[0026] **FIG. 4** depicts alphabetic representation of a plurality of marker coupons of PIPS of the preferred embodiment, and the registration marks for beginning and end of code markings.

[0027] **FIG. 5** depicts geographical landmark and location representation of a plurality of marker coupons of PIPS of the preferred embodiment, and the registration marks for beginning and end of code markings.

[0028] **FIG. 6A** depicts a sketch of a commonly used above-ground pipeline marker indicating a Mile Post 4 or MP 4.

[0029] **FIG. 6B** depicts PIPS markings applied to the MP 4 pipeline depicted in **FIG. 6A**.

[0030] **FIG. 7A** depicts a sketch of a commonly used above-ground pipeline marker indicating a Mile Post 8 or MP8.

[0031] **FIG. 7B** depicts PIPS markings applied to the MP**8** pipeline depicted in **FIG. 7A**.

[0032] **FIG. 8** depicts a simplified sketch of a pipeline segment having plurality of spaced-apart coupons as appropriate to property represent the PIPS code as contemplated by the present invention.

[0033] **FIG. 9** depicts a data flow diagram illustrating the database of the present invention.

[0034] **FIG. 10** depicts a simplified system flow diagram for remote access to the database depicted in **FIG. 9**.

[0035] **FIG. 11** depicts a sample tabulation of pipeline information compiled into the PIPS database.

[0036] **FIG. 12A** depicts a simplified end view of a section of pipe showing a PIPS code implemented with marks that are disposed within the wall structure at less than 90° positions.

[0037] **FIG. 12B** depicts a simplified end view of a section of pipe showing the PIPS code implemented with marks that are disposed on the external circumference at less than 90° positions.

DETAILED DESCRIPTION

[0038] The pipeline identification and positioning system ("PIPS") of the present invention comprises a systematic application of a plurality of in situ markers that enable changes in local pipeline thickness to be identified and located. As will be hereinafter described in detail, the preferred embodiment of PIPS provides a code structure incorporated into this plurality of in situ markers that is "readable" by smart pigs or other comparable detection devices known in the art. It will be appreciated by those skilled in the art that such detection devices use a variety of technologies and concomitant resolutions for inspecting pipelines.

[0039] It will be understood that markers taught by the preferred embodiment of the present invention are designed for detection by the lowest resolution available in the art. Such a characteristic, of course, assures universal detection of pipeline irregularities or the like, independent of the particular detection device or technology used. It is an advantage and feature of PIPS of the present invention that it does not have to be upgraded to accommodate changes in detection and inspection technology. Accordingly, while any advance in the detection methodology art allows for more sophisticated codes to be provided as contemplated by the present invention, nevertheless, no changes or retrofitting in existing marker-installations will be necessary.

[0040] Under the present invention, marker means are disposed upon a pipe's external or internal circumferential surface as will be hereinafter described. **FIG. 1** depicts a frontal perspective view of section of pipe P showing the PIPS Registration Mark comprising plurality of coupons C**1**, C**2**, and C**3** emplaced upon the exterior circumference thereof, for the preferred embodiment of the present invention. As will be hereinafter described, referring to **FIGS. 1 and 2** A, B, C, this predefined configuration of marks successively disposed at 90° positions, from 9 o'clock to 12 o'clock to 3 o'clock, represents the preferred beginning-of-code marker. **FIG. 2A** shows a simplified end view of the embodiment of the present invention wherein plurality of markers or coupons C**1**, C**2**, and C**3** are disposed on the external diameter or circumference of pipe segment P. In the alternative embodiment shown in **FIG. 2**B, plurality of markers C**1**, C**2**, and C**3** are emplaced upon the internal diameter of pipe segment P. In another embodiment shown in **FIG. 2**C, coupons C**1**, C**2**, and C**3** are incorporated into the wall structure pipe segment P, thereby altering the local wall thickness. As will become clear to those skilled in the art, through detection by marker means coded according to the teachings of the present invention, defects and other pipeline anomalies may be identified and positioned with an accuracy, reliability, and convenience heretofore unknown in the art.

[0041] Thus, in the preferred embodiment, the external diameter disposed on a pipe segment's circumference is subdivided into four areas for coupon emplacement. Under this placement strategy, moving along the circumference in a clockwise direction, a coupon is emplaced at successive 90° positions thereof: top, right side, bottom, and left side. That is, suitably-coded marker coupons are positioned at the 12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock positions, respectively.

[0042] Referring now collectively to FIGS. **2** A-C, there is seen how the present invention uses a plurality of markers or coupons to represent the top—12 o'clock—pipe position as the zero reference point. As will become clear to those skilled in the art, this zero reference position of the pipe corresponds to a Registration Mark that conforms to the actual top position along pipeline sections. This Registration Mark has been found to constitute a reliable means for ascertaining whether a smart pig or other detection device is recording the correct orientation of a pipeline section. Plurality of coupons **200** correspond to coupon C1 disposed at the 12 o'clock position and interposed between coupons C**2** and C**3**, respectively. Coupon C**3** is seen to be disposed at the 9 o'clock position and coupon C**2** is disposed at the 3 o'clock position. It will be appreciated that the Registration Mark taught by the present invention signals the beginning of a code series that will identify the associated pipeline segment.

[0043] Now referring to **FIG. 3**, there is depicted a pluratity of markers that are separated by 90° and that correspond to codes for using the decimal system to represent pipeline locations. Thus, the number "1" is represented by