

**GUIDELINES AND PROCEDURE FOR THE CONSTRUCTION, OPERATION AND  
MAINTENANCE OF OIL AND GAS PIPELINES AND THEIR ANCILLARY  
FACILITIES.**

**1.1.0 PURPOSE.**

1.2.0 These Guidelines are issued pursuant to the provision of section 31 of the Oil pipeline Act CAP 338 of the Law of the Federation of Nigeria 1990. It prescribes the procedure to be followed to obtain all necessary licences and approvals for the construction of oil and gas pipelines, the guidelines to follow during the construction c, commissioning, operation and maintenance of pipelines and their ancillary installations

**1.3.0 PERMIT TO SURVEY A PIPELINE ROUTE**

It shall be mandatory for the route of the proposed flowline or pipeline to be surveyed or that of an existing pipeline to be re-surveyed before the grant of an Oil Pipeline Licence or the renewal for an expired licence.

For the purpose of this survey, a Permit to Survey shall be obtained in accordance with the provisions of Sections (4) and (5) of the Oil Pipeline Act CAP 338.

An application for a Permit to Survey shall accompanied by the specified number of copies of the topographical map of the pipeline drawn on Scale 1:50,000 for pipelines of length up to 50 kms and 1:100,000 for pipelines of lengths between 50 kms and 100 kms and 1:250,000 for pipelines above 100 kms in length.

For renewal purposes, copies of the integrity report so far carried out on the pipeline shall be forwarded with the application.

**1.3.0 LICENCE TO CONSTRUCT AND OPERATE PIPELINES.**

An Oil Pipeline licence should be applied for within the validity of the Permit to Survey for the purpose of constructing the proposed pipeline.

Oil pipeline licence shall not be required for a flowline.

In this regard, the provisions of Part III of the Oil Pipelines Act shall be followed in making such applications in addition to which the following requirements shall be fulfilled:

- 1.3.1 A statement indicating the service that the pipeline will render, the specifications of the pipeline, the characteristics of the fluid to be conveyed through the pipeline and the total estimate cost construction.

Also, before the final grant and release of the licence to construct the pipeline, the List of the prospective construction companies being considered for the project Shall be submitted to the Department of Petroleum Resources for confirmation of Their accreditation and eligibility to render such services, in accordance with the Provisions of the Petroleum (Drilling and Production) regulations.

- 1.3.2 A survey description in accordance with the Nigeria National Grid, of the total route of the pipeline, indicating the width of the right of way with the coordinates of the various points of intersection shall be submitted for appropriate publication.

- 1.3.3 Ten copies of the plan of the pipeline showing the following:

- i) The proposed route of the pipeline marked in red, with sections and quarter sections shown.
- ii) The location of each point at which there is a change in any of the following parameters:
  - (a) Outside or nominal diameter of the pipeline
  - (b) Wall thickness of the line pipe material
  - (c) Type and Grade of line pipe.
  - (d) Designed maximum operating pressure.
- iii) Direction of fluid flow along the pipeline
- iv) The locations indicated by symbols of any installations along the pipeline.
- v) The locations of the points at which other pipelines would be crossed by the new pipeline indicating the owner of the pipeline to be crossed. Also, the relative position of any existing pipeline or pipeline in an adjacent right of way within 100 meters should be indicated stating the name of the owner of such a pipeline.
- vi) The regional topography of the area along the pipeline route within a distance of 100 meters on both sides should be indicated including any watercourses to be crossed.

- 1.3.4 Two copies of the plan of the pipeline showing the following details:
- (a) Location of any anchors or expansion loops
  - (b) Location and operating details of corrosion prevention devices, main line valves and any emergency shut down devices.
  - (c) Pig launching and receiving points, any tie-in points with operating details.
- 1.3.5 A hydraulic profile of the pipeline indicating the position of any pumping Or booster stations.
- 1.3.6 For the ancillary facilities along the pipeline or at its terminal ends such as compressor stations, manifolds, meter banks etc., a general description of the facility, and its proposed operation parameters shall be given.
- 1.3.7 Two copies of the plan and profile of the pipeline showing the manner in which any highway, railroad, water way or other pipeline lying along the route would be crossed.
- 1.3.8 For purpose of renewal, a photocopy of the expiring licence with the relevant attachments (shedule1&2) and a copy of the final integrity report of the pipeline of the 20<sup>th</sup> year of operation.

## SECTION II

### LIQUID PETROLEUM TRANSPORTATION PIPING SYSTEMS

2.1.0 Definition Liquid Petroleum shall include crude oil, refined products, Natural

2.2.0 Gas Liquids, condensates and liquefied Petroleum Gas

The design criteria shall apply to relocation, replacement, and upgrading of existing pipelines.

2.1.2 Design Criteria: Reference Code ANSI/ASME B 31.4

- a) The two commonly acceptable grade of line pipes for this service shall be either those materials conforming with the ASTM A 106 Grade B or API 5L Grade B for low pressure range for high working pressure or large diameter pipelines, and any of the API 5LX range for high working pressure or large diameter pipeline where lower grade would require excessively thick walls to cope with the desired working pressure
- b) The line pipe shall be seamless in fabrication, being of the Electric Resistance Welded (ERW) or Double Submerged Arc Welded (DSAW) types only.
- c) The design shall generally be in accordance with the standard ANSI/ASME B 31.4 – 1979 and its subsequent revisions published by the American Society of Mechanical Engineers under the title ‘liquid Petroleum Transportation Systems’
- d) In addition to the general provisions of the code, special attention shall be paid to the following:
  - i) Wave and current loads shall be taken into account in the stress calculation of pipelines to be laid at sea or riverbeds without burial.
  - ii) Calculation of limit stresses due to sustained load, thermal expansion and occasional loads where applicable shall be strictly in conformity with paragraphs 402.3.2 and 402.3.3 of the code.

- iii) Design and material selection of the pipeline components such as tees, elbows, bends, valves, fittings etc. shall in all respects, conform with chapter II, part II and III of the code.
- iv) No used fitting of an existing pipeline shall be reused on a new pipeline without its original specification being identified and confirmed to be capable to perform the new service
- v) Threaded joints at both internal and external portions shall all be of the tapered line pipeline thread type conforming with API standard 5B or NPT threads in accordance with ANSI B2-1 while the least nominal wall thickness of the threaded portion of the pipe shall not be less than the value specified in ANSI B.36.10
- vi) All threaded joints shall be on sections of the pipeline above ground.
- vii) If two or more pipelines are to be connected in manner that one will operate at a pressure higher than the other, they shall be so designed that the pipeline system operating at the lower pressure shall not be subjected to any pressure greater than its licensed operating pressure.
- viii) All pipe fittings, valves and equipment connected to the pipeline shall have manufacturers ratings which are equal to or greater than the proposed maximum operating pressure of the pipeline.

### **2.3.0 CONSTRUCTION PRECEDURE**

2.2.1 Application: This procedure shall apply to new pipelines construction and replacements of existing pipelines.

#### **2.2.2 Construction Code**

- a) The licensee shall inform the Department of Petroleum Resources prior to the start of construction.

- b) All metallic pipeline material to be buried shall be coated with any of the following systems – coal-tar enamel, Asphalt enamel, polyethylene tape, epoxy, asphalt mastic, urethane or other material specially approved by the Department of Petroleum Resources for specific reasons, while all surface pipelines shall be painted, raised and maintained above ground on permanent supports.
- c) The pipeline construction shall generally follow the steps outlined in Chapter V of the standard ANSI/ASME B 31.4-1979
- d) All pipeline construction shall be carried out in a manner that will minimize disturbance to the environment.
- e) Special precautions shall be taken to protect the pipeline from washouts, unstable soil, landslides or another hazards that may cause the pipeline to move or be subjected to abnormal loads.
- f) Ditching for the pipeline shall follow good pipeline practice and consideration for public safety as provided for in the Standard API RP 1102 shall be followed.
- g) All pipeline welding shall be in accordance with the provisions of API 1104/1107 while welding inspection shall be by non-destructive method preferably using Radiographic method contained in API 1104 – 1973 or its later editions.
- h) Minimum soil coverage of pipelines shall be as follows:
  - Dry land – 1.0 metre.
  - River Crossings and Riverbeds – 1 metre.
  - Drainage ditches, Rail Road and Highway Crossing – 1.5 metres
  - Rocky Areas – 0.9 metres
  - Swamp – 1.0 metre
  - Shipping Channels – 2.0 metres
- i) At Rail road and Highway crossings, in addition to the specific requirement of the relevant Government Agency responsible for these infrastructures, the following precautions shall be taken:
- j) Installations of carrier pipe or casing shall be in accordance with API RP 1102.
  - ii) The casing shall be insulated from its carrier pipe support and shall extend to both sides of the railroad or highway. In the alternative the crossing could be of a thicker wall line pipe covered with compacted full and protective reinforced concrete slab.

- iii) All surface lines shall be similarly buried with casing protections or special construction specified in (iii) above at such crossings.
  - iv) Pipeline warning signs shall be conspicuously displayed at both the entry and exit points of the pipeline crossings of railroads, highways, other pipelines and rivers.
- k) The licensee shall identify any pipeline lying within 30 metres radius of its area of ground disturbance during pipeline construction.
  - l) The licensee before commencing any ground disturbance in a populated or controlled area shall first accurately locate the position and alignment of the pipeline with markings and distinguishable warning signs at adequate intervals.
  - m) If a pipeline lies within the 30-metre radius of construction, the licensee shall endeavour to first of all locate the pipeline in question and manually excavate it till it is sufficiently exposed for purpose of identification and avoidance by the construction equipment. The same precaution shall be taken by any third party undertaking any construction activity within this radius of safety zone around any pipeline. Once the pipeline has been so exposed, no excavation within 1 metre radius of it, shall be allowed
  - n) Where in the opinion of the Department of Petroleum Resources, it is desirable to do so, it may direct that an existing pipeline located within the construction zone of a new pipeline in a populated or controlled area be either completely depressurised, operated at reduced pressure, or be otherwise protected throughout the period of ground disturbance in its vicinity.
  - o) The same precautions as stipulated in (1) and (m) above shall apply to pipeline crossings.
  - p) Mainline block valves shall be installed on the upstream side of major river crossings and at pump stations while check valves shall be installed downstream of river crossings.

Also, mainline valves shall be installed at other sensitive locations of the pipeline such as in industrial, commercial and densely populated areas where construction activities may pose particular risks of damage to the pipeline. The pipeline right of way in these areas shall be clearly marked with signs for ease of identification.

- q) Six months after the completion of construction, the licensee shall submit two copies of the as built plan of the pipeline on the same scale as that of the plan submitted along with the pipeline licence.

#### 2.4.0 **PROCEDURE FOR INSPECTION AND TESTING.**

2.5.0 Notification: The Licence shall notify the Department of Petroleum Resources of the completion of the pipeline or any sections of it which is due for testing giving notice of not less than one month from the date of commencement of such tests.

#### 2.6.0 Inspection and Test Guidelines

- a) The pipeline material and construction shall be inspected visually and examined radio graphically according to the procedure enumerated in Chapter VI of the reference standard ANSI/ASME B 31.4 – 1979
- b) All tests shall generally be hydrostatic and be conducted in a manner that will ensure the protection of life, property and the general environment of the pipeline.
- c) The entire length of the pipeline shall be tested to the designed rated pressure while any in-line pressure vessel or pre-fabricated manifold on the pipeline shall be tested to the manufacturer's specifications in accordance with the Mineral Oils (Safety) regulations.
- d) The pressure recording instruments to be used for the tests shall have a valid calibration certificate which should not be more than a year of issue and the chart record of the test shall be continuous and legible and all test results and any remedial action taken shall be submitted to the Department for approval before commissioning of the pipeline. The Accuracy of the pressure recorder shall be within two per-cent (2%) of its range.
- e) Unless otherwise permitted by the Department, pressure test duration shall not be less than twenty-four hours of continuous test both for leaks and material failures. Buried pipeline of up to 100 meters in length and all surface running pipelines could be tested for less periods but not lower than (1) hour.
- f) The general guiding rule for environmental protection shall be as follows:
  - I Where the test pressure shall result in a hoop stress greater than 75 percent of specified minimum yield strength of the pipeline based on the nominal wall thickness, and the pipeline does not cross or pass within 100 metres of any environmental protection arrangement, otherwise permission of the Department would be required to

ensure that adequate contingency plans have been made for protecting the environment.

- ii Any pipeline crossing watercourses shall be tested with adequate environmental precautions taken.

### **2.3.3 Test Code**

- a) Unless otherwise authorized by the Department, the following shall generally apply:
  - i) The actual test pressure throughout the duration of test shall not exceed 110% of the minimum yield strength of the pipe material, hence the testing equipment shall be preset not to produce more than this pressure during the test.
  - ii) The test medium shall be water except with special permission of the Director of Petroleum Resources.
- b) All buried pipelines shall be tested to a pressure not less than 1.25 times the maximum designed operating pressure.
- c) Surface pipeline transmitting liquid petroleum or gas shall be tested up to a pressure not less than 1.4 times the maximum designed operating pressure.
- d) All pipelines shall be tested to a minimum pressure of not less than 700 kilopascals unless otherwise permitted by the Department
- e) The maximum test pressure in all cases shall not result in a hoop stress, greater than 110 percent of the specified minimum yield strength of the pipe material based on its nominal wall thickness.
- f) Valves and fittings on the pipeline under test shall not be subjected to a pressure greater than the manufacturer's test pressure rating during the test.

### **2.4.0 SAFETY AND MAINTANING PROCEDURE**

2.4.1 The operator shall establish a written emergency plan for implementation in the event of systems failures, accidents and other emergencies, which shall include procedures for prompt and expedient remedial action for the following.

- i) Safety of the public and operator's personnel
- ii) Protecting of property and the environmental and control of accident discharge from the pipeline
- iii) Adequate Personnel training for handling such emergencies

- 2.4.2 Care shall be taken to ensure that at no time should the maximum steady state operating pressure and static condition exceed either the internal design pressure or the pressure ratings of components used whichever is less. Pressure surges or any momentary pressure variations shall not exceed 10 percent of these pressure limits.
- 2.4.3 Pipeline markers at crossings shall indicate the location of the line and the name of the operating company.
- 2.4.4 All pressure relief devices shall be activated after installation to ensure that they function properly and shall be inspected and re-certified once in twenty-four (24) months with the report of such tests lodged with the nearest office of the Department of Petroleum Resources.
- 2.4.5 The right of way should be maintained so as to have a clear visibility and give reasonable access to maintenance crews. Clear access shall be maintained to valve locations and ditches shall be protected against washout of the line.
- 2.4.6 The right of way shall be regularly patrolled for prompt detection of any line break, encroachment or any other development that may endanger the safety of the pipeline and any such development shall be promptly reported to the nearest office of the Department of Petroleum Resources.
- 2.4.7 All under water crossing shall be periodically inspected but not longer than once in two years to ensure that there is sufficient cover for the pipeline and that the safety of the line at crossings is not endangered in any way.
- 2.4.8 All pipeline repairs shall be carried out in accordance with good pipeline practice and shall be generally undertaken in accordance with the safety provisions contained in the Standards API RP 1107 and API RP 1111. The repaired section of the pipeline shall be pressure tested at expected operating conditions like a new line. Detail report of this exercise shall be submitted to the Department.
- 2.4.9 For offshore pipelines connected to platform risers, the riser installations shall be visually inspected annually for physical damage or corrosion in the splash zone and above. Records of such inspections shall be kept on site for future verifications whenever the need arises.
- 2.5.0 CORROSION CONTROL
- The following shall constitute the minimum requirements and the procedure for cathodic protection of ferrous pipe and its components from internal and external corrosion the design of which shall generally follow the specifications and procedures prescribed in

NACE RP 0169-96. and section 10.1&10.2 of API RP 1160 managing pipeline system integrity.

#### 2.5.1 External Corrosion Control of Buried or Submerged Pipeline

This shall consist of application of coating to the pipeline and its cathodic protection to achieve the following objectives:

##### a) Protective Coating

- i) Shall be applied in such a way that it will mitigate corrosion and adhere to the pipe metal surface sufficiently enough such that it will effectively resist under film migration.
- ii) Shall be ductile and strong enough to resists cracking and damage during handling and under soil stress.
- iii) Shall be compatible with any supplemental cathodic protection and if is an insulating type material shall have low moisture absorption.
- iv) Shall be applied in such a way that no irregularities protrude through it and no holiday gaps exist in the coating all along the whole length of the pipeline.
- v) The points of connection of any attachment to pipeline shall be equally sealed with the coating, together with the attachments themselves.

##### b) Cathodic Protection System

- i) This shall be provided by either a galvanic anode or impressed current anode system installed in such a way that it mitigates corrosion and contains method of determining the degree of cathodic protection achieved on the pipeline. The criteria for the selection of an appropriate protection system shall be as listed in section 7 paragraph 7.5 of NACE standard RPO 169-96 and relevant subsequent provision.
- ii) The system shall be installed not later than one year after the laying of the pipeline in such a way that the pipe coating at the points of installation are kept
- iii) The cathodic protection system shall be electrically isolated at all inter-connections to other pipeline systems or structures except where the two structures are mutually protected by the same system.
- iv) The cathodic system shall be protected against damage by atmospheric electrical discharges, underground cables and power lines.
- v) Except for underwater pipelines, sufficient test leads shall be installed on buried pipelines for occasional check of the effectiveness of the cathodic protection to be

carried out by electrical measurements. Such test stations shall include all pipe casing installations, insulating joints, all crossings and main manifold junctions.

- vi) A minimum separation of 3 meters shall be maintained between electric transmission tower footings, ground cables and earthlings, power lines and the pipelines under protection.
- c) Monitoring of Cathodic Protection Systems
  - i) Cathodic protection facilities shall always be maintained in serviceable condition and be electrically tested and inspected once a year with appropriate corrective measures taken where such inspections reveal any weakness in the system. A report of such inspections shall be lodged with the Department at the completion of such exercise. However, all sources of impressed current rectifiers and other associated devices shall be inspected and tested at quarterly intervals to ensure that they are functioning properly.

#### 2.5.2 Internal Corrosion Control

- a) The general rule shall be that of avoiding transportation of any corrosive materials in a pipeline without appropriate measure taken to mitigate the corrosion effect of the commodity on the internal section of the pipeline.
- b) However, internal corrosion shall be prevented either by frequent pigging, inhibiting, scraping or application of internal coating on the pipeline before laying.
- c) Whichever method is used, appropriate precautions shall be taken, such as the utilization of sufficient coupon holders when inhibitors are used and the compliance with established industry standards of internal coating materials.

##### 2.5.2.1 Monitoring of Internal Corrosion

This shall be by the running of intelligent pig or other internal pipeline survey instrument throughout the whole length of the pipeline at least once in five years. A report of such annual inspection shall be lodged with the Department on schedule.

## SECTION III

### GAS TRANSMISSION AND DISTRIBUTION PIPELINE

#### **3.1.0 GENERAL DESIGN CONSIDERATIONS**

3.1.1 Scope: The guideline covers the design, fabrication, installation, inspection, testing, operation and maintenance of gas transmission and distribution systems. It shall apply to piping systems required to operate with metal temperature of between 450oF and minus 20oF only.

#### 3.1.2 Design Criteria and Materials Specifications

Applicable standard shall be the ANSI/ASME B31-8 1986 or its later editions under the title “Gas Transmission and Distribution Piping Systems”

- a) All materials to be used shall generally conform to the specifications in appendix B of the reference Standard ASME B31.8 for the structural materials of the line pipe, valves, fittings and flanges, bolting and tubing.
- b) The pipelines shall be generally seamless or of the ERW and SCAW types.
- c) Thermoplastic and thermosetting pipe materials shall also be acceptable provided that they conform with ASTM specifications 02513 and 02517 respectively and shall be inhibited against material degradation effects of ultra violet rays if used in locations where the pipeline is exposed to sunlight.
- d) Weld ability of the ferrous pipe material shall be tested in accordance with the requirements of API standard 1104.
- e) Adequate provision shall be made for the flexibility of the pipeline while under pressure in the form of anchorage and guide points and for temperature induced stresses by allowing for expansion joint couplings.

#### 3.2.0 Guideline for the Design, Construction and (Capital)

##### Testing of Gas Pipeline

3.2.1 Application These guidelines shall apply to the design and construction of new pipelines and the replacement of existing ones as from the date of adoption of this document.

#### 3.2.2 Applicable Standards and Specifications

- a) The standards and codes specified in ANSI/ASME B31.8 and National Association of Corrosion Engineers Standards RPO169-96 generally referred to as NACE standard RPO169-96 shall be followed in the design and construction of gas pipelines and their corresponding corrosion control installation respectively.
- b) Long distance gas transmission pipelines shall be made of steel, the design and construction of which shall be governed by the population density indices specified in ANSI/ASME B31.8 and the corresponding design factors. Also the specified construction types of pipelines in the proximity of main roads and railroads and the mode of their crossing shall be complied with.
- c) The minimum depth of burial shall be as specified in section II paragraph 2.2.2 (h) but where these minimum depths could not be achieved or the pipeline at these points shall be encased, bridged or specially reinforced to withstand any anticipated external load.
- d) There shall be a minimum clearance of 0.5 meter between the pipeline and any other underground structure not connected with it.
- e) It shall be mandatory for all buried pipelines to be protected against corrosion and where any pipeline is to transport corrosive or toxic gas, then the design parameter shall be such that the gas pressure at any time in the pipeline shall not result in a hoop stress greater than 60 percent of the specified minimum yield strength of the pipeline material based on the nominal wall thickness. Also, block valves and check valves for such pipelines shall be so located as to prevent the escape of the corrosive or toxic gas into the atmosphere in the event of a pipeline failure.
- f) Inspection of pipeline construction materials and its appurtenances, welding, ditching, stringing and the general installation shall follow the procedure outlined in chapter IV of the ANSI/ASME B31.8.
- g) All gas pipelines laid in farmlands, virgin areas and sparsely populated areas shall be tested with water up to a minimum pressure of 125 percent of their maximum operating pressure or with air up to 110 percent of their minimum

operating pressures. Pipelines laid in densely populated areas shall be tested ONLY with water up to a minimum and the test result shall be lodged with the nearest office of the Department in the area.

- h) Leak test shall however be performed on the pipeline system with the use of pressurized air or gas between 100 PSI to 20 percent of the minimum specified yield of the material for pipelines that has been designed to withstand 20 percent or more of the specified minimum yield strength. While pipeline to operate at below 100 PSI be leak tested at maximum system pressure.

### **3.2.3 Gas Pipelines made with materials other than ductile steel**

- a) Cast Iron Materials

Cast iron Materials shall be used for gas pipelines under specified application to and special approval by the Department and all such applications shall be supported with the compelling reasons for using Cast Iron Material. In such the design considerations shall strictly follow the specifications in paragraph 842 of the reference standard.

- b) Plastic Materials: The use of thermoplastic and thermosetting plastic materials of the grades specified in ASTM D 2513 and ASTM D 2517 shall be generally allowed for laying service lines only.

- a. The design pressure for plastic gas piping system shall be governed by the formula given in paragraph 824.31 of reference standard (ANSI/ASME B31.8) where the value of the plastic design factor shall not be less than 0.32 for any case.

- ii) Plastic pipe materials shall not be used in any service where the maximum and minimum operating Temperatures shall be higher or lower than 100oF and 20oF respectively
  - iii) Plastic pipe materials to be used shall be inhibited against the effect of Ultraviolet rays which renders such materials brittle when exposed to sun light

- iv) Plastic pipes or tubing shall not be threaded at joints but shall be jointed by the solvent cement method, adhesive method, heat-fusion or by the means of compression coupling or flanging whichever conforms with the manufacturer's specifications.
- v) Extreme caution shall be taken in laying plastic pipelines to avoid any damages to the material. All buried plastic pipelines of ½ inch nominal diameter and above shall have a minimum wall thickness of 0.1 inch while those below ½ inch nominal diameter shall have a wall thickness not less than 0.06 inch.
- vi) Plastic pipes shall be buried in undistributed or well-compacted soil while no meter bends shall be permitted at any portion of the pipeline.
- vii) Plastic pipes shall be tested at pressure not less than 150 percent of their maximum operating pressure or 50 PSI whichever is greater and shall not on any occasion be subjected to a pressure more than 300 percent of their maximum operating pressure.

### **3.3.0 OPERATION AND MAINTENANCE OF GAS PIPELINES.**

- 3.3.1 This shall be as specified in paragraph 2.40 and 2.5.0 of section II of this document in addition to which the provisions of NACE standard RP1069-96 shall be followed in the design and maintenance for the associated corrosion control system of the pipeline.
- 3.3.2 Any gas pipeline that will not be put into use for more than six months after construction shall be filled with inert gas or nitrogen and if it is to be put into use after one year of completion shall be pressure tested and certified by the Department before being put into use.
- 3.3.3 Gas pipeline systems shall be well purged with water, air or inert gas before undertaking any repairs and the environment of the repair site shall be constantly monitored with gas detecting device to ensure adequate safety.

## **SECTION IV**

### **PROCEDURE FOR UPGRADEING OF A PIPELINE OR FOR CHANGING THE SUBSTANCE TRANSMITTED BY THE PIPELINE**

#### **4.1.0 PIPELINE UPGRADE.**

##### **4.1.1 Application**

Any Licensee that desire to upgrade the maximum operating pressure of this pipeline shall lodge an application with the Department to that effect giving the following information:

- a) The reason for his desire to operate the system at a lower/higher pressure than its original maximum designed pressure.
- b) The leak/repair history of the pipeline to be graded.
- c) The modification that shall be made to the pipeline system to qualify it for upgrading in accordance with the specifications contained in paragraph 845 of ANSI/ASME 31.8
- d) The test that will be carried out on the pipeline system after upgrading which shall be compatible with the procedure outlined in section III paragraph 3.2.0 of this documents in which the upgrade maximum operating pressure will now be pressure parameter to use for the tests.

4.1.2 The grant of approval to carryout the upgrading and operate the upgrade pipeline at the new pressure shall be contingent upon satisfactory fulfilment of the conditions listed in 4.1.1 above.

#### **4.2.0 CHANGING OF THE SUBSTANCE TRANSMITTED BY THE PIPELINE**

##### **4.2.1 Application**

This shall apply to situations when the Licences desire to change the nature of the fluid transmitted by the pipeline in the following manner:

- a) From Liquid Petroleum to Gas
- b) From sweet Gas to Corrosive Gas
- c) From Hydrocarbon substance to water etc.

##### **4.2.2 Procedure**

In all such cases, an application for making the change shall be made to the Department giving the following information.

- a) The reason for the change

- b) The leak history of the pipeline in question
- c) The modifications that shall be made to the pipeline system for it to be capable of rendering the new service.
- d) Other relevant information that will enable the Department undertakes a realistic assessment of the request for the purpose of approval.

4.2.3 Emergency Notice.

In case of an emergency, the nearest office of the DPR shall be notified of the above  
(4.2.0)

## SECTION V

### PROCEDURE FOR DISCONTINUATION, ABANDONMENT AND RESUMPTION OF OPERATION OF PIPELINE SYSTEMS

#### 5.1.1 Discontinuation of Operation of Pipeline Systems

- a) The Licensee shall apply to the Department giving three months notice of its intention to discontinue with the operation of the pipeline system or ancillary facilities such applications shall be accompanied with the following
  - i) The reasons for the discontinuation of the operation of the pipeline system
  - ii) Two copies of the plan of the entire pipeline or part there of in which the operations is to be discontinued shown in green colour.
  - iii) The proposed method of discontinuing operations.

#### 5.1.2 Procedure for Discontinuation of operations

- a) Apart from the conditions that may be specified when granting discontinuation approval, the pipeline to be discontinued with shall be disconnected from all other facilities like other pipelines, meter stations, ancillary facilities and other appurtenances.
- b) It shall be purged of all Petroleum Liquid or Gas with water or an inert material and capped at both ends with moisture resistant materials.

#### 5.2.0 Abandonment and Removal of Pipelines

5.2.1 All the steps outlined in 5.1.1 and 5.1.2 above shall be followed in cases where the pipeline is to be completely abandoned.

5.2.2 The right of way of abandoned pipelines shall continue to be maintained and clearly identified for as long as the pipeline remains in place.

5.2.3 In cases where the pipeline is to be removed, the Licensee shall furnish the Department with the proposed work programme for its removal. Also the Licensee shall restore into perfect condition the right of way of the pipeline and other disturbed land areas in the neighbourhood after its removal.

#### 5.3.0 Resumption of Operation of an Abandoned or Discontinued Pipeline

5.3.1 An application shall be made to the Department for approval to resume operations in an idle pipeline system.

5.3.2 Such applicants shall state reasons for the resumption of operation and the proposed method to be used in reactivating the pipeline.

5.3.3 All such pipelines shall be tested as new under the proposed operating conditions of the pipeline after reactivation.

**DEFINITION:**

***FLOWLINE***- A pipeline flowing mineral oil, natural gas and their derivatives or components from the wellhead to the first gathering manifold whose length is less than or equal to 1Km and does not traverse third party area, facility or infrastructure shall be regarded as a flowline.

***PIPELINE***- See section eleven, paragraph 2 of part 3 of the oil and pipeline Act cap 338 LFN 1990.

***EMERGENCY SITUATION***- An event/operational offset that requires an immediate remedial action/solution of that nature or extent that can be termed mandatory.

***DEPARTMENT OF PETROLEUM RESOURCES  
LAGOS***