904.42	2111.27	4435.5	60
47143.8	903.39	2112.47	4435.5	60
47156.1	902.6	2113.35	4435.5	60
47168.5	901.96	2114.02	4435.5	60
47180.8	901.07	2115.03	4435.5	60
47193.2	898.9	2117.77	4435.5	60
47205.5	896.81	2120.4	4435.5	60
47217.9	895.6	2121.84	4435.5	60
47230.2	895.28	2122.09	4435.5	60
47240.4	895.46	2121.69	4435.5	60
47252.8	896.5	2120.1	4435.5	60
47265.1	898.19	2117.63	4435.5	60
47277.4	898.91	2116.47	4435.5	60
47289.8	898.54	2116.78	4435.5	60
47302.1	897.97	2117.36	4435.5	60
47314	897.57	2117.72	4435.5	60

47325.5	897.83	2117.2	4435.5	60
47337.4	898.98	2115.46	4435.5	60
47349.2	900.32	2113.48	4435.5	60
47361.6	901.55	2111.63	4435.5	60
47373.9	902.37	2110.34	4435.5	60
47386.3	902.67	2109.74	4435.5	60
47398.6	902.32	2110.03	4435.5	60
47411	901.03	2111.58	4435.5	60
47423.1	899.12	2113.97	4435.5	60
47435.1	897.16	2116.43	4435.5	60
47447.4	895.65	2118.28	4435.5	60
47459.8	894.83	2119.19	4435.5	60
47472.1	894.34	2119.67	4435.5	60
47484.5	893.84	2120.15	4435.5	60
47496.6	893.43	2120.52	4435.5	60
47508.8	892.97	2120.95	4435.5	60
47521.2	892.1	2121.94	4435.5	60
47533.5	890.86	2123.42	4435.5	60
47543.1	889.79	2124.72	4435.5	60
47555.3	888.46	2126.33	4435.5	60
47567.7	887.41	2127.55	4435.5	60
47580	886.62	2128.43	4435.5	60
47592.4	885.83	2129.31	4435.5	60
47604.8	884.93	2130.33	4435.5	60
47616.6	884.34	2130.95	4435.5	60
47629	884.69	2130.29	4435.5	60
47641.4	885.33	2129.23	4435.5	60
47652.8	884.47	2130.22	4435.5	60
47664.2	883.18	2131.78	4435.5	60
47676.5	882.65	2132.31	4435.5	60
47688.8	883.37	2131.15	4435.5	60
47701.1	884.95	2128.83	4435.5	60
47713.3	886.24	2126.91	4435.5	60
47725.7	886.07	2126.95	4435.5	60
47738	884.35	2129.08	4435.5	60
47750.4	883.31	2130.29	4435.5	60
47762.6	883.42	2129.96	4435.5	60
47770.5	883.99	2129.07	4435.5	60
47782.9	883.69	2129.29	4435.5	60
47794.8	881.68	2131.82	4435.5	60
47807.2	880.26	2133.54	4435.5	60
47819.6	880.44	2133.11	4435.5	60
47831.9	881.54	2131.44	4435.5	60
47844.3	883.08	2129.17	4435.5	60
47856.7	884.05	2127.67	4435.5	60
47868.5	883.35	2128.44	4435.5	60
47880	881.43	2130.85	4435.5	60
47891.6	878.64	2134.44	4435.5	60
47903.4	876.33	2137.37	4435.5	60
47914.8	875.48	2138.35	4435.5	60
47926.2	875.63	2137.97	4435.5	60

47938.5	875.4	2138.09	4435.5	60
47950.5	874.18	2139.55	4435.5	60
47962.8	873.37	2140.46	4435.5	60
47974.7	873.67	2139.87	4435.5	60
47987.1	874.55	2138.5	4435.5	60
47999.4	874.9	2137.84	4435.5	60
48011.7	874.54	2138.14	4435.5	60
48023.7	874.19	2138.42	4435.5	60
48036	874.28	2138.12	4435.5	60
48048.4	875.57	2136.19	4435.5	60
48060.2	876.69	2134.5	4435.5	60
48072.1	876.78	2134.19	4435.5	60
48084.5	875.9	2135.19	4435.5	60
48095.9	873.31	2138.51	4435.5	60
48108.1	869.68	2143.22	4435.5	60
48120.4	868	2145.3	4435.5	60
48132.7	869.55	2143.02	4435.5	60
48145.1	871.04	2140.82	4435.5	60
48157.4	872.07	2139.24	4435.5	60
48169.8	871.67	2139.59	4435.5	60
48181.4	869.49	2142.36	4435.5	60
48193.7	867.21	2145.24	4435.5	60
48206.1	865.81	2146.94	4435.5	60
48218.5	865.37	2147.35	4435.5	60
48230.8	864.77	2147.97	4435.5	60
48243.2	865.45	2146.86	4435.5	60
48255.6	867.78	2143.53	4435.5	60
48267.9	868.88	2141.86	4435.5	60
48280.3	868.39	2142.33	4435.5	60
48292.7	867.61	2143.19	4435.5	60
48305	867.24	2143.51	4435.5	60
48316.9	867.3	2143.24	4435.5	60
48329.3	866.97	2143.5	4435.5	60
48341.6	865.19	2145.71	4435.5	60
48353.8	862.87	2148.66	4435.5	60
48366.2	860.43	2151.76	4435.5	60
48378	858.32	2154.42	4435.5	60
48390	856.26	2157.02	4435.5	60
48402.2	854.3	2159.47	4435.5	60
48414.5	852.98	2161.07	4435.5	60
48426.9	852.47	2161.57	4435.5	60
48439.8	852.34	2161.54	4435.5	60
48452.1	852.45	2161.21	4435.5	60
48463.9	852.35	2161.16	4435.5	60
48476.3	850.9	2162.93	4435.5	60
48488.5	847.78	2166.95	4435.5	60
48500.9	843.76	2172.19	4435.5	60
48513.2	839.64	2177.55	4435.5	60
48525.6	835.56	2182.87	4435.5	60
48537.9	833.38	2185.62	4435.5	60
48549.7	832.27	2186.94	4435.5	60

48560	832.34	2186.69	4435.5	60
48570.9	830.17	2189.45	4435.5	60
48583.3	824.92	2196.34	4435.5	60
48595.6	817.57	2206.07	4435.5	60
48607.9	811.59	2213.95	4435.5	60
48620.3	809.02	2217.23	4435.5	60
48632.7	811.29	2213.97	4435.5	60
48645	817.55	2205.34	4435.5	60
48657.3	824.68	2195.54	4435.5	60
48669.7	829.76	2188.49	4435.5	60
48682	833.39	2183.41	4435.5	60
48696.3	836.76	2178.65	4435.5	60
48708.7	838.31	2176.37	4435.5	60
48720.9	838.99	2175.26	4435.5	60
48731.5	839.92	2173.85	4435.5	60
48743.9	841.2	2171.93	4435.5	60
48755.6	842.48	2170.03	4435.5	60
48768	842.71	2169.53	4435.5	60
48780.2	842.64	2169.44	4435.5	60
48791.8	842.61	2169.3	4435.5	60
48803.7	843.22	2168.29	4435.5	60
48815.9	844.17	2166.83	4435.5	60
48828.3	845.35	2165.05	4435.5	60
48840.1	846.53	2163.27	4435.5	60
48852	848.2	2160.84	4435.5	60
48864.3	851.83	2155.76	4435.5	60
48876.7	856.14	2149.76	4435.5	60
48889	860.17	2144.13	4435.5	60
48901.4	863.91	2138.9	4435.5	60
48913.4	867.44	2133.96	4435.5	60
48925.8	871.36	2128.48	4435.5	60
48938	875.18	2123.14	4435.5	60
48950.4	878.11	2119	4435.5	60
48962.7	880.16	2116.05	4435.5	60
48975.1	882.14	2113.19	4435.5	60
48986.7	883.2	2111.58	4435.5	60
48999	883.16	2111.45	4435.5	60
49011.3	882.84	2111.69	4435.5	60
49023.5	882.38	2112.13	4435.5	60
49035.9	881.06	2113.72	4435.5	60
49048.2	878.79	2116.59	4435.5	60
49060.6	876.59	2119.37	4435.5	60
49072.8	874.98	2121.36	4435.5	60
49084.6	873.97	2122.54	4435.5	60
49096.9	873.27	2123.29	4435.5	60
49109.3	872.8	2123.74	4435.5	60
49121.7	871.81	2124.88	4435.5	60
49134	872.13	2124.27	4435.5	60
49146.3	872.66	2123.36	4435.5	60
49158.7	872.73	2123.08	4435.5	60
49171	870.98	2125.25	4435.5	60

49183.4	868.19	2128.83	4435.5	60
49195.7	866.16	2131.38	4435.5	60
49207.9	864.46	2133.48	4435.5	60
49219.3	863.94	2134.01	4435.5	60
49231.7	865.7	2131.45	4435.5	60
49244	867.92	2128.26	4435.5	60
49256.4	869.44	2126.03	4435.5	60
49268.8	870.6	2124.27	4435.5	60
49281.1	870.22	2124.6	4435.5	60
49293.2	867.38	2128.24	4435.5	60
49305.6	864.33	2132.17	4435.5	60
49317.9	863.28	2133.39	4435.5	60
49330.3	864	2132.23	4435.5	60
49342.7	864.19	2131.79	4435.5	60
49355	863.24	2132.88	4435.5	60
49367.4	862.64	2133.5	4435.5	60
49379.6	863.9	2131.62	4435.5	60
49391.8	867.22	2126.95	4435.5	60
49404.2	871.35	2121.2	4435.5	60
49416.6	873.48	2118.13	4435.5	60
49428.3	873.31	2118.18	4435.5	60
49440.7	872.26	2119.41	4435.5	60
49452.8	871.46	2120.31	4435.5	60
49465.2	871.66	2119.85	4435.5	60
49477.5	872.4	2118.66	4435.5	60
49489.6	872.16	2118.8	4435.5	60
49501.7	870.68	2120.61	4435.5	60
49514	868.89	2122.84	4435.5	60
49526.2	867.69	2124.27	4435.5	60
49538.5	867.04	2124.96	4435.5	60
49550.8	866.92	2124.93	4435.5	60
49563.1	867.14	2124.45	4435.5	60
49575.4	867.1	2124.31	4435.5	60
49587.8	866.41	2125.06	4435.5	60
49600.1	863.96	2128.17	4435.5	60
49612.3	860.34	2132.87	4435.5	60
49624.7	856.21	2138.25	4435.5	60
49637	854.8	2139.96	4435.5	60
49649.4	856.7	2137.21	4435.5	60
49656.8	858.36	2134.86	4435.5	60
49669	861.35	2130.64	4435.5	60
49681.3	861.74	2129.93	4435.5	60
49693.7	859.48	2132.79	4435.5	60
49706.1	857.7	2135	4435.5	60
49715.1	857.22	2135.51	4435.5	60
49727.4	856.93	2135.71	4435.5	60
49739.8	856.83	2135.66	4435.5	60
49750.9	856.64	2135.74	4435.5	60
49763.2	857	2135.07	4435.5	60
49775.6	857.13	2134.71	4435.5	60
49787.8	857.39	2134.17	4435.5	60



49800.1	858.43	2132.58	4435.5	60
49812.5	860.73	2129.29	4435.5	60
49824.7	863.21	2125.76	4435.5	60
49837.1	864.8	2123.42	4435.5	60
49849.3	864.14	2124.13	4435.5	60
49861.7	861.14	2127.98	4435.5	60
49874	858.02	2132	4435.5	60
49886.4	858.2	2131.57	4435.5	60
49898.1	859.63	2129.47	4435.5	60
49910	861.8	2126.36	4435.5	60
49922.3	862.43	2125.32	4435.5	60
49934.7	863.52	2123.66	4435.5	60
49947.1	864.21	2122.54	4435.5	60
49959.4	863.46	2123.37	4435.5	60
49971.3	861.29	2126.11	4435.5	60
49983.2	858.27	2130	4435.5	60
49995.4	856.03	2132.84	4435.5	60
50007.7	854.87	2134.21	4435.5	60
50019.5	854.05	2135.14	4435.5	60
50031.9	853.26	2136.01	4435.5	60
50044.2	852.96	2136.23	4435.5	60
50056.5	853.1	2135.86	4435.5	60
50068.9	852.94	2135.88	4435.5	60
50081.3	852.51	2136.27	4435.5	60
50093.7	852.03	2136.73	4435.5	60
50103.7	851.32	2137.54	4435.5	60
50116.1	850.23	2138.82	4435.5	60
50128.4	849.65	2139.41	4435.5	60
50140.8	849.28	2139.72	4435.5	60
50153.2	849.03	2139.87	4435.5	60
50165.4	848.38	2140.56	4435.5	60
50177.7	848.53	2140.17	4435.5	60
50189.8	848.67	2139.8	4435.5	60
50202.2	848.33	2140.07	4435.5	60
50214.5	847.04	2141.62	4435.5	60
50226.7	845.45	2143.58	4435.5	60
50239	844.84	2144.21	4435.5	60
50251.3	844.76	2144.13	4435.5	60
50262.3	844.41	2144.44	4435.5	60
50274.6	842.93	2146.24	4435.5	60
50286.6	840.52	2149.31	4435.5	60
50298.5	838.07	2152.43	4435.5	60
50309.9	835.79	2155.33	4435.5	60
50322.2	833.18	2158.67	4435.5	60
50334.1	830.78	2161.72	4435.5	60
50345.6	829.6	2163.14	4435.5	60
50357.2	828.86	2163.96	4435.5	60
50369.6	828.46	2164.31	4435.5	60
50381.8	828.39	2164.22	4435.5	60
50394.2	828.51	2163.87	4435.5	60
50406.6	829.17	2162.79	4435.5	60

50418.9	830.09	2161.36	4435.5	60
50431.3	830.61	2160.47	4435.5	60
50443.7	830.63	2160.25	4435.5	60
50456.1	831.12	2159.4	4435.5	60
50468.4	832.88	2156.84	4435.5	60
50480.7	834.9	2153.93	4435.5	60
50492.9	835.15	2153.41	4435.5	60
50505.2	833.98	2154.8	4435.5	60
50517.6	832.14	2157.09	4435.5	60
50530.6	830.41	2159.22	4435.5	60
50541.9	829.32	2160.52	4435.5	60
50554.3	828.66	2161.22	4435.5	60
50565.8	828.93	2160.68	4435.5	60
50578.1	829.76	2159.38	4435.5	60
50590.3	831.17	2157.29	4435.5	60
50602.2	831.38	2156.82	4435.5	60
50614.5	829.68	2158.93	4435.5	60
50626.8	827.6	2161.55	4435.5	60
50638.9	826.31	2163.1	4435.5	60
50651.3	825.6	2163.87	4435.5	60
50663.3	825.23	2164.19	4435.5	60
50673.9	824.96	2164.39	4435.5	60
50686.3	824.81	2164.4	4435.5	60
50698.4	825.16	2163.74	4435.5	60
50710.8	826.64	2161.56	4435.5	60
50723.1	828.57	2158.77	4435.5	60
50735.1	829.99	2156.67	4435.5	60
50747.2	831.03	2155.08	4435.5	60
50759.5	831.7	2153.99	4435.5	60
50771.7	831.97	2153.44	4435.5	60
50784.1	831.51	2153.87	4435.5	60
50796.4	829.12	2156.91	4435.5	60
50808.9	826.1	2160.79	4435.5	60
50821.1	823.26	2164.44	4435.5	60
50833.5	821.52	2166.59	4435.5	60
50844.9	820.74	2167.47	4435.5	60
50857.3	820.03	2168.24	4435.5	60
50869.7	819.57	2168.67	4435.5	60
50882	819.63	2168.4	4435.5	60
50894.3	820.17	2167.49	4435.5	60
50906.7	820.65	2166.65	4435.5	60
50919.1	821.02	2165.96	4435.5	60
50931.4	821.62	2164.96	4435.5	60
50943.8	821.49	2164.95	4435.5	60
50955.6	819.11	2167.98	4435.5	60
50967.9	817.76	2169.61	4435.5	60
50979.2	818.32	2168.69	4435.5	60
50991.4	818.75	2167.92	4435.5	60
51003.7	818.38	2168.23	4435.5	60
51016	817.68	2168.99	4435.5	60
51028.4	817.39	2169.19	4435.5	60

51040.8	817.52	2168.83	4435.5	60
51053.2	817.41	2168.79	4435.5	60
51065.3	816.45	2169.9	4435.5	60
51077.6	815.33	2171.22	4435.5	60
51089.7	814.91	2171.6	4435.5	60
51101.9	814.51	2171.95	4435.5	60
51114.3	814.05	2172.38	4435.5	60
51126.7	813.51	2172.92	4435.5	60
51139	812.62	2173.94	4435.5	60
51151.3	810.99	2175.95	4435.5	60
51163.6	808.21	2179.51	4435.5	60
51175.7	806.58	2181.52	4435.5	60
51188	808.23	2179.11	4435.5	60
51199.9	810.71	2175.58	4435.5	60
51212.3	812.86	2172.5	4435.5	60
51224.6	814	2170.77	4435.5	60
51237	813.68	2171.01	4435.5	60
51251.1	812.61	2172.24	4435.5	60
51263.1	811.39	2173.7	4435.5	60
51275.3	809.11	2176.59	4435.5	60
51287.1	808.09	2177.79	4435.5	60
51299.2	808.94	2176.46	4435.5	60
51311.4	809.47	2175.56	4435.5	60
51315.4	809.52	2175.43	4435.5	60
51327.7	809.43	2175.36	4435.5	60
51340.1	808.7	2176.16	4435.5	60
51352.4	806.88	2178.42	4435.5	60
51364.4	804.74	2181.13	4435.5	60
51376.7	803.15	2183.08	4435.5	60
51389.1	802.16	2184.23	4435.5	60
51401.4	800.65	2186.08	4435.5	60
51413.8	799.95	2186.83	4435.5	60
51426.6	802.28	2183.5	4435.5	60
51438.9	805.71	2178.68	4435.5	60
51451.2	808.72	2174.43	4435.5	60
51463.6	811.57	2170.4	4435.5	60
51475.9	814.45	2166.33	4435.5	60
51488.2	817.01	2162.69	4435.5	60
51499.4	818.21	2160.9	4435.5	60
51511.3	817.11	2162.2	4435.5	60
51523.4	815.23	2164.55	4435.5	60
51535.7	814.83	2164.9	4435.5	60
51548.1	814.93	2164.58	4435.5	60
51560.4	813.56	2166.24	4435.5	60
51572.8	813.99	2165.47	4435.5	60
51583.6	814.76	2164.27	4435.5	60
51595.9	813.48	2165.81	4435.5	60
51608.3	810.55	2169.57	4435.5	60
51620.5	807.19	2173.92	4435.5	60
51632.9	804.12	2177.87	4435.5	60
51644.5	801.72	2180.93	4435.5	60

51656.8	799.66	2183.52	4435.5	60
51669.2	797.75	2185.91	4435.5	60
51681.5	795.95	2188.15	4435.5	60
51693.8	793.03	2191.9	4435.5	60
51706.2	788.69	2197.56	4435.5	60
51718.5	785.4	2201.81	4435.5	60
51730.7	785.14	2201.98	4435.5	60
51742.4	787.04	2199.24	4435.5	60
51754.2	790.39	2194.54	4435.5	60
51766.1	792.9	2190.97	4435.5	60
51778.5	795.02	2187.92	4435.5	60
51790.8	796.27	2186.05	4435.5	60
51802.7	796.46	2185.61	4435.5	60
51815.1	795.86	2186.23	4435.5	60
51827.4	793.64	2189.04	4435.5	60
51839.8	791.14	2192.22	4435.5	60
51852.1	789.02	2194.89	4435.5	60
51864.5	787.23	2197.12	4435.5	60
51876.8	785.45	2199.33	4435.5	60
51889.2	783.38	2201.93	4435.5	60
51901.6	781.01	2204.94	4435.5	60
51913.9	779.42	2206.9	4435.5	60
51926.2	776.22	2211.03	4435.5	60
51938.6	773.84	2214.05	4435.5	60
51950.7	771.55	2216.95	4435.5	60
51963	769.29	2219.82	4435.5	60
51975.3	767.2	2222.45	4435.5	60
51987.7	765.14	2225.04	4435.5	60
51999.3	762.08	2228.99	4435.5	60
52011.6	756.28	2236.63	4435.5	60
52024	749.8	2245.18	4435.5	60
52038.1	749.76	2245.02	4435.5	60
52050.4	749.79	2244.79	4435.5	60
52062.8	752.02	2241.59	4435.5	60
52075.2	757.74	2233.69	4435.5	60
52087.5	764.93	2223.8	4435.5	60
52099.8	771.48	2214.77	4435.5	60
52112.2	777.81	2206.05	4435.5	60
52124.5	783.7	2197.91	4435.5	60
52136.9	788.87	2190.75	4435.5	60
52149.2	792.83	2185.22	4435.5	60
52161.6	795.02	2182.08	4435.5	60
52172.4	795.38	2181.43	4435.5	60
52184.8	795.79	2180.68	4435.5	60
52190.5	796.28	2179.94	4435.5	60
52202.7	797.7	2177.84	4435.5	60
52208.4	798.21	2177.06	4435.5	60
52216	798.4	2176.69	4435.5	60
52228.4	798.45	2176.43	4435.5	60
52233.3	799.84	2174.48	4435.5	60
52237	801.43	2172.28	4435.5	60

52240.1	801.43	2172.23	4435.5	60
52245.9	801.43	2172.15	4435.5	60
52249.1	801.43	2172.1	4435.5	60

# ANEXO F

**CHECK LIST DE PRUEBA DE FUNCIONAMIENTO VALVULAS ESDV-0X0XX**

ESTACION PRS 2  
 TAG ESDV- 07004  
 OPERADOR: CARLOS ADRIANO  
 OPERADOR MPCC Edgor Crespo  
 ORDEN DE TRABAJO 106190  
 FECHA 2009-06-26  
 TIEMPO DE PRUEBA 1 Hora.

**OBJETIVO :** Revisar el correcto funcionamiento de las valvulas ESDV-0X0XX, y sus accesorios y medicion de los tiempos de apertura y cierre de las valvulas

DESCRIPCION	PARAMETROS DE FUNCIONAMIENTO					
	TIEMPOS DE APERTURA Y CIERRE					
	REMOTO		LOCAL		EMERGENCIA	PORCENTAJE
	APERTURA	CIERRE	APERETURA	CIERRE	CIERRE	
ESDVA-0X0XX	1:50 min	50 seg	1:50 min	50s.	1:50 min	
ZSOC-0X0XX	OK	OK	OK	OK	OK	100%
SWITCH DE POSICION LOCAL REMOTO	OK	OK	OK	OK	OK	
POSICIONADOR NEUMATICO	100%	100%	100%	100%	N/A	
SISTEMA HIDRAULICO	N/A	N/A	N/A	N/A	OK	

OBSERVACIONES se Realizo pruebas con simulación de Pasado de Emergencia PT-07016 y PT- 07021

*Carlos Adriano*

# ANEXO H



Quito, 15 de Febrero de 2008.

PARA: **ING OSWALDO VIVANCO (OCP)**  
DE: *ING. ERIC ALEJANDRO*  
ASUNTO: **INFORME TÉCNICO DE PSV – 07003**

**Antecedentes:**

Se recibió para inspección y mantenimiento en los talleres de Black Gold la válvula PSV-07003 de las siguientes características:

1. SN: 02-36295
2. Marca Crosby
3. Modelo 965101M A
4. Caudal 183 GPM W@70°F
5. Set pressure 3190 PSIG
6. Tamaño ¾" x 1" Roscada

La válvula presenta el sello de calibración roto y contaminación alta de petróleo, al retirar el Cap se observa que la contratuerca se encuentra floja, señal de alguna manipulación externa a Black Gold.

**Situación actual:**

Se somete a presión la PSV y se observa liqueo a muy baja presión por lo que se decide desarmarla completamente para análisis y mantenimiento.

Luego de retirar la presión del resorte y desarmar el cuerpo se encuentra las piezas con gran cantidad de crudo y ajustadas unas a otras por la presencia de fluido y por deformaciones de las piezas.

Las piezas que se logran separar luego de la aplicación de solventes y su estado actual son:

**Eje:** Presenta torcedura y huellas de desgaste metálico excesivo en el punto de contacto con las rodela de presión del resorte.

**Rodela de presión del resorte:** Tienen desgaste en los agujeros internos.

**Resorte:** En condiciones normales.

**Guía:** La guía del asiento se encuentra con muestras de desgaste metálico interno al contacto con el sostenedor del disco. Es difícil retirarlo de su

lugar debido a la presencia de gran cantidad de crudo pesado y por deformación en la boquilla.

**Sostenedor del disco:** Desgaste pronunciado de su superficie externa y dificultad para retirarlo de su Posición. Se observa que el sostenedor se mantiene por encima de su posición normal.

**Disco o asiento:** El disco se encuentra pegado completamente a su sostenedor por lo que resulta imposible retirarlo del sostenedor. Las deformaciones en la superficie del asiento y en el sostenedor hacen difícil retirarlo para analizar otras caras.

**Boquilla:** La boquilla se encuentra muy desgastada en su superficie de contacto con el asiento mostrando deformaciones.

**Cuerpo:** El cuerpo de la válvula tiene gran cantidad de petróleo.

#### **Conclusiones:**

La alta presión y el trabajo normal de la válvula por varias aperturas y cierres constantes pueden llegar a deformar excesivamente el asiento y la boquilla como es el caso de la PSV que se analiza actualmente.

La dificultad para retirar el sostenedor del disco de su guía y las deformaciones en su superficie muestran una muy deficiente operación de la PSV, aspecto que pudo haber llevado a que la válvula no se cerrara completamente y generando las fugas observadas en las pruebas iniciales denominadas AS RECIVED.

Es evidente que la válvula se ha activado en repetidas ocasiones; y, junto con la gran fuerza del resorte que necesita para mantener la alta presión han logrado los desgastes en las partes deformadas de esta PSV: Se sugiere un cambio completo de la PSV en mención.

La válvula se vuelve a armar se devuelve inmediatamente para disposición de OCP.

Atentamente,



Ing. Eric Alejandro  
QUALITY ASSURANCE ENGINEER