

CAVELIER

ABOGADOS

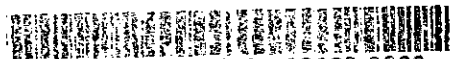
www.cavelier.com
cavelier@cavelier.com

EDIFICIO SISKI
CARRERA 4 No. 72 - 35
BOGOTA 8, COLOMBIA

63
6
Teléfono: (57-1) 347 3611
Telefax: (57-1) 211 8650
(57-1) 540 0860
Fax in U.S.A.: (1-305) 381 9660

Señora Jefe de la
DIVISION DE NUEVAS CREACIONES
Superintendencia de Industria y Comercio
E. S. D.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 06-066033-00003-0000

Fecha: 2008-11-09 11:41:17 - 2020 NUECREACION
Tm 2 PATENTES SIA REGDEPOSITO
Act 538 PETICION Folio 2

Trámite : 011
Evento : 378
Actuación : 538

Referencia : Expediente No. 06.066.033
Asunto : SOLICITUD DE PATENTE PARA EQUIPO Y
PROCEDIMIENTO PARA LOCALIZAR E
IDENTIFICAR INCRUSTACIONES EN CONDUCTOS Y
EN PLANTAS DE PROCESO
Solicitante : PETROLEO BRASILEIRO S.A. PETROBRAS
Clase : F16L 058/000
Publicada en : La Gaceta No. 578 Del 31 de julio de 2007
Fecha de Solicitud : 7 de julio de 2006

1. Yo, Emilio FERRERO, identificado como aparece al pie de mi firma, actuando como apoderado en el asunto de la referencia, atentamente, solicito se efectúe el examen de patentabilidad de la solicitud en referencia presentada de acuerdo con lo establecido en el artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina. Para tal efecto presento junto con este escrito el recibo por valor de \$ 420.000.00, que corresponde a la tasa fijada para este concepto.

2. Ruego atentamente a la Señora Jefe se sirva ordenar que se anexe este recibo para que se efectúe dicho examen y se continúe con el trámite de la solicitud.

Señora Jefe,

EMILIO FERRERO
T.P.A. No. 31.929

COLO-00795-801-029-5
MVN\SCT\ID-116039\WPCL0795
No. M-2008-116039\MVN

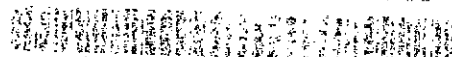
64
63

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 149
FECHA : ENERO 2 DE 2008

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



Nc. 06-066035-00000-0000

RECIBO OFICIAL DE CAJA : 08 - 149
FECHA : ENERO 2 DE 2008
Art. 538 REPOSICION Folios 2

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO DE BOGOTA	062754387	2808637	02/01/2008	42,278,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	112 PTC CAP-I EXAMEN DE PATENTIBILIDA
			TOTAL : \$ 420,000.00

SON: CUATROCIENTOS VEINTE MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

Q16 00795-801-029-5

654

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 06-66033

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **578** DE

FECHA **31 DE JULIO DE 2007** EL TÉRMINO HÁBIL SEÑALADO POR LA LEY

EXPIRA EL **26 DE OCTUBRE DE 2007**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X



US 20040261547A1

(19) **United States**(12) **Patent Application Publication** (10) Pub. No.: **US 2004/0261547 A1**

Russell et al.

(43) Pub. Date: **Dec. 30, 2004**(54) **METHOD OF DERIVING DATA**

Related U.S. Application Data

(76) Inventors: **David Alexander Russell**, Edinburgh (GB); **Gordon Campbell Short**, Edinburgh (GB)

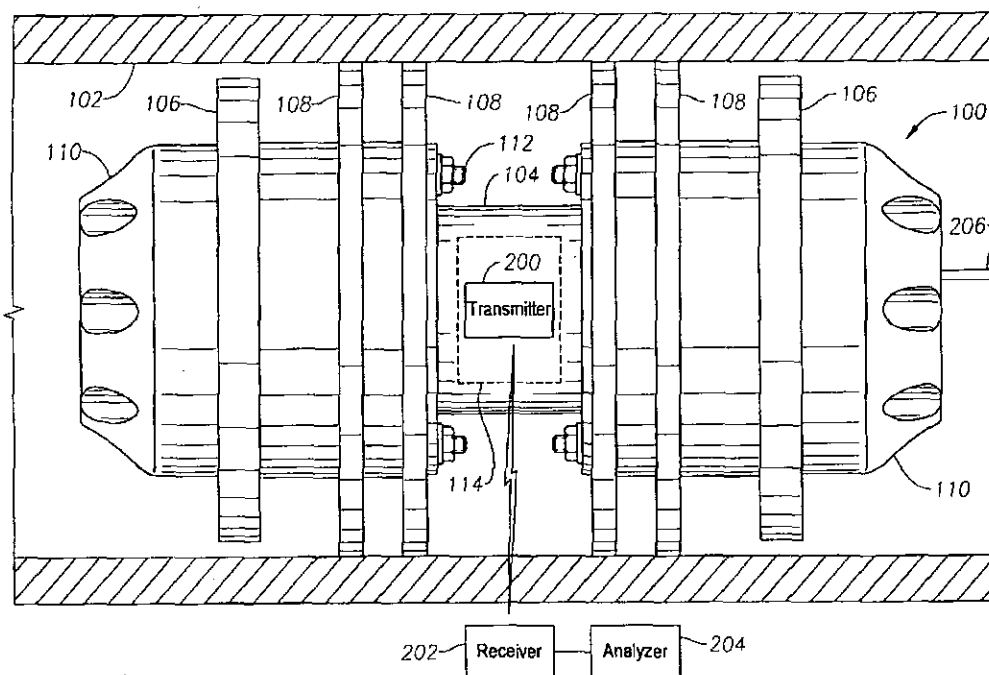
(60) Provisional application No. 60/415,323, filed on Oct. 1, 2002.

Publication Classification(51) Int. Cl.⁷ **G01M 19/00**(52) U.S. Cl. **73/865.8**

Correspondence Address:

MOSER, PATTERSON & SHERIDAN, L.L.P.
3040 POST OAK BOULEVARD, SUITE 1500
HOUSTON, TX 77056-6582 (US)(57) **ABSTRACT**

Method, apparatus and article of manufacture for detecting a physical condition in a pipeline. In one aspect, there is provided a method of detecting a physical condition in a pipeline by obtaining vibration data from the pipeline which is representative of the physical condition. In one embodiment, physical condition is any corrosion in the pipeline.

(21) Appl. No.: **10/675,863**(22) Filed: **Sep. 30, 2003**

68A

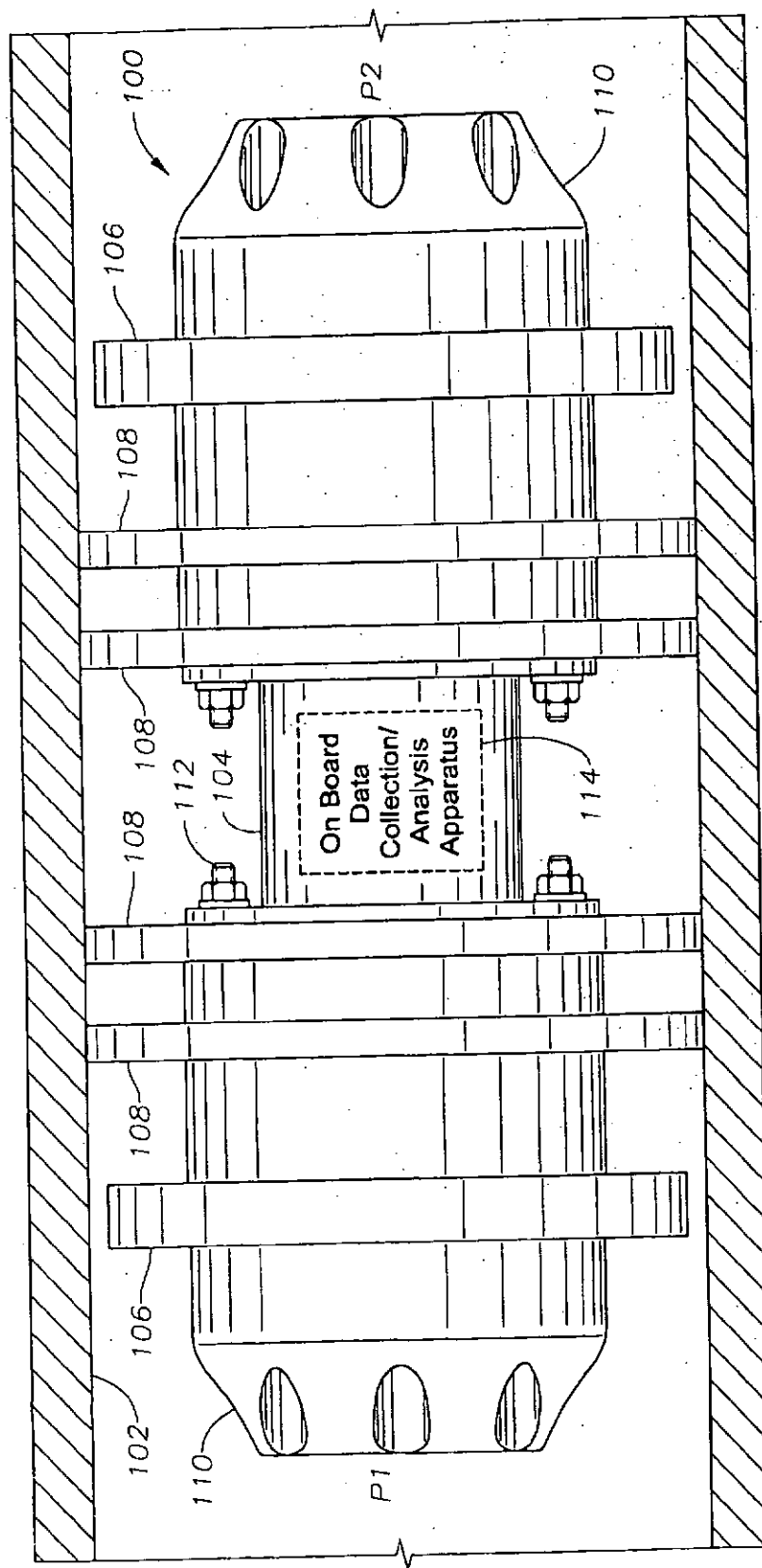


Fig. 1

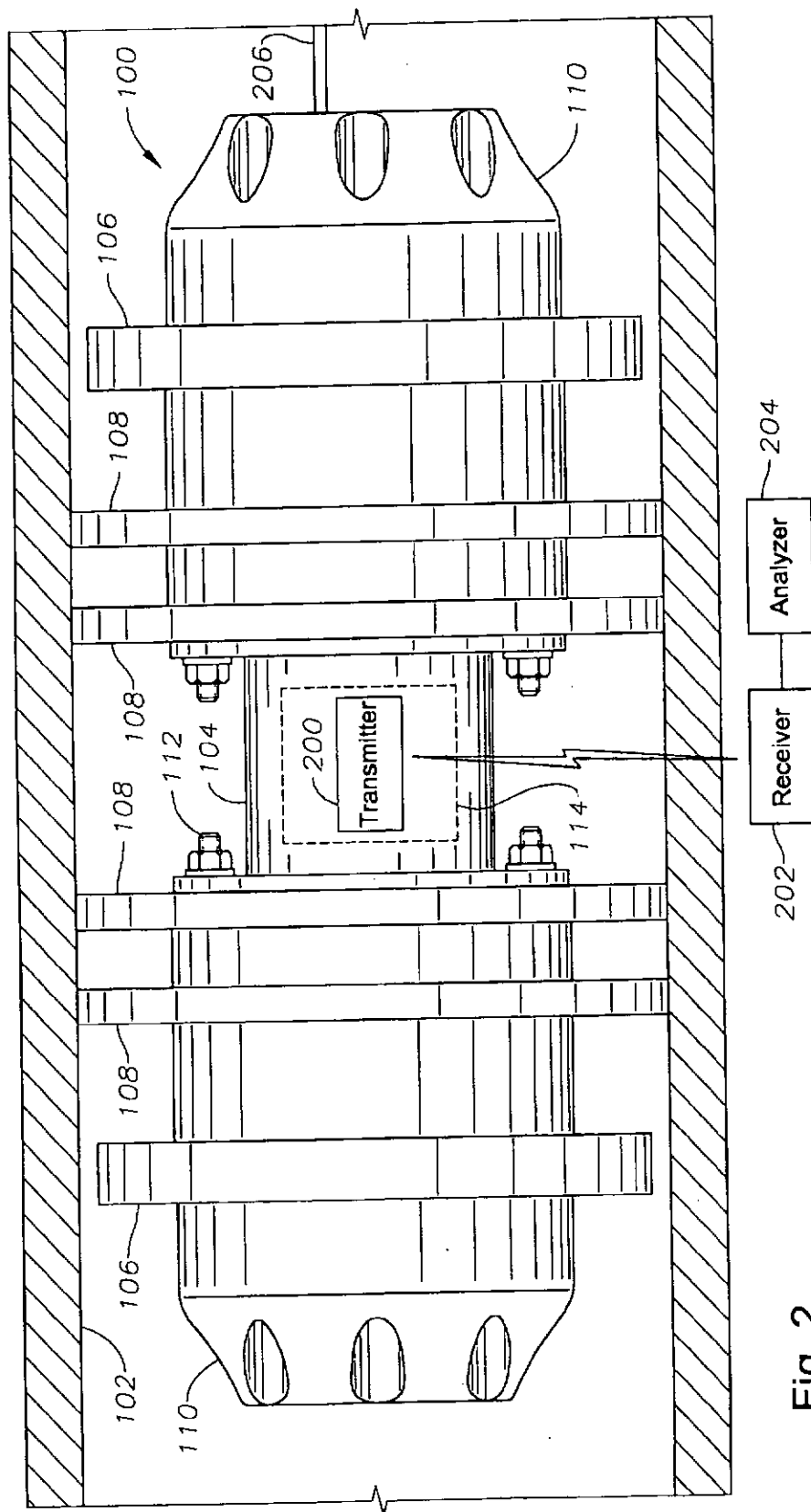


Fig. 2

67

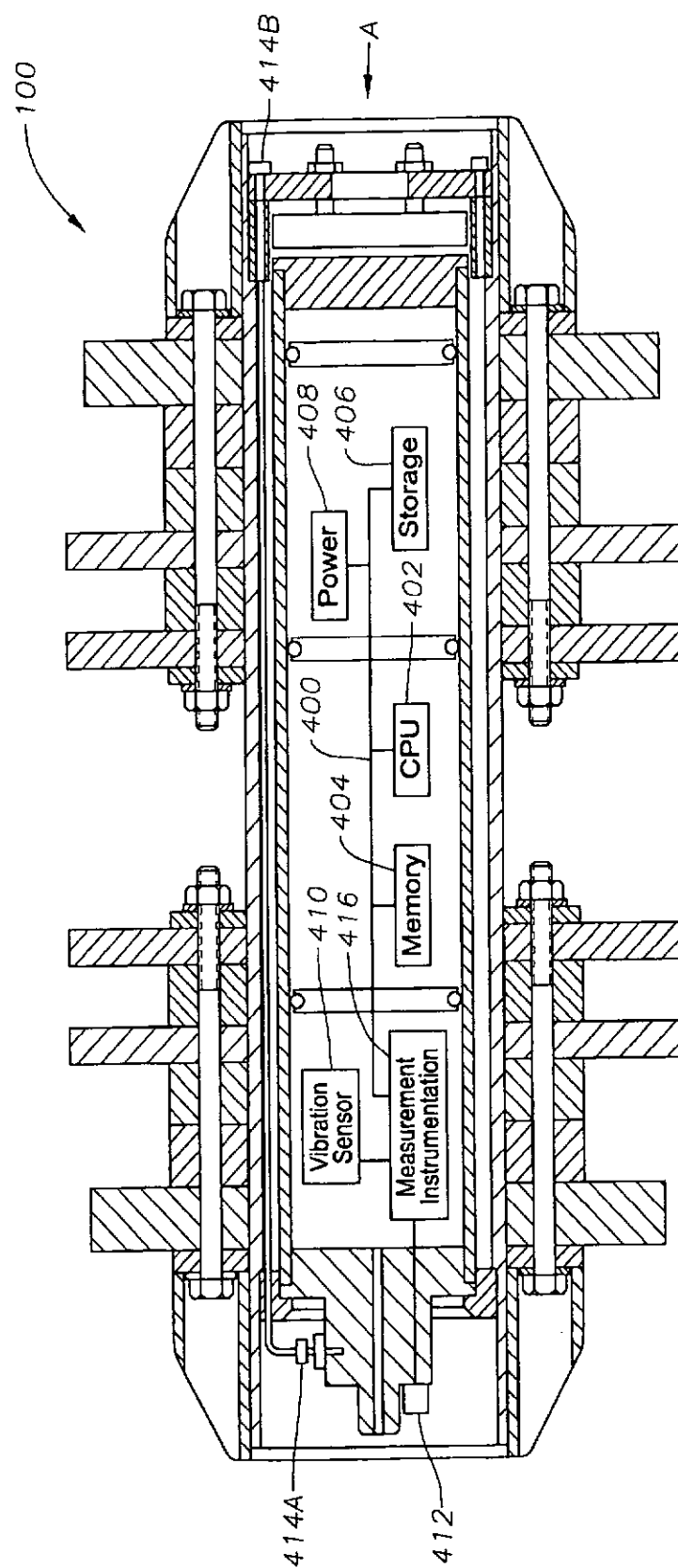


Fig. 4

62

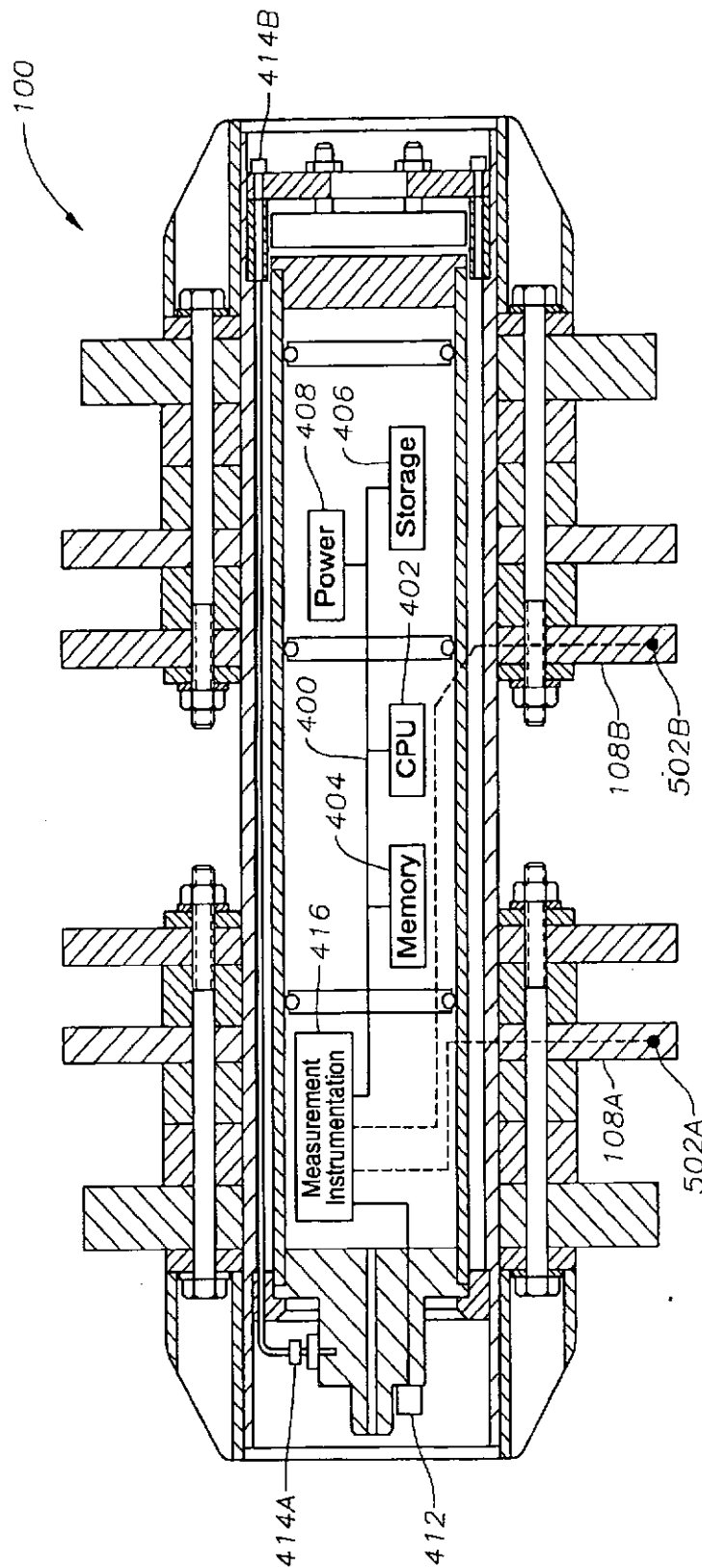


Fig. 5

69

METHOD OF DERIVING DATA

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. provisional patent application Ser. No. 60/415,323, filed Oct. 1, 2002, and is related to UK Patent Application No. 9620635.4, entitled "PIPELINE CONDITION MONITORING SYSTEM AND APPARATUS" filed Oct. 3, 1996, each of the aforementioned is herein incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a method of deriving data representative of the condition of a pipeline and more particularly for detecting corrosion in the pipeline by obtaining vibration data which is representative of any corrosion in the pipeline.

[0004] 2. Description of the Related Art

[0005] The safe and continuous operation of hydrocarbon pipeline networks are essential to the operators and users of such networks and to national economies served by such networks. Accordingly, such pipelines are cleaned and inspected at regular intervals to ensure their operational integrity.

[0006] The conventional approach to inspection of pipelines is for the pipeline to be cleaned several times using a "dumb" pig. The "dumb" pig operates to scrape and remove debris such as wax, scale, sand and other foreign matter from the pipeline while maintaining fluid supply via the pipeline. Subsequently, detailed inspection is performed by an "intelligent pig", which makes detailed measurements of the pipeline to determine the internal condition of the pipe. The "intelligent pig" is equipped with complex tools generally comprising arrays of probes and sensors and techniques such as magnetic flux leakage (MFL) or ultrasonic scanning (at various positions along the pipeline) to detect flaws or defects, which might prejudice the pipeline's integrity.

[0007] One shortcoming of conventional pigging techniques is that many cleaning pigs simply fail to effectively clean a pipeline at all points therealong. Therefore, when an intelligent pigging operation is undertaken the results obtained may be inaccurate, misleading or useless because the pipeline is not clean and the measurements have been distorted as a result. Such intelligent pigging operations are typically very costly, and thus it will be appreciated that it is highly desirable that the information and data obtained be as accurate and reliable as possible in order to avoid unnecessarily wasted expense and lost production time, and the risk of pipeline integrity failure not being detected.

[0008] Therefore, there is a need for a cost efficient and effective method and apparatus for determining the condition of pipelines.

SUMMARY OF THE INVENTION

[0009] The present invention generally provides for methods and apparatus for detecting a physical condition in a pipeline.

[0010] In one embodiment, there is provided a cost efficient method of detecting a physical condition in a pipeline by obtaining vibration data from the pipeline which is representative of the physical condition. In one embodiment, physical condition is any corrosion in the pipeline. Data can be obtained along the entire length of the pipeline.

[0011] In another embodiment, there is provided a method of deriving data representative of a condition of the pipeline comprising: passing a pipeline pig along a pipeline; sensing a vibration frequency of the pig as it moves along the pipeline to generate data representative of the frequency response of the pipeline pig; and analyzing the frequency data to give data representative of the condition of the pipeline.

[0012] In another embodiment, the method further includes the step of collecting data representative of the pig position along the pipeline.

[0013] In another embodiment, the method further includes the step of collecting data representative of the speed of travel of the pig along the pipeline.

[0014] In another embodiment, the method further includes the step of controlling the speed of the pig to within a suitable range to generate vibration frequency data characteristic of the internal condition of the pipeline.

[0015] In yet another embodiment, the pig guide diameter, seal diameter and thickness are selected to generate vibration frequency data characteristic of the internal condition of the pipeline.

[0016] In yet another embodiment, the speed at which the pig is passed along the pipeline and/or the pig guide diameter and/or seal diameter and/or the thickness are selected to give a desired frequency response.

[0017] In yet another embodiment, the frequency data and the data representative of the pig position along the pipeline and the speed of travel of the pig along the pipeline are correlated to obtain an indication of the condition of the pipeline.

[0018] In yet another embodiment, the data is processed to remove frequency responses resulting from the pig passing joints in the pipeline and/or rounding bends in the pipeline.

[0019] Yet another embodiment provides a method of deriving data representative of a condition of a pipeline comprising: passing a pipeline pig along a pipeline; generating data representative of an acoustical characteristic of the pipeline pig made as the pipeline pig moves through the pipeline pig; and analyzing the data to determine a condition of the pipeline.

[0020] Still another embodiment provides a method of deriving data representative of a condition of a pipeline comprising: passing a pipeline pig along a pipeline; sensing a frequency response generated by the pipeline pig as it moves along the pipeline; generating data representative of the frequency response; and analyzing the data to give data representative of the condition of the pipeline.

[0021] Still another embodiment provides a computer readable medium containing a program which, when executed, performs an operation, comprising: receiving a sensed frequency response generated as the pig moves along a pipeline by interaction between a physical structure of the

pipeline pig and at least one of a structure of the pipeline and debris formed on the pipeline; and generating data representative of the frequency response.

[0022] Still another embodiment provides an onboard pipeline pig system, comprising: one or more vibration sensors configured to collect a sensed frequency response generated as a pig moves along a pipeline by interaction between a physical structure of the pipeline pig and at least one of a structure of the pipeline and debris formed on the pipeline; and a processor connected to receive information representative of the sensed frequency response.

[0023] Still another embodiment provides a pipeline pig, comprising: a casing; an onboard pipeline pig system disposed at least partially within the casing and comprising: one or more vibration sensors configured to collect a sensed frequency response generated as the pig moves along a pipeline by interaction between a physical structure of the pipeline pig and at least one of a structure of the pipeline and debris formed on the pipeline; and a processor connected to receive information representative of the sensed frequency response.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] So that the manner in which the above recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may be had by reference to embodiments, some of which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

[0025] FIG. 1 is one embodiment of a pig, shown in perspective.

[0026] FIG. 2 is another embodiment of a pig, shown in perspective.

[0027] FIG. 3 is another embodiment of a pig, shown in perspective.

[0028] FIG. 4 is a cross sectional view of a pig showing one embodiment of an onboard system.

[0029] FIG. 5 is a cross sectional view of a pig showing another embodiment of an onboard system.

[0030] FIG. 6 summarizes the metal loss achieved in each of four (corroded) test spools.

[0031] FIGS. 7-52 are graphs showing data for various configurations of a pig.

[0032] FIGS. 53-54 are plots of amplitude with respect to time and frequency, respectively.

[0033] FIGS. 55-56 are plots of amplitude with respect to time and frequency, respectively.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0034] In general, there is provided an apparatus for, and method of, detecting a physical condition in a pipeline by obtaining vibration data from the pipeline, wherein the data is representative of the physical condition. In one embodiment, physical condition is any corrosion in the pipeline. In

one aspect, data can be obtained along the entire length of the pipeline. It will be appreciated that the term "condition" with respect to a pipeline, may embrace a variety of different and independent pipeline factors such as debris deposits, joints, bends, etc., the combination of which will provide an overall pipeline condition profile.

[0035] Apparatus and Operation

[0036] The apparatus of the invention may generally include any variety of passive and active devices suitable for facilitating collection of pipe condition information. As used herein the expression "passive devices" indicates sensing devices which simply record physical effects associated with the passage of the pipeline pig such as changes in pressure, speed, acceleration, noise, vibration, temperature etc. as opposed to "active devices" which probe the pipeline e.g. with radiation, sound waves etc.

[0037] Referring to FIG. 1, a pig 100 according to one embodiment of the invention is shown. The pig 100 is shown disposed in a pipeline 102. Illustratively, the pig is bi-directional to allow movement in either direction through the pipeline. The pig 100 is motivated by the difference in pressure of the fluid (e.g., oil or gas) in the pipeline 102 across the pig 100 (indicated by 'P1' and 'P2'). In one embodiment, the pig 100 may incorporate aspects of pigs commonly used in pigging operations in the oil and gas industry. As such, the pig 100 includes a casing 104 mounted on and between two spaced apart guides 106. The guides 106 have a diameter slightly less than the internal diameter of the pipeline 102. The pig 100 further includes four spaced apart cleaning seals 108, disposed between the guides 106. The cleaning seals 108 have a diameter generally greater than the internal diameter of the pipeline and are made of resilient materials so that, in use inside the pipeline 102, the periphery of the seals 108 is deflected into a sealing engagement with the inside wall of the pipeline 102. End plates 110 are disposed on either end of the pig 100. The components of the collective assembly are fastened to one another by bolts 112.

[0038] The pig 100 is equipped with an on-board data collection system 114. The onboard data collection system 114 generally comprises any combination of sensors, detectors, memory devices, processors, power supplies, support circuits, etc. which allow collection of various data as the pig 100 moves along the pipeline 102. This data can then be analyzed off-line. Alternatively, the system 114 includes on-board data processing equipment for performing at least some processing of data obtained from the sensing devices on-board the pig 100. In this manner, the data can be analyzed on-line as the pig 100 passes along the pipeline 102.

[0039] Various forms of sensing devices/techniques may be utilized. In one embodiment, a single sensing device is used. In another embodiment, a plurality of different sensing devices are employed. Suitable sensing devices may be formed and arranged for detecting one or more parameters associated with interaction of the pig 100 with debris deposits and/or the passage of the pig 100 in the pipe, as it passes along the length of pipeline 102 and is perturbed by debris deposits or other pipeline conditions. Such parameters include: differential pressure across the pig between a leading end and a trailing end thereof; velocity of the pig as it passes along a length of pipeline; longitudinal, and optionally angular, acceleration and deceleration of the pig as it

passes along a length of pipeline; vibrations; noise (including amplitude and/or frequency characteristics thereof) generated by interaction of the pig with the wall of the pipeline and/or deposits thereon or other pipeline conditions; temperature gradients and variations; and friction between the pig and the pipeline wall.

[0040] In one embodiment, the pig 100 can generate and record amplitude and/or frequency data representative of the vibrations generated by interaction of the pig with the wall of the pipeline and/or deposits thereon or other pipeline conditions. The analysis of the frequency data gives data representative of the condition of the pipeline in particular providing an indication of corrosion within the pipeline because certain frequency responses are only obtained when the pig passes corroded sections of the pipeline. In another embodiment, the pig 100 is configured to generate data which is analyzed for patterns, or signatures. Each of these analysis techniques are described in more detail below.

[0041] In one embodiment, the pig 100 is operated as cleaning pig. That is, the guides 106 act as scrapers to clear away debris on the inside wall of the pipeline as the pig 100 passes through the pipeline 102 while collecting data. The data may then be processed to determine a physical condition of the pipeline 102. In one aspect, the data is used to determine whether additional intelligent pigging is required. Alternatively, or additionally, the pig 100 may be operated to traverse the pipeline 102 subsequent to a cleaning operation and/or subsequent to intelligent pigging.

[0042] In one embodiment, the collected and/or analyzed data is stored in a storage device of the onboard system 114. Alternatively, as shown in FIG. 2, the onboard system 114 may include a transmitter 200 (or transceiver) configured to transmit information to a remote location at which a receiver (or transceiver, in some embodiments) 202 resides. The received information may then be provided to an analyzer 204. In this manner, the onboard system 114 may perform no processing of the data, or may perform some processing of the data, while the remotely located analyzer 204 performs additional processing.

[0043] In one embodiment, the information is provided to an Internet-based server computer (e.g., a Web server). In another embodiment, the information is provided to a wireless-enabled laptop computer. The laptop may be configured with the analyzer 204. To facilitate these and other communications of the data, it is contemplated that the information may, at least in part, be transmitted via satellite or by wireless telephone technologies.

[0044] Preferably, the transmitter 200 and transceiver 202 are wireless devices. In one embodiment, a plurality of transceivers 202 (collectively part of a common network) are disposed along the length of the pipeline 102. Each receiver 202 defines an access point at which a communications exchange may occur between the receiver 202 and the transmitter 200. However, in another embodiment, the pig 100 is connected to a tether 206 configured as a transmission medium. By way of example, the tether 206 may include electrically conductive elements (e.g., copper wire) or a fiber optic cable(s).

[0045] In any embodiment in which information is exchanged between the pig and one or more other nodes (e.g., the transceivers 202 and the analyzer 204), the infor-

mation may be filtered at various stages. For example, data filtering may be performed by the pig 100 before transmitting the information to one or more transceivers 202, or at the transceivers 202 before transmitting to the analyzer 204. Filtering the information may effect faster transmission rates.

[0046] In addition to transferring information from the pig 100 to remote devices, it is also contemplated that information may be transferred to the pig from remote devices. For example, the transceivers 202 may transmit data to the pig as it passes. The information collected by the pig in this manner may be used to control the operation of the pig (i.e., to remote control the pig) or may be data collected by other components in the pipe and subsequently be retrieved/uploaded/downloaded for analysis (i.e., after the pig is removed from the pipe or at some other uploading station within the pipe).

[0047] In yet another embodiment, the pig 100 is a "dumb" pig, having no data collection/analysis capabilities. Instead, vibration caused by interference between the inner walls of the pipeline 102 and the pig 100 is captured by a data collection/analyzer apparatus 302 coupled to the pipeline 102, as shown in FIG. 3. To augment the vibration, one embodiment of the pig 100 includes noisemakers. For example, formations may be disposed on the guides 106 or spacers 108 which, upon engaging the inner walls of the pipeline 102, increase the amount of vibration caused by relative movement between the formations and the pipeline 102 than would be possible without formations.

[0048] Referring now to FIG. 4, one embodiment of an onboard system 114 is shown. Generally, the onboard system 114 includes a bus line 400 having connected thereto a processor 402, a memory 404, storage 406, and a power supply 408. The onboard system 114 includes one or more sensors selected according to the desired data to be collected. Illustratively, the sensors includes a vibration sensor 410, a temperature sensor 412, and a pair of pressure sensors 414A-B. The sensors may be any variety of known or unknown devices capable of sensing one or more parameters. By way of illustration, the sensors may include accelerometers, strain gauges, fiber optic sensors and the like. In a particular embodiment, the vibration sensor 410 may be an accelerometers, the temperature sensor 412 may be a thermocouple and the pair of pressure sensors 414A-B may be strain gauges (illustratively, one pressure sensor is positioned at either end of the pig 100 to allow determination of a pressure drop across the pig 100). The various sensors may be connected to measurement instrumentation 416 which may include, for example, detectors.

[0049] In another embodiment, there may be provided on the pig 100 between the spaced apart guides 106 a probe formed and arranged for contact with the inside wall of the pipeline 102 for measuring the friction between the pipeline pig and the inside of the pipeline and thereby to obtain debris deposit profile for the length of pipeline being measured.

[0050] In another embodiment, the pig 100 is equipped with distance and/or position equipment. For example, the pig 100 may be configured with an odometer wheel for detecting the distance traveled by the pig 100. Alternatively or additionally, the pig 100 is provided with timing means. Pipelines are generally made up of a plurality of fixed lengths of pipe, e.g., 12 m, 6 m or 3 m. By "listening" for

74 2

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCIÓN DE NUEVAS CREACIONES**

2020
Bogotá, D.C.,

Abogado
EMILIO FERRERO

ASUNTO	Radicación	06-66033
	Trámite	002
	Evento	001
	Actuación	430
	Oficio	- - - 2522
	Folios	013

Patente de Invención ☒ Patente de Modelo de Utilidad ☐

Vía Nacional ☒

Vía PCT (fase nacional) ☐ Cap. I ☐ Cap. II ☐

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción: Folios: 31 a 40 como se radicó inicialmente

Reivindicaciones: Folios: 41 a 45 como se radicó inicialmente

Dibujos: Folios: 47 a 49 como se radicó inicialmente

Prioridad: Folios: 7 a 24
(2005-07-07, BR, No. PI0503627-5).

2. Análisis de la Prioridad

Comparando el documento de prioridad No. BR PI0503627-5, con la presente solicitud, se encuentra que ambas corresponden a la misma materia, por lo cual se acepta la fecha de prioridad.

3. Objeto de la invención

La presente solicitud se titula "EQUIPO Y PROCEDIMIENTO PARA LOCALIZAR E IDENTIFICAR INCRUSTACIONES EN CONDUCTOS Y EN PLANTAS DE PROCESO", Folio No. 1.

El objeto de la presente solicitud de patente consiste en equipo para registrar variables físicas de importancia para el conocimiento del proceso de formación de incrustaciones dentro de los conductos en plantas de proceso.

De otra parte, el pliego reclama un equipo para localizar e identificar incrustaciones en conductos y plantas de proceso, relacionado en las reivindicaciones 1 a 4 y un

75

procedimiento para localizar e identificar incrustaciones en conductos y plantas de proceso, relacionado en las reivindicaciones 5 a 8.

El objeto de la solicitud definido anteriormente se clasificó en la IPC F16L 58/00.

4. Claridad de la solicitud

4.1. Reivindicaciones (artículo 30 D 486)

Las reivindicaciones calificadas no definen ni un producto ni un procedimiento definido que se ajuste a los lineamientos legales vigentes.

En la reivindicación 1 se limita a enumerar los elementos que componen el equipo para localizar e identificar incrustaciones. Como es bien sabido la reivindicación no se debe limitar a enumerar los componentes de un producto, sino que debe establecer las relaciones funcionales o de estructura que se presentan entre tales componentes.

A diferencia de lo anterior, la reivindicación 1 se enfoca en definir el uso o utilización que se da a cada componente de manera individual: *un registrador de temperatura para registrar valores de temperatura, un registrador de presión para registrar valores de presión, etc.*, estas características NO son características funcionales del equipo, simplemente se trata de usos, los cuales no aportan a la definición del objeto que se pretende proteger.

La reivindicación 2 establece que los registros son realizados simultáneamente, mientras que la reivindicación 3 especifica que los datos son almacenados en una memoria no volátil. Como se puede ver, las reivindicaciones mencionadas no se refieren a características técnicas del equipo de registro, sino al uso que se da a algunos elementos del equipo.

La reivindicación 4 se refiere al resultado que se obtiene con la utilización del equipo: *permite la investigación de conductos de distintos diámetros*. El uso o el resultado alcanzado con el uso, no son características técnicas que permitan definir un producto, dado que el uso o resultado del uso son elementos independientes a la estructura física del dispositivo.

Finalmente, las reivindicaciones 5 a 8 no definen un procedimiento patentable por cuanto los pasos o etapas mencionados en tales reivindicaciones se refieren a un procedimiento de operación o uso de un equipo de registro, lo cual NO puede protegerse por patente.

Por los motivos anteriores, el pliego reivindicatorio calificado NO cumple con las disposiciones del artículo 30 de la Decisión 486.

5. Reivindicaciones relativas a un uso (artículo 14 D 486)

El artículo 14 de la Decisión 486 establece que el Despacho otorgará el privilegio de patente a las invenciones de producto o procedimiento. Los usos o procedimientos de uso no corresponden a ninguno de los anteriores, por cuanto no pueden protegerse por medio de patente.

De acuerdo a lo anterior, las reivindicaciones 5 a 8, no cumplen los requisitos del artículo 14 porque no definen un producto de acuerdo a la práctica establecida, en lugar de esto, tales reivindicaciones se refieren al procedimiento de operación (uso)

56

de un equipo de registro:

- i) Alojamiento del registrador en una cavidad.
- ii) Desplazar el equipo por la tubería a ser investigada.
- iii) Medición y registro de las variables físicas.
- iv) Transferencia de los datos registrados.
- v) Análisis de las variables físicas registradas.

Como se puede ver el procedimiento reclamado especifica la forma de uso de un equipo, lo no corresponde ni a un producto ni a un procedimiento patentable de acuerdo a lo establecido en el artículo 14 de la Decisión 486.

6. Determinación del Estado de la Técnica

Considerando que la solicitud reclama prioridad del 7 de Julio de 2005, se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a esta. Se realizó búsqueda de documentos relevantes dentro del estado de la técnica, entendiendo como estado de la técnica la definición provista en el Art. 16 D 486, y las excepciones fijadas en el Art. 17 de la misma.

No obstante, la solicitud presenta problemas de claridad, se realizó una búsqueda parcial la cual se complementara una vez se realicen los ajustes a la solicitud.

Se encontró como anterioridades los documentos relacionados a continuación que pueden afectar la patentabilidad del objeto de la presente solicitud

Nº	Documento*	Título	Fecha de publicación
D1	US2004/0261547	METHOD OF DERIVING DATA	2004-12-30

*los documentos mencionados se anexan al expediente

7. Análisis de patentabilidad (artículo 14 D486)

En cumplimiento del Art. 14 D486 se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicabilidad industrial, con el fin de establecer la patentabilidad de la invención reivindicada de la solicitud en estudio.

7.1. Novedad (artículo 16 D486)

El requisito de novedad se evaluó por comparación entre lo solicitado y los documentos citados en el numeral 6.

La reivindicación 1 se refiere a un equipo para localizar e identificar incrustaciones en conductos y plantas de proceso que comprende:

- Un registrador de temperatura.
- Un registrador de presión.
- Un registrador de presión diferencial.
- Un registrador de aceleración longitudinal.
- Un registrador de aceleración vertical.
- Un registrador de aceleración horizontal.
- Un sensor de rotación longitudinal.
- Un sensor de rotación horizontal.
- Un sensor de rotación vertical.
- Un sensor de radiación.

- Un conversor análogo/digital.
- Una unidad de control y procesamiento.
- Una unidad de almacenamiento de datos.
- Una unidad de suministro de energía.
- Una interfaz de comunicación.
- Un cable con conectores.
- Un taco de material elastomérico, con una cavidad en la cual se aloja el registrador.

El documento D1 se refiere a un método y un aparato para detectar condiciones físicas en una tubería, particularmente, para detectar corrosión en la tubería mediante la adquisición de datos de vibración que representan la corrosión en la tubería. El equipo presenta un registrador autónomo (sonda) que comprende los siguientes elementos comunes a la materia reclamada:

- Dispositivos sensores para tomar datos físicos a medida que la sonda pasa a través de la tubería tales como (párrafo [0036]):
 - Medidores de temperatura.
 - Medidor de cambios de presión.
 - Medidor de presión diferencial (párrafo [0039]).
 - Un registrador de aceleración longitudinal.
 - Medidor de aceleración
 - Un medidor de velocidad angular
- Donde la sonda esta configurada para registrar datos de frecuencia, presión , temperatura y posición grabados a una frecuencia de 24 hZ y digitalizada a alrededor de 12 kHz.
- Una unidad de control y procesamiento **400**.
- Una unidad de almacenamiento de datos **404**.
- Una unidad de suministro de energía **408**.
- Una interfaz de comunicación **202**.
- Un cable de conexión **206** (párrafo [0044]).
- Una sonda **100** en la cual se alojan los elementos de registro.

Como se puede ver, el documento D1 comprende todos los elementos reclamados en la presente solicitud, de manera que afecta la novedad de la misma.

Es claro que el objeto solicitado no presenta ninguna ventaja o efecto novedoso con respecto al estado del arte, por consiguiente se considera que el objeto de la solicitud no tiene Novedad y no cumple con los requisitos del artículo 14 de la decisión.

8. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

Nº	Documento Nº	Reivindicaciones Afectadas	Requisito que Afecta
D1	US2004/0261547	1 a 8	Novedad

Si el interesado desea continuar la tramitación, deberá presentar un pliego reivindicatorio que defina claramente la materia, que se desea proteger, acorde a lo explicado anteriormente.

77

Se recomienda, que tenga en cuenta que el replanteamiento de esos apartes NO podrá implicar una ampliación de la protección que correspondería a la divulgación contenida en la solicitud inicial, de acuerdo a lo que establece el artículo 34 de la Decisión 486.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2 Literal e) del capítulo quinto del título primero de la Circular Única No. 10 de 2001.



ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha
25 FEB. 2010

CONCEPTO TECNICO No. 663	EXAMINADOR TÉCNICO Código No. 202082
--------------------------	---