STANDARD OPERATING PROCEDURE
IN CASE OF PIPELINE LEAKS

PIPELINE HEADQUARTERS,
NOONMATI, GUWAHATI
Approval

PL/SOP/14/01

STANDARD OPERATING PROCEDURE
IN CASE OF PIPELINE LEAKS

Prepared by:

[Signature]
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Reviewed by:

Head (M&S)
Head (TTI& FC)
Head (E&C)
Head (PLO)
Head (PLP)
Head (Admin)
Head (L&C)
Head (F&A)

Approved by:

General Manager (PL M)
General Manager (Commercial)
General Manager (PL S)
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<th>Description</th>
<th>Page no.</th>
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STANDARD OPERATING PROCEDURE
IN CASE OF PIPELINE LEAKS

FUNCTION AND SCOPE: The purpose of this note is to identify the steps involved in detecting, isolating and repairing a leak in the pipeline in a safe and efficient manner. It also spells out the duties and responsibilities of various officers in the Pipeline Sphere in the event of a leak or any other major fault occurring in the pipeline. For details regarding repair of pipe defects and leaks, pipeline maintenance procedures, etc. Sections A-5 and A-6 of the “Operations Manual” must be consulted.

PROCEDURES:

Note: Action to be taken for the assigned job by designated official or in-charge of the respective official or a person nominated by the concerned official.

<table>
<thead>
<tr>
<th>Function</th>
<th>Details of Action</th>
<th>Action to be taken by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Detection</td>
<td>Leaks may be detected by Engineer in shift duty in Main Control Room from the alarms and checking of unscheduled discrepancies in the parameters displayed in the monitor of the control room; otherwise its occurrence shall be communicated to him by Pump Station In Charge or any other person who may come to know about the occurrence of the leak.</td>
<td>Engineer in Shift Duty in main control room (MCR), Pump Station In Charge</td>
</tr>
</tbody>
</table>
| 2. Immediate Action. | Immediately on detection of the fault or receipt of information of the fault, after making the necessary checks, the Engineer in shift duty (MCR) shall take the following steps:  
  (a) Shut down the pumping units of upstream station, inform Pump Station In Charge and regulate the pumping operations as demanded by the situation.  
  (b) Close the valves in the Pump Station and Repeater Station/Repeater Stations / Repeater Station and Pump Station, upstream and downstream of the leak, depending on the location of the leak. | Engineer in shift duty (MCR) |
|                  |                                                                                                                                                                                                                  | Pump Station In Charge                                    |
|                  |                                                                                                                                                                                                                  | Engineer in shift duty (MCR), Pump Station In Charge      |
| 3. Reporting | After detecting the leak or getting information from Pump Station In Charge about the leak, the Engineer in Shift Duty (MCR) shall inform the following officers over telephone about the suspected leak.  
GM(PLS) / H(PLO) / CEPL (OM)  
Who in turn shall arrange to inform over telephone the following officers about the occurrence.  
Head (M&S) / Head (E&C) / CEPL(PLM) / Head (TTI & FC) / Head(Admin) / CEPL(S&E), etc. or subsequent in-charges in case of absent. | Engineer in Shift Duty (MCR)  
GM(PLS) / H(PLO) / CEPL (OM) |
|---|---|---|
| 4. Initiate Action  
4.1 Ascertain Approximate Location | GM(PLS), Head(PLO), Head (M&S), Head (TTI&FC), Head (Admin)/CEPL(OM), CEPL(PLM), CEPL(S&E), DyCEPL(PLM) shall assemble immediately in the Control Room to take stock of the situation and to take required steps immediately, especially in respect of:  
(i) Ascertaining the exact location of leak and its magnitude.  
(ii) Informing Police and other authorities at Guwahati. District / Sub-divisional head-quarters about the leak and requesting them information, which they may have or receive in course of time.  
(iii) Coordinating, sending out ground patrols from stations and arranging for helicopter.  
(iv) Informing the nearest Police headquarter of the district in which the leak occurred. Informing the district authority.  
If possible, sectionalise the location of leak with the help of Repeater Station remote control valves and Pump Station block valves. | GM(PLS), Head(PLO), Head (M&S), Head (TTI&FC), CEPL(OM), CEPL(PLM), CEPL(S&E), DyCEPL(PLM)  
Pump Station In Charge |
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Responsible Officer(s)</th>
</tr>
</thead>
</table>
| 4.2 Ascertain Exact Location                 | On being directed by GM(PLS)/Head(PLO), Pump Station In Charge with one / two Helpers, from the nearest Pump Station, or from both the Pump Stations-upstream and downstream of the leak, shall make arrangements to detect / identify the exact location. This ground party in a WLL set fitted jeep, with hand wheels of block valves, valve box keys, set of general tools, i.e. adjustable spanners, hammer, chisel, etc., torch light (flameproof and general purpose), on their way will enquire from Police Stations and other agencies of any reported leak. The duties of party/ parties will include:-  
(i) locating the leak site  
(ii) closing of upstream and downstream valves.  
(iii) ensuring safety of area by posting guards and forbidding smoking and use of naked lights.  
(iv) organizing labour and raising earth bunds, cutting cellar pits to contain leak.  
(v) Reporting about leak site, quick and convenient approach to the site of incidence and pertinent details to PHQ  
(vi) Organizing labour and standing by till the arrival of maintenance crews.  
(vii) Obtaining permission from land owners, if necessary, for the use of their private land. | Pump Station In Charge, Chief Engineer (T), Base Telecom Incharge / Telecom Incharge of nearest Pump Station |
<p>| 4.3 Location Isolation And Arrangement of Security |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Pump Station In Charge, Sr.Manager (Security)                                             |
| 4.4 Monitoring Progress of Work              | Head (PLO) and in his absence CEPL (PLM) will set up a control room to monitor the progress of work on round the clock basis. The control room will assist in coordinating the activities of various departments.                                                                                                                                                                                                                                                                   | Head (PLO) / CEPL (PLM)                                                                  |</p>
<table>
<thead>
<tr>
<th><strong>5. Decision on Leak Repair</strong></th>
<th>At the earliest possible, Head(PLO), CEPL(PLM) should take off by helicopter, or by any other mode of transport, for site to take stock of situation, work out the methods of leak repair in consultation with GM (PLS), who will be provided with an accurate information on the extent of damage.</th>
<th>Head(PLO)/ CEPL(PLM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6. Technical Support</strong></td>
<td><strong>6.1 Telecommunication link establishment</strong> Nearby base Dy.Chief Engineer (Telecom) / Suptdg. Engineer (Telecom), nearest pumping station should make arrangements to establish communication link from leak site to nearest Repeater/ Pump Station with PHQ.</td>
<td>CEPL(Telecom.)Radio Base Telecom Incharge / Telecom Incharge of nearest Pump Station</td>
</tr>
<tr>
<td></td>
<td><strong>6.2 Transporting materials/ tools/equipment</strong> Head (PLO) and CEPL (PLM) will soon after receipt of the message of pipeline leak, direct mobilization of men, materials and equipments, for sending the same to site in an orderly manner as per site requirements.</td>
<td>Head (PLO) CEPL (PLM)</td>
</tr>
<tr>
<td></td>
<td>(a) 1st and 2nd trucks as per Appendix No 1 should carry items, required for earth work, oil recovery, area lighting and camping.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) Next transport (s) should carry items as per Appendix No. 2 required for (i) oil removal (ii) dewatering general tools etc. (iii) welding machines, oxygen and acetylene bottles with accessories, CO₂ type fire extinguishers. (iv) Subsequent transports can carry equipments and materials as required for the work.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Notes :</strong> (i) Besides transport as available with pipeline maintenance department, vehicles from other departments will be required at short notice.</td>
<td></td>
</tr>
</tbody>
</table>
(ii) If it is possible, about 20-25 labourers should be sent from the base or nearby station. These labourers should be made to stay at site and be available at all times.

During the period the repair job is in progress, arrangements are to be made for manning the communication points for receiving and transmitting messages.

GM(PLS)/ Head (PLO)/ Head (M&S)/ Head (E&C)

will coordinate the release of suitable personnel from various sections.

[Persons to be released should be earmarked and trained by CEPL(Telecom) Radio]

<table>
<thead>
<tr>
<th>7. Messing/ Canteen etc.</th>
<th>CEPL(PLM) in consultation with nearest Station Engineer will arrange for providing amenities like fresh water, tea, food, etc. for personnel working at site.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>CEPL(PLM)</strong>, Pump Station In Charge, Sr. Manager (ER)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Supervision</th>
<th>In order to ensure speedy completion of repair work, CEPL(PLM) of the Sector along with other personnel, will camp at site. CEPL (PLM) will closely monitor the progress of work and liaise between the site, maintenance base and PHQ, for meeting various requirements of repair work.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>CEPL(PLM)</strong>,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Returning Line to Service</th>
<th>After completion of the repair- temporary or permanent, test the line to ANSI B 31.4. Purging displacement of the section, return line to service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>CEPL(PLM)</strong>,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. Reporting</th>
<th>GM(PLS) will keep Director (Operations), apprised of developments. CEPL(S&amp;E) shall to comply with the requirement under the Mines Act and other statutory bodies. Head(F&amp;A) shall inform GM(F&amp;A) for intimating the Insurance company.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>GM(PLS)/ D(O)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>CEPL(S&amp;E)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Head(F&amp;A)/GM(F&amp;A)</strong></td>
</tr>
</tbody>
</table>
## Appendix No.1

**DETAILS OF CAMPING AND OTHER ITEMS WHICH WILL BE IMMEDIATELY REQUIRED IN THE EVENT OF PIPELINE LEAK / DAMAGE**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Tents complete</td>
<td>6 Nos.</td>
</tr>
<tr>
<td>02.</td>
<td>Portable generating set</td>
<td>1 No.</td>
</tr>
<tr>
<td>03.</td>
<td>Flame Proof flood light &amp; wires</td>
<td>4 Nos.</td>
</tr>
<tr>
<td>04.</td>
<td>Camp cots</td>
<td>8 Nos.</td>
</tr>
<tr>
<td>05.</td>
<td>Kudalis</td>
<td>12 Nos.</td>
</tr>
<tr>
<td>06.</td>
<td>Shovels</td>
<td>12 Nos.</td>
</tr>
<tr>
<td>07.</td>
<td>Baskets</td>
<td>12 Nos.</td>
</tr>
<tr>
<td>08.</td>
<td>Buckets</td>
<td>12 Nos.</td>
</tr>
<tr>
<td>09.</td>
<td>Drums for water storage</td>
<td>2 Nos.</td>
</tr>
<tr>
<td>10.</td>
<td>Cooking utensils</td>
<td>1 Set.</td>
</tr>
<tr>
<td>13.</td>
<td>Hurricane lamps/Petromax/ Solar lamp/Gas light</td>
<td>6 Nos</td>
</tr>
<tr>
<td>14.</td>
<td>Tool box (General purpose)</td>
<td>1 No.</td>
</tr>
<tr>
<td>15.</td>
<td>H.S.D. Oil</td>
<td>50 Litres</td>
</tr>
<tr>
<td>16.</td>
<td>Kerosene Oil</td>
<td>50 Litres</td>
</tr>
<tr>
<td>17.</td>
<td>CP2 Sump Pumps with delivery hoses</td>
<td>2 Nos.</td>
</tr>
<tr>
<td>18.</td>
<td>Air Compressor with hoses</td>
<td>1 No.</td>
</tr>
<tr>
<td>19.</td>
<td>Empty barrels</td>
<td>5 Nos.</td>
</tr>
<tr>
<td>20.</td>
<td>Funnels</td>
<td>2 Nos.</td>
</tr>
<tr>
<td>22.</td>
<td>HDPE linings/ Sheets</td>
<td>4 Nos.</td>
</tr>
<tr>
<td>23.</td>
<td>DCP Type Fire Extinguishers (75 Kg. Cap)</td>
<td>2 Nos.</td>
</tr>
<tr>
<td>24.</td>
<td>DCP Type Fire Extinguishers (10 kg Cap)</td>
<td>10 Nos.</td>
</tr>
<tr>
<td>25.</td>
<td>Barricade tape</td>
<td>200 M</td>
</tr>
</tbody>
</table>
Appendix No. 2

DETAILS OF EQUIPMENT TOOLS AND OTHER ITEMS REQUIRED FOR PIPELINE LEAK / DAMAGE REPAIR

01. Oil Recovery Items
   (a) Empty barrels 50 Nos.
   (b) Large funnels 2 Nos.

02. Dewatering Arrangements – When Required
   (a) Gorman Rupp/ Iron Maxflow Pumps with suction and delivery hoses 2 Nos.
   (b) Pegson Marlow/ Kirloskar Pumps with Suction and delivery hoses 2 Nos.

03. Welding machine(s) with cables and other accessories
   (Skid mounted- 2 nos.; Portable- 1No.) 3 Nos.

04. Oxygen and Acetylene gas cylinders, hoses and cutting set 2 Sets.

05. CO₂ fire extinguishers 2-4 Nos.

06. Wooden skids and planks 20-30 Nos.

07. 44 cms/60 cms Hacksaw frames with blades 2 Nos.

08. Explosimeter(s) 1-2 Nos.

09. Pneumatic pipe cutting saw 1 No.

10. Coffing hoists 6 Nos.

11. Trifor winches 6 Nos.

12. Pipeline maintenance Tool box 2 Nos.

13. 20 cms dia pipe about 6 metres long 3-4 Nos.

14. Petrol / H.S.D / Lubricants As required

15. 50 mm (2”) Nipples, pipe welding/bolting saddles, weld plus ends, leak clamps, tapping/stoppling machines, pipe ground clamps, etc. As required

16. Pipe lengths and pipe fittings As required

17. Additional tents and other camping facilities As required

18. Heavy equipment and other machines As required

19. Foam Jerrican (30 Lit.cap) .. 10 Nos.

Exact requirement of equipment, pipes/fittings and specialized tools, etc will be worked out after damage has been assessed and methods of repair have been decided.)

- 10 -
SECTION A-5

OPERATING PIPE DEFECTS AND LEAKS

A. FUNCTION AND SCOPE - The function of this report is to record all known facts and conditions related to an operating pipeline defect or leak and its temporary or permanent repair. These records are to be retained as long as the section of line involved remains in service. This report is not intended for use on stock pipe or pipe under construction.

B. REPORT - The pipe defect and leak report, Form OIP-2, is designed to easily record essential information pertinent to a leak or defect such as location, type, description and cause of defect, physical properties of the pipe, type and condition of coating and type of repair. In the event permanent repairs cannot be made immediately, a space is provided for recommendation on the method of permanent repair.

In the upper left hand corner of this form a space is provided for classifying the repair as permanent or temporary. The record of each defect will remain under review until a report is received on the permanent repair.

The section on coating is an essential part of the report in that the coating is often a factor in the defect and leak development, and in any case an opportunity is given to check the condition thereof. The Cathodic Engineer should be given an opportunity to examine the condition of the coating and leak prior to cleaning or otherwise disturbing the natural conditions.

C. RESPONSIBILITY - The responsibility for preparing and submitting this report is that of the Head of Pipeline Maintenance Section at Pipeline Department.

D. REPAIR OF PIPE DEFECTS AND LEAKS - Each pipe defect or leak discovered in an operating pipeline requires individual consideration and judgment as to the potential danger of the leak or defect which therefore dictates the method of repair. Basically, defects or leaks fall in one of two general categories - those requiring immediate cut-out or weld repairs, and those which may be temporarily rectified by emergency repair pending a permanent repair at a later date. For Maintenance procedures relating to such repairs see Section A-6.
OIL INDIA PIPELINE

OPERATING PIPE DEFECT AND LEAK RECORD

Report of

- Initial Discovery
- Temporary
- Permanent Repair

1. LOCATION

BASE ____________________ Km.P__________________ Meters East/West ____________________

SPECIAL FEATURES ____________________________________________

2. OCCURRENCE:

DATE _____________ TIME ____________ DISCOVERED BY WHOM __________________________

DATE _____________ TIME ____________ REPORTED TO H.Q. BY WHOM ______________________

3. CLASSIFICATION:

OIL LEAK : MAJOR / MINOR

PIPE DEFECT : MAJOR / MINOR

4. TYPE OF DEFECT:

SEAM LENGTH _____________" WIDTH _____________" DEPTH _______________"

DENT LENGTH _____________" WIDTH _____________" DEPTH _______________"

CORROSION LENGTH _____________" WIDTH _____________" DEPTH _______________"

CRACK LENGTH _____________" WIDTH _____________" DEPTH _______________"

POROSITY NUMBER OF HOLES __________________ DIAMETER ____________________"

OTHER INFORMATION_____________________________________________________________________

DEFECT IS LOCATED AT __________________________ O’CLOCK ON PIPE LOOKING DOWNSTREAM ON

PIPEWALL*/GIRTH WELD* / LONGITUDINAL WELD*.

IF DEFECT NOT ON GIRTH WELD, LOCATING DISTANCE TO GIRTH WELD _____________’ ______________"

DIA METER OF PIPE _____________________” WALL THICKNESS ____________________"

PIPE MANUFACTURER FROM STRINGING CHART _________________

5. TYPE OF TEMPORARY REPAIR:

BOLTED LEAK CLAMP*

LEAK COUPLING*

OIL LEAK SEALED OFF YES / NO *

OTHER INFORMATION ____________________________________________

6. TYPE OF PERMANENT REPAIR:

CUT OUT AND REPLACE SECTION * _______________ LENGTH ____________’ ______________"

WELDED TYPE CLAMP* 

WELDED TYPE COUPLING* 

OTHER* DESCRIBE _______________________________

METHOD APPROVED BY CHIEF ENGINEER ____________________________________________________

7. COAT AND WRAP CONDITION:

TYPE __________________________________________________________

ACTUAL THICKNESS _______________ MON TO METAL GOOD / FAIR / BAD*

EVIDENCE OF SOIL STRESS YES / NO *

REMARKS _____________________________________________________

8. OPERATION:

LINE CLEARED FOR OIL MOVEMENT AT ________________ KG/CM² PRESSURE

- Delete which is not applicable

----------------------------------
Deputy Chief Engineer

Date ___________________________________

Distribution :
- Chief Engineer Pipeline (Operation)
- Deputy Chief Engineer Pipeline (Pipeline Maintenance)/ (Oil Movement)/ (Electrical & Cathodic)
- BASE PIPELINE INCHARGE.
SECTION A-6

PIPELINE MAINTENANCE PROCEDURES

A. FUNCTION AND SCOPE - The function of this section is to lay down acceptable maintenance procedures for temporary and permanent repairs to the pipeline, and to ensure that adequate safety measures are adopted.

B. RESPONSIBILITY - The responsibility for ensuring that such practices are adhered to in the field is that of the Base Pipeline Maintenance Engineers in charge of work in progress.

C. TEMPORARY LEAK REPAIRS - A complete range of approved leak repair materials is stocked at each maintenance base as listed in the Schedule of Pipeline Maintenance Equipment. For the majority of defects likely to be encountered, this range of equipment will provide for a safe and temporary cold repair. If, as a result of a major leak, a pipe joint/pup is to be replaced/inserted, a cold repair using 'weld + end' couplings is acceptable as a temporary repair bearing in mind the need to get the line operational soonest, and that crude spillage may prevent welding for some time.

A temporary repair in these categories should be made permanent at the first opportunity, and here, each case must be judged on its merits. Generally speaking, subsequent welding of approved leak couplings, 'weld + end' couplings, and leak patches will constitute a permanent repair, however, approval of the Chief Engineer is required before so doing. Subsequent welding should only be carried out when the area is gas-free and with oil moving in the line at reduced pressure.

All repairs in the category of temporary must be regularly inspected, and any temporary-leak-clamps having neoprene inserts checked for tightness fortnightly.

D. SCHEDULED PERMANENT REPAIRS - When any permanent repair is scheduled necessitating cutting the line, a water plug should whenever possible, be inserted to minimise crude spillage and for safer working.

If the faulty section is to be adjacently stoppled, such welding as required for tapping should be carried out with oil moving at reduced pressure, before insertion of water plug. If the distance between stoppled is not excessive, a water plug need not be placed provided adequate and prior arrangements are made for disposing crude spillage.
Immediately after the line is cut, arrangements must be made for blinding the upstream and downstream ends of the line. If the line is shut down, Maloney Templugs may be used to contain any static head developing/resulting from nearest block valves.

If the faulty section is by-passed with a temporary line such that pressure other than static head exists at valves/stopple valves immediately upstream and downstream, the line when cut, must be immediately blinded by either adequately rated cone-lock-stoppers or capped - ‘weld + end’ - couplings. Maloney Templugs must never be used for blinding when pumping is in progress under these conditions.

The Base Pipeline Maintenance Engineer In-charge of the work is solely responsible for and solely authorised for valve operation and safety connected therewith when field repairs are in progress. This responsibility can in no circumstances be delegated.

1. **Cold Closing Tie In** - This is permissible under certain circumstances to be decided by the Chief Engineer, and would consist of using ‘weld + end’ couplings to be welded later on when oil is again moving in the line at reduced pressure.

2. **Hot Closing Tie In** - This is the preferable method of tying in, but may only be carried out by trained crews. In each case the trained welder must be authorised on Form OIP-3 in writing by the Base Pipeline Maintenance Engineer In-charge before carrying out this work, and authorisation must be cleared by Chief Engineer before commencement of hot tie in.

---

**E. CRUDE OIL SPILLAGE**

1. Adequate arrangements must always be made to safely contain spillage, if the line has to be cut for any reason or if a major leak occurs. If a line cut is scheduled, usually a water plug will be inserted into the section in question. However, the resultant emulsion should be treated as crude spillage insofar as safety and crop damage is concerned. Safety points to be observed are as follows;

   a) Spillage storage, if not mobile, is to be sited at not less than 60 metres distance from bell hole if welding is to be carried out later on.

   b) Posting of guards to keep villagers away from spillage and forbidding the use of smoking and naked lights.

2. If a serious leak occurs, e.g., a split seam, it is possible that a large area will be affected by spillage, particularly, if the pipe section is under a static head. The following precautions must be immediately taken.
i) Enclosing the area with an earthen bund to contain the spillage.

ii) Posting of guards to keep villagers away from bunds and forbidding of use of smoking and naked lights.

iii) If welding is to be carried out in the vicinity of a spillage/pit, the following precautions must be adopted.

   a) Since "light ends" in the crude spillage will evaporate, due attention must be paid to dangers of "flashback". Welding should not be carried out within at least 60 meters of a crude oil spillage pit, and to the windward side.

   b) Irrespective of this distance, however, continuous explosimeter-readings must be taken during welding. If, for any reasons, concentration of inflammable gases causes the instrument to register danger signal, welding must be immediately discontinued, until the atmosphere again registers safe.

   c) Welding sets should be located at least 60 meters away from the spillage. Plant attendants should have strict instructions to shut down the set if the explosimeter indicates a hazardous atmosphere emerging.

F. WELDING - See Section E, Pipeline Welding Specification.

G. TESTING - When the line has been cut, or a new section introduced, the line section shall, wherever possible, be brought up to maximum working pressure for a period of at least four hours.

Any section so introduced shall, however, be tested in accordance with ANSI B 31.4 (latest edition) before tieing in.

H. OIL RECOVERY
1. Crude oil temporarily stored in spillage pits must be recovered as soon as possible, both from a safety and an economical aspect. If quantities involved are small and the area accessible, mobile tanks should be employed, and recovery effected at the nearest pump/repeater station. If the amount involved is large, line tapping may be used and the oil pumped into the line by means of a high-pressure recovery pump. The same precautions outlined under Crude Oil Spillage should be adopted as applicable.
2. Clean up of the area is an important and necessary conclusion after all crude oil has been disposed of. This is achieved by spreading a layer of dirt over the area, sufficient to soak up all patches.

I. SAFETY - The following safety points must at all times be strictly observe:

GENERAL

i) The Pipeline In-charge or his authorised representative in charge of the job shall brief the welder on the possible hazards of the specific job.

ii) The Pipeline In-charge or his authorised representative in charge shall obtain the necessary approvals and notify those concerned before the welding operation begins.

iii) Welders are responsible to the Pipeline Maintenance Engineer In-charge for the proper maintenance and safe operation of welding equipment.

iv) The welder should always thoroughly instruct his helpers concerning the work procedures and safety procedures in the specific job before it is begun.

v) The Pipeline Maintenance Engineer In-charge and the welder should see that the welder and helpers wear adequate eye protection and follow safety precautions while the welding job is being performed.

vi) Each welding unit should have available at least two 10 kg CO2 fire extinguishers and a first aid kit including a special burn kit. The welder is responsible to the Pipeline Maintenance Engineer In-charge for the condition of the safety equipment carried with the welding unit.

vii) Flames, sparks, molten slag, and hot metal should be prevented from coming in contact with combustible materials.

Viii) Whenever practicable, the object to be welded upon should be moved to a location designated as safe for welding, or movable fire hazards should be removed.

ix) Before welding in any bell hole or building at any location where there has been a crude oil or product spillage, the area is to be tested with an explosimeter and must be gas-free. This testing should be continued at short intervals during the repairs to insure against the encroachment of explosive mixtures. Before the welder begins his actual welding operation, he should test the pipe or bell hole by lowering a lighted welding torch into it.
x) Welding must be stopped if vapours become noticeable in the area in which the work is being performed and should not be resumed until the area is tested with an explosimeter and found to be gas-free.

xi) Screens or other suitable means should be used to protect nearby employees from the rays of the welding arc.

xii) When a weld is to be made on a partition or on the side of a building or structure, all combustible material should be removed from the opposite side of the partition or wall.

SAFETY PRACTICES IN PIPELINE WELDING

i) Only experienced Pipeline Maintenance Engineers and trained welders/workmen should work on a loaded pipeline.

ii) In welding on a loaded pipeline, only electric arc welding shall be used, and only when enough fluid is flowing through the pipeline to carry away the heat of the arc. (Welding limitations on specific types of pipe should be closely followed).

iii) Bell holes for repairs to pipelines should provide sufficient room for the welder to work freely and to make a quick exit in an emergency. The Pipeline Maintenance Engineer In-charge should determine if shoring is needed to prevent a cave-in.

iv) A safety belt with lifeline attached should be worn by the welders who work in deep bell holes.

v) An experienced employee should hold the lifeline during the welding operation.

vi) Only the welder should be permitted in the bell hole during welding operations.

vii) Fire extinguishers shall be manned and be ready for instant action should a fire occurs when welding on a loaded pipeline

viii) A first-aid burn-kit should be placed in readiness and be available for instant use before starting a welding operation.

ix) When welding on a loaded pipeline, mobile radios must be used for communication, and should be kept "on" at all times for ready communication with Oil Movement Engineer On Duty (Dispatcher).
x) Before welding on a trunk or main line, in addition to the precautions as listed in this section, the following specific procedures must be followed:

a) The Pipeline Maintenance Engineer in charge of the welding must notify the Deputy Chief Engineer Pipeline (Oil Movement)/Deputy Chief Engineer Pipeline (Pipeline Maintenance) before commencing work. If the welding is to be done on a loaded line, the Deputy Chief Engineer Pipeline (Oil Movement)/Duty Oil Movement Engineer and the Pipeline Maintenance Engineer In-charge will discuss repairs to be made to the end that a safe working pressure may be determined and maintained and other safety precautions may be taken.

b) The Deputy Chief Engineer Pipeline (Oil Movement)/Duty Oil Movement Engineer will be responsible to see that the pressure agreed on is not exceeded until the welding operations are completed.

c) If welding is to be done on an open line, the Deputy Chief Engineer Pipeline (Oil Movement)/Duty Oil Movement Engineer will ensure that all pumping units have been shut down and give clearance to the Pipeline Maintenance Engineer In-charge to enable him to close the immediate block valves pertinent to the job in hand. The Pipeline Maintenance Engineer In-charge of the work is alone responsible in ensuring that these block valves are closed and are locked out to prevent operation by unauthorised persons. All block valves so locked out are to be tagged with a red danger board "Danger Do Not Operate - Work in Progress".

d) On the completion of the welding operation the Pipeline Maintenance Engineer In-charge of the job will notify the Deputy Chief Engineer Pipeline (Oil Movement)/Duty Oil Movement Engineer that the welding is completed and that the line is ready for normal operations.

xi) All automotive equipment, welding machines, tractors, portable pumping equipment, and other possible sources of ignition are to be kept at a safe distance (60 metres minimum) and on the windward side, if possible, from crude oil or products spill until the spill has been cleaned up and the area found to be gas-free after testing with an explosimeter.

xii) When working near crude oil spillage all employees are to leave matches, lighters and smoking material in a location designated by the Pipeline Maintenance Engineer In-charge and at least 60 metres away from the operations.
xiii) On pipelines which carry induced cathodic protection currents, the currents must effectively be removed before work is done on the lines. All rectifiers must be turned off or disconnected.

xiv) When pipelines which have been in crude oil or products service are to be parted, or when sections of lines are to be joined, a bonding cable must be installed between the two sections to reduce the possibility of spark ignition of combustible vapours. This bond must be made before the line is cut, or before the last connection is made in joining two sections. (Further, on well-coated lines, in order to effectively eliminate possible straying earth current hazards, the bonding cable should be grounded. This may be accomplished by connecting the cable to a ground rod driven approximately two metres into the bottom of the bell hole. The rod should be a pipe of a minimum diameter of 3/4" or 5/8" diameter iron rod). The purpose of these electrical bonds is to minimise the possibility of electric sparks from induced currents, stray currents or static electricity by providing safe metallic circuits for anticipated electrical flow paths.

xv) Following the attachment of the bonding cable and the cutting of the line, vent holes should be cut. Vent holes must not be drilled by an electrically powered drill. Holes should be located at least 60 metres (if possible) both ahead of and behind where the line is cut. When it is necessary to vent the line closer than 60 metres, a line or hose should be connected to the vent to carry unexpected gas vapours or oil to a safe distance from the job.

xvi) When the "cut-out" section of the line has been removed and drainage cleaned up, each end of the line should be plugged with an expandable mechanical plugging device or a clay or drilling mud plug. The mud plugs should be located from 0.6 metre to 1 metre back from the proposed welds. It must be packed solid with a skid or tamp so that it is of sufficient strength to trap drainage or any surge within the line.

xvii) All oil and oil-soaked earth must be removed from the bell hole and the immediate vicinity. The removed oil-soaked dirt should be replaced with dry dirt to prevent flashing from welding. After the area is freed of gas and oil, tests with an explosimeter should be made.

xviii) Even though the gas tests are negative, it is considered a safe practice to drop a lighted welding torch into the ditch near the open lines as an additional safeguard before entering the immediate area.

xix) An employee should be stationed at each vent or vent line and be stationed there to remain during the entire welding procedure. They should be alert at all times to observe any undue quantity of air, gas or oil escaping from the vent or vent lines, so that welding may be stopped immediately pending further investigation.
xx) After welding has been completed, the vent holes in the line must be plugged, or closed with a patch and leak clamp. The patch should be welded after the line has been filled.

WELDING AT A PUMP/REPEATER STATION:

i) Prior authorisation must be obtained from the Deputy Chief Engineer (Pipeline Maintenance) before beginning welding operations within a Pump Station area.

ii) The engineer in-charge of the welding job shall discuss the proposed work with the Station Engineer In-charge responsible for the station to ensure compliance with all safety practices.

iii) Generally, the station should be shut down and by-passed. All power circuits to the pump house should be isolated at the generator house. All of the switches, gate valves and control points instrumental in the shut down should be locked out and tagged with the red danger board "Danger Do Not Operate - Work in Progress".

a) All gate valves and other connections involved must be blank flanged. All gate valves and controls must be tagged with the danger board "Danger Do Not Operate - Work In Progress".

b) During the welding operation all nearby pump pits likely to cause danger should be covered with water soaked tarpaulins.

c) Just prior to welding on or cutting on a line that has contained oil or gas, the line must be thoroughly washed out with water and purged with air until such time as tests indicate it is gas-free.

iv) Prior to welding, explosimeter tests must indicate the area is free of gas. These tests must be repeated frequently to insure that the atmosphere continues to be gas-free until the welding is finished.

v) Before the welder begins his actual welding operation, he should test the pipe or bell hole by lowering a lighted welding torch into it.

vi) While welding, fire extinguishers must be manned and ready for instant action.

vii) While welding in the vicinity of the station, no employee should be in a confined space such as a pump pit or sump, etc.

viii) When the welding is completed and the Station Engineer notified, the station operation should be brought back to normal.
ix) When welding is to be done on a line in a station for installation of instruments, tapping connections, thermowells, etc., in addition to the precautions already listed in this section, the following procedure must be observed:

a) In order to keep oil circulating in the line to be welded on, a portable pumping unit should be used. The lines from this unit should be hooked up so that oil can be circulated and the line to be welded on will be kept packed with fluid.

**WELDING ON A TANK IN SERVICE:**

4. After the proper authorization, minor welding (such as welding brackets to support a remote control gauging installation) on crude oil storage tanks may be permissible provided;

a) The oil level is static (the tank neither being filled or emptied, and the tank mixer is not in use).

b) The oil level is at least 0.30 metre above the level where the welding is to be done.

c) The minimum velocity of the wind is approximately 10 km/hour (good breeze).

d) An explosiometer is used at various points around the tank and it shows that there is no combustible gas mixture present at any location. This fact must be established before any welding is started and testing must be continued throughout the welding operation.

**ELECTRIC WELDING EQUIPMENT**

i) Portable electric welding equipment

a) Protection of equipment: When used outdoors, welding machines should be protected against the weather.

b) Service cable and connectors: When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors, of a capacity at least equivalent to that of the cable, should be used. If connections are effected by means of cable lugs, then these should be securely fastened together by more than one bolt to give good electrical contact. The exposed metal parts of the lugs should be completely insulated.
GAS WELDING AND CUTTING

i) The following precautions should be observed in the storage, handling, and use of oxygen and acetylene cylinders, fittings, and hose:

a) Cylinders should be stored in a definitely assigned place away from sources of heat such as a radiator, stove, etc. Cylinders which are stored outdoors should be protected against extremes of weather. Oxygen cylinders should not be stored near reserve stocks of acetylene or other fuel gas cylinders, or near any other substance likely to cause or accelerate fire. Pure oxygen will not burn, but it supports and accelerates combustion, and this will cause oil and other similar materials to burn with great intensity.

b) Cylinders of oxygen and acetylene should be used in rotation as they are received from the supplier.

c) Always describe oxygen by its proper name "oxygen", and never "air". Never use oxygen for compressed air. A serious accident may result if oxygen is used as a substitute for compressed air. Oxygen must never be used in pneumatic tools, on oil preheating burners, to start internal combustion engines, to blow out pipelines, to "dust" clothing or work, to dry hands, for pressure tests of any kind, or for ventilation.

d) Oil or grease must not be used on or around an oxygen cylinder, cylinder valve, regulator, fitting or hose.

e) Oxygen and acetylene cylinders should be placed with the valve end up whenever they are in use.

f) When cylinders are moved by hand, they may be tilted, and rolled at their bottom edge. Dragging and sliding of cylinders should be avoided. Cylinders should not be dropped, nor should they be permitted to strike anything violently.

g) Valve protection caps should not be used for lifting cylinders from one vertical position to another.

h) Cylinders whether in use or in storage must be secured to prevent them from being knocked over.

i) Cylinders in use should be kept far enough away from the welding or cutting operation to prevent their coming in contact with sparks, hot slag or flame.

j) Cylinders should not be placed where they might become part of an electric circuit such as a ground return circuit for an arc-welding machine. Never strike an arc against a cylinder.
k) Cylinders should not be used for any purpose except those specified by the supplier. Do not experiment, in any way, with an unknown gas in an unknown cylinder.

l) If a valve leak develops, the cylinder should not be used. It should be tagged for the advice of the supplier and placed outdoors away from all sources of ignition, where the contents may be expelled harmlessly.

m) Before a cylinder is placed in use, the valve should be opened slightly and closed immediately to clear the valve of dirt which might enter the regulator. This must not be done near other welding work, sparks, flames, or other sources of ignition.

n) To determine if tight connections have been obtained in the installation of the pressure regulator and other connections, soapy water may be used.

o) The oxygen cylinder valve should be opened slightly, after the installation of the regulator, so that the high pressure gauge hand will move slowly. The valve should never be opened suddenly, and the operator should not stand directly in front of the gauge faces.

p) Welding hose is manufactured in distinctive colours for ready identification. Red is the recognized colour for acetylene and black for oxygen. Hose connections on the regulator should similarly be marked for identification.

q) If parallel lengths of oxygen and acetylene hose are taped together to prevent their becoming tangled, not more than 4" out of each 8" should be covered with tape.

r) The hose should be inspected frequently for leaks, worn places, and loose connections. Leaks may be detected by immersion of the hose in water under normal working pressure. A defective hose must not be used.
OIL INDIA PIPELINE

HOT TAPPING / HOT TIE IN
AUTHORISATION

Location __________________________________________ Date _____________

Description of Work:

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----------------------------------------------------------------------------------------------------------------

Authorised Welder Name _______________________________
Date of Hot Welding Training _______________________________
Pipeline Engineer in Charge Name _______________________________
Date to be carried out _______________________________

Authorised by Chief Engineer __________________________ Date _______________

Special Precautions to be adopted

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Notice of Accident

A. As per Mines Act 1952

23. Notice to be given of accidents:-

(1) Whenever there occurs in or about a mine:-
   (a) an accident causing loss of life or serious bodily injury, or
   (b) an explosion, ignition, spontaneous heating, outbreak of fire or irruption
      or inrush of water or other liquid matter, or
   (c) an influx of inflammable or noxious gases, or
   (d) a breakage of ropes, chains or other gear by which persons or
      materials are lowered or raised in a shaft or an incline, or
   (e) an over-winding of cages of other means of conveyance in any shaft
      while persons or materials are being lowered or raised, or
   (f) a premature collapse of any part of the workings, or
   (g) any other accident which may be prescribed,

the owner, agent or manager of the mine shall give notice of the occurrence to such
authority in such form and within such time as may be prescribed, and he shall
simultaneously post one copy of the notice on a special notice-board in the prescribed
manner at a place where it may be inspected by trade union officials, and shall ensure
that the notice is kept on the board for not less than fourteen days from the date of such
posting.

(1A) Whenever there occurs in about a mine an accident causing reportable injury *
to any person, the owner, agent or manager of the mine shall enter in a register such
occurrence in the prescribed form and copies of such entries shall be furnished to the
Chief Inspector once in quarter.”

(2) Where a notice given under sub-section(1) relates to an accident causing loss of
life, the authority shall make an inquiry into the occurrence within two months of the
receipt of the notice and, if the authority is not the Inspector, he shall cause the Inspector
to make an inquiry within the said period.

(3) The Central Government may, by notification in the Official Gazette, direct that
accidents other than those specified in sub-sections(1) and (1A) which cause bodily
injury resulting in the enforced absence from work of the person injured for a period
exceeding twenty-four hours shall be entered in a register in the prescribed form or shall
be subject to the provision of sub-section(1) or sub-section (1A), as the case may be.”

(4) A copy of the entries in the register referred to in sub section (3) shall be sent by
the owner, agent or manager of the mine, on or before the 20th day of January in the
year following that to which the entries relate to the Chief Inspector.

(5) Whenever there occurs in or about a mine an accident causing loss of life or
serious bodily injury to any person, the place of accident shall not be disturbed or altered
before the arrival or without the consent of the Chief Inspector or the Inspector to whom
notice of the accident is required to be given under sub-section(1) of section 23, unless
such disturbances of alteration is necessary to prevent any further accident to remove
bodies of the deceases; or to rescue any person from danger, or unless discontinuance
of work at the place of accident would seriously impede the working of the mine;
Provided that where the Chief Inspector or the said Inspector fails to inspect the place of
accident, within seventy-two hours of the time of the accident, work may be resumed at
the place of the accident.”
“(pp)"reportable injury” means any injury other than a serious bodily injury which involves, or in all probability will involve, the enforced absence of the injured persons from work for a period of seventy-two hours or more.

(q) "serious bodily injury" means any injury which involves; or in probability will involve the permanent loss of any part or section of a body or the use of any part or section of a body, or the permanent loss of or injury to the sight or hearing or any permanent physical incapacity or the fracture of any bone or one or more joints or bones of any phalanges of hand or foot.

B. As per Oil Mines regulation- 1984

7. Notice of accident

(1) (a) When there occurs in or about a mine –

(i) an accident causing loss of life or serious bodily injury in connection with mining operations;
(ii) an explosion or ignition;
(iii) a blowout;
(iv) an outbreak of fire;
(v) a bursting of any pipeline or equipment containing petroleum, steam, compressed air or other substance at a pressure greater than the atmospheric pressure;
(va) a major uncontrolled emission of petroleum;
(vi) a breakage or fracture of any essential part of draw-works, casing line or failure of emergency brake;
(vii) a breakage, fracture or failure of any essential part of any derrick, machinery or apparatus whereby the safety of persons may be endangered;
(viii) an influx of noxious gases;
(ix) any due to explosives;

the owner, agent or manager shall forthwith inform the Regional Inspector telephone or express telegram or by special messenger and shall also within 24 hours of every such occurrence give notice thereof in Form IV-A to the District Magistrate, the Chief Inspector and the Regional Inspector.

(b) When an accident causing loss of life or serious bodily injury occurs in or about a mine in connection with the generation, storage, transformation, transmission, supply or use of electrical energy, the owner, agent or manager shall also forthwith inform the Electrical Inspector of Mines by telephone, express telegram or special messenger.

(2) If death results from any injury already reported as serious under sub-regulation (1) the owner, agent or manager shall within 24 hours of his being informed or the death, give notice thereof to the Chief Inspector, Regional Inspector and District Magistrate.

(3) In respect of every person killed or injured as above, the owner, agent or manager shall send to the Chief Inspector particulars in Form IV-B and IV-C within seven days of such occurrence or within 15 days of the injured returning to duty, as the case may be.
FORM - IV A
(See regulation 7)

NOTICE OF ACCIDENT/OCCURRENCE

From: Agent,
      Pipeline Oil Mine,
      Oil India Limited, Udayan Vihar,
      Guwahati – 781 171 (Assam)

To,

1. The Chief Inspector of Mines,
   (Director General of Mines Safety)
   Dhanbad - 826 001.
   Jharkhand

2. Inspector of Mines,
   (Dy. Director General of Mines Safety)
   Sitarampur Region II,
   Sitarampur – 713 359,
   West Bengal

3. Director of Mines Safety
   Guwahati Region, Guwahati (Assam)

4. The District Magistrate

5. The Electrical Inspector of Mines (In case of Electrical accident only)

Sir,

I have to furnish the following particulars of a fatal accident / Serious accident / dangerous occurrence / major accident which occurred at .......................mine of Oil India Limited (Owner).

1.0 Particulars of the mine:

<table>
<thead>
<tr>
<th>Situation of Mine</th>
<th>Name and postal address of owner:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline Oil Mine (1157 KM long 406.4 mm / 355.6 mm dia Crude Oil Pipeline Barauni) spread over from Naharkatiya to three states viz. Assam, West Bengal and Bihar</td>
<td>Post Office : Duliajan District : Dibrugarh, Assam Pin Code : 786 602 Fax : 0374 – 2800433 Telex : ---- Telephone : 0374 - 2800525</td>
</tr>
</tbody>
</table>

Place and location in mine (site) of accident/occurrence:
Place :
Police Station :
District :
State :

Nature of operation undertaken at the place of accident/occurrence:

- 27 -
2.0 **Particulars of the accident/occurrence:**

(a) Date, shift & hours of the accident/occurrence:
(b) Classification of accident/occurrence (**)
(c) Cause, circumstance and description of accident/occurrence (if cause not yet established information to be sent as soon as possible).

3.0 **Nature of extent of damage:**

<table>
<thead>
<tr>
<th></th>
<th>Within the establishment</th>
<th>Outside the establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Number of persons --</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- exposed to the accident/occurrence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- killed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- seriously injured</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- affected by gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Particulars of material damage:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii) State whether the danger is still present / no longer exists:</td>
<td></td>
<td>No longer exists.</td>
</tr>
</tbody>
</table>

4.0 **Particulars of injuries etc.:**

<table>
<thead>
<tr>
<th>Name of person (s) (in block capital)</th>
<th>Nature of employment</th>
<th>Age</th>
<th>Sex</th>
<th>Nature of injury and if fatal, cause of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Killed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.0 **Measures taken or envisaged:**

a) to alleviate the effects of the accident occurrence
   i) short term:
   ii) medium or long term:

b) to prevent recurrence of similar accident occurrence:

6.0 **Any other relevant information:**

Particulars in respect of every person killed or injured, in Form IV-B are enclosed/ shall be forwarded within a week.

Yours faithfully,
(Signature)

Designation: Owner/ Agent/ Manager
Code: 100009
Date:
FORM IV – B
(See Regulation 7)

PARTICULARS OF DECEASED / INJURED PERSON

(To be given separately in respect of every person killed or injured in an accident in the mine)

1. General:
   (i) Name of mine: Pipeline Oil Mine.
   (ii) Owner: Oil India Limited.
   (iv) State: Assam, West Bengal & Bihar

2. Name of injured worker:

3. Time of Accident :
   (i) Date :
   (ii) Time :
   (iii) Shift :
   (iv) Number of shift worked per day at the mine: Time when the worker began work on the day of the accident …

4. Occupation and experience of the worker :
   (i) State the nature of job he was doing at the time of accident:
   (ii) Was it his regular occupation?
       (a) If “yes” state length of experience at the occupation at your mine …… previous experience, if any ……
       (b) If no, state how long employed at this job ………………………
   (iii) State total experience in mining ………………………
   (iv) Give details of experience in mining work ………………………

5. Place of accident:

6. Nature of injury:
   (i) State whether fracture, amputation, laceration, bruise, sprain, crushing injury or other (to be specified)……
   (ii) Part of body injured (to be specified precisely) ...

7. Degree of disability :
   (i) If fatal, date and time of expiry ……………
   (ii) If permanent disablement, specify ………
       (a) The part or parts of the body lost, if any …………
       (b) The part or parts of body gone out of use …………
       (c) Whether disablement was total or partial …………
   (iii) If temporary disablement, state number of days forced to remain idle … …
8. Responsibility for the accident:
   (i) Was any safety provision(s) contravened ..................
   (ii) If so, by whom?
   (iii) What action was taken against the offender?
   (iv) Could the accident have been avoided?
   (v) If so, how?

Yours faithfully,
(Signature)
Designation: Owner/Agent/Manager
Code: 100009
Date:

FORM IV – C
(See Regulation 7)

PARTICULARS OF INJURED PERSON RETURNED TO DUTY
(To be given separately in respect of every person within 15 days of his return to duty)

1. General:
   (i) Name of mine: Pipeline Oil Mine.
   (ii) Owner: Oil India Limited.
   (iv) State: Assam, West Bengal & Bihar

2. Date of Accident:

3. Name of injured worker:

4. Return to duty:
   (i) Date when returned to work:
   (ii) Whether returned to regular job or some other job? (To be specified).....

5. Compensation

6. State amount of compensation paid or to be paid, if any..............

Yours faithfully,
(Signature)
Designation: Owner/Agent/Manager
Code: 100009
Date:
Notification of accidents as per The Assam Factories Rules

95. Notification of accidents – (1) Fatal and serious – When there occurs in any factory an accident to any worker which results in (a) death, or (b) such injury that there is no reasonable prospect that he will be able to resume his employment in the factory within 20 days, such accidents shall be called in all prescribed communications “Fatal” or “Serious” as the case may be, and the manager of the factory shall give notice of occurrence forthwith by telephone, telegram or special messenger to –

(i) the Chief Inspector of Factories, Assam, Guwahati and the Senior Inspector of Factories, in charge Zonal Factory Office or the Inspector of Factories, in charge of Dist. Factories Office as the Case may be.

(ii) the District Magistrate or, if the District Magistrate by order so directs the Sib-divisional Officer;

(iii) the Commissioner for Workmen’s Compensation appointed under Section 20 of the Workmen’s Compensation Act, 1923;

(iv) in the case of fatal accidents only, the officer-in-charge of the Police Station within the local limits of which the factory is located; and

(v) the relatives of the injured or deceased person.

Report by special messenger shall be in Form No. 18 and those sent by telephone or telegram shall be confirmed within 48 hours by a written report in that form.

(2) Minor – When there occurs in any factory an accident to any worker less serious than those described in sub-rule (1) but which prevents or is likely to prevent him from resuming his employment in the factory within 48 hours after the accident occurred, such accident shall be recorded by the manager of the factory and reported by him in Form No.18 as soon as practicable, but in any case within 72 hours of its occurrence, to the authorities mentioned in clauses (i), (ii) and (iii) of sub-rule (1) Such accidents shall be called in prescribed communications “minor accident”

(3) Supplementary reports – (a) When an accident which has been reported to the Inspector as either “Serious” or “Minor” afterwards proves to be “Fatal” the manager of the factory shall make the necessary correction in the supplementary report which shall be sent forthwith to the authorities mentioned in clauses (i), (ii) and (iv) of sub-rule (1).

(b) When an accident which has been reported to the Inspector as “Minor” afterwards proves to be “Serious” or when one reported as “Serious” afterwards proves to be “Minor”, the manager of the factory shall make the necessary correction in a supplementary which shall be sent forthwith to the authorities mentioned in clauses (i), (ii) and (iii) of sub rules (1).

(4) Site of fatal accident – Where loss of life has immediately resulted from an accident, the place where the accident occurred shall be left as it was immediately after the accident until the expiration of at least three days after the time when the notice required under sub-rule (1) was given, or until the visit to the place by an Inspector, whichever first happens, unless compliance with this sub-rule would tend to increase or continue the danger.

(5) Explosions, fire and accidents to plant – When there in any factory any explosion, fire, collapse of buildings, or serious accident to the machinery or plant whether or not attended by personnel injury or disablement, such occurrence shall be reported by the manager of the factory within five hours of its occurrence to the authorities mentioned in clauses (i) and (ii) of Rule 95 (1). Such reports shall be in Form No. 18-A.
FORM NO. 18
[PREScribed UNDER RULE 95]
Notice of accident

To ......................PO.,

Sir,

I, hereby give notice under Section 88 of the Factories Act, 1948 that an accident occurred in this factory and the following person(s) was involved in the accident.

<table>
<thead>
<tr>
<th>Name</th>
<th>Occupation</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
</table>

1. Date and hour of accident ..............................................................
2. The hour at which the injured persons started work on day of occurrence....................................................
3. (a) State how the accident occurred ..............................................
   (b) If caused by machinery.........................................................
      (i) Give the name of the machine and part causing the accident ........................................................................
      (ii) State whether it was being moved by mechanical power at the time ..............................................................
4. Was the accident due to injured person’s negligence or to that of any other person’s..........................................................
5. Names of persons who saw the accident and can give important evidence ..............................................................
6. Nature and extent of injury giving medical diagnosis, if possible........................................................................
7. Number of days the injured persons is likely to be off work..........................
8. Name and address of Medical Officer in attendance on injured person..............................................................

Name of Factory ..........................................
Nature of Industry.................................
Branch or Department where accident occurred .........................
Address.................................
Signaure......................

Note: Any additional information which the Manager may wish to give, in order to let the Inspector have a clear idea of the circumstances surrounding the accident, should be attached to this form.

( To be filled in by the Factory Inspection Department)

Classification.................................
Inspector’s initial..................
Responsibility .........................
Date ........................................

- 32 -
FORM NO. 18-A  
[PRESCRIBED UNDER RULE 95 (5)]  
Notice of Dangerous Occurrence

Date..................

To
Sir,

I hereby give notice under Section 88 of the Factories Act, 1948 that a dangerous occurrence occurred in the factory as detailed below

1. Date and hour of dangerous occurrence .................................................................
2. Full account of dangerous occurrence .................................................................
3. Name of persons who saw the dangerous occurrence and can give important evidence .................................................................

Name of Factory .................................................. Nature of Industry......................

Branch or Department where the dangerous occurrence occurred......................

Address........................................ Signed........................................

Note: Any additional information which the Manager may wish to give in order to let the Inspector have a clear idea of the circumstances surrounding the dangerous occurrence, should be attached to this form.
Notification of accidents as per The West Bengal Factories Rules

Rule 95 Notification of accidents-fatal and serious.-When there occurs in any factory an accident to any person which results in (a) death, or (b) such injury that there is no reasonable prospect that he will be able to resume his employment in the factory within 20 days, such accidents shall be called in all prescribed communications "Fatal" or "Serious" as the case may be, and the Manager of the factory shall give notice of the occurrence forthwith by telephone, telegram or special messenger to:

1. the Inspector of Factories,
2. the District Magistrate or, if the District Magistrate by order so directs, the Subdivisional Officer,
3. the Commissioner for Workmen's Compensation appointed under section 20 of the Workmen's Compensation Act, 1923,
4. the relatives of the injured or deceased person,
5. in the case of fatal accidents only, the officer-in-charge of the police-station within the local limits of which the factory is located.

Reports by special messenger shall be as nearly as possible in Form No. 18 and those sent by telephone or telegram shall be confirmed within 12 hours by a written report in that form.

*Provided, however, that the Defence Installations may send reports of accidents in their own form IAFO 1913, subject to the condition that any change in the form shall at once be communicated to the Chief Inspector in writing.

Rule 96. Minor.-When there occurs in any factory an accident to any person less serious than those described in rule 95 but which prevents or is likely to prevent him from resuming the employment in the factory within 48 hours after the accident occurred, such accident shall be recorded by the manager of the factory and reported by him in Form No. 18 as soon as practicable, but in any case within 72 hours of its occurrence, to the authorities mentioned in clauses (1), (2), (3) and (4) of rule 95. Such accidents shall be called in prescribed communications "minor accidents".

Rule 97. Supplementary reports.- (1) When an accident which has been reported to the Inspector as either "Serious" or "Minor" afterwards proves to be "Fatal", the manager of the factory shall make the necessary correction in a supplementary report which shall be sent forthwith to the authorities mentioned in clause (1), (2), (3) and (4) of rule 95.

(2) When an accident which has been reported to the Inspector as "Minor" afterwards proves to be "Serious", the manager of the factory shall make the necessary correction in a supplementary report which shall be sent forthwith to the authorities mentioned in clauses (1), (2), (3) and (4) of rule 95.

Rule 98. Site for fatal accident.- Where loss of life has immediately resulted from an accident, the place where the accident occurred shall be left as it was immediately after the accident until the expiration of at least three days after the time when the notice required under rule 95 was given, or until the visit to the place by an Inspector, whichever first happens, unless compliance with this rule would tend to increase or continue the danger.

Rule 99. Dangerous Occurrence: The following occurrences in a factory, whether or not attend by personnel injury or disablement, are declared as dangerous occurrences.
(a) Bursting of a plant used for containing or supplying steam under pressure greater than atmospheric pressure;

(b) Explosion of a receiver or container used for storage at a pressure greater than atmospheric pressure of any gas or gases (including air) or any liquid or solid resulting from the compression of gas;

(c) Explosion, fire, bursting out, leakages or escape of any molten metal, or hot liquor, or gas.

(d) Collapse or serious accident of any plant machinery, hoist, lift, lifting machine, lifting tackle, and the overturning of crane; and

(e) Collapse or subsidence of any floor, gallery, roof, bridge, tunnel, chimney wall, building or any other structure.

(2) when there happens in any factory any dangerous occurrence referred to in sub-rule (i) such occurrence shall reported by the manager of the factory within five hours of its occurrence to the authorities mentioned (1) and (2) of rule 95. Such reports shall be as nearly as possible in Form No. 19.
Notice of Accident

1. Name of occupier (or Factory)/Employer
   E.S.I
   Employers’
   Code No.

2. Address of factory/premises where accident took
   Place.

3. Nature of industry

4. Branch or department and exact place where the
   Accident took place.

5. Name and address of the injured
   E.S.I. Insurance No.

   (a) Sex
   (b) Age (last birthday)
   (c) Occupation of the injured person

7. Local E.S.I. Office to which the injured person is
   attached.

8. Date, shift and hour of accident

9. (a) Hour at which the injured person started work
   on the day of accident
   (b) Whether wages in full or part are payable to
   him for the day of the accident.

10. Cause of accident –
    (a) If caused by machinery –
        (i) Give name of the machinery and the part
            causing the accident
        (ii) State whether it was moved by mechanical
             power at the time
    (b) State exactly what the injured person was doing
        at the time
    (c) In your opinion, was the injured person at the
        time of accident –
        (i) acting in contravention of provisions of any
            law applicable to him ?
            OR
        (ii) acting in contravention of any orders given
            by or on behalf of his employer ?
            OR
    (d) In case reply to (c) (i), (ii) or (iii) is in the
        affirmative, state whether the act was done for
        the purpose of and in connection with the
        employer’s trade or business
11. In case the accident happened while travelling in The employer’s transport, state whether-
   (i) the injured person was travelling as a passenger to or from his place or work;
   (ii) The injured person was travelling with the express or implied permission of his employer;
   (iii) the transport is being operated by or on behalf of the employer or some other person by whom it is provided in pursuance of arrangements made with the employer;
   (iv) the vehicle was being/not being operated in the ordinary course of public transport vehicle;

12. In case the accident happened while meeting Emergency, state
   (i) Its nature;
   (ii) whether the injured person at the time of accident was employed for the purpose of his employer’s trade or business in or about the premises at which the accident took place.

13. State how the accident occurred

14. Names and addresses of witnesses
   (a)
   (b)

15. (a) Nature and extent of injury (e.g., fatal, loss of finger, fracture of leg, scale of scratch and followed by sepsis.
   (b) Location of injury (right leg, left hand or left Eye, etc.)

16. (a) If the accident is not fatal, state whether the Injured person was disabled for 48 hours or more
   (b) Date and hour of return to work

17. (a) Physician, dispensary or hospital from whom or in which the injured person received or is receiving treatment
   (b) Name of dispensary/panel doctor selected by The injured person

18. (i) Has the injured person died
   (ii) If so, date of death.

I certify that to the best of my knowledge and belief the above particulars are correct in every respect.

Date..............................
...........................................
...........................................
Signature of the Manager
FORM NO.19
(See rule 99 and 106)

Notice of dangerous occurrence which does not
Result in death or bodily injury

Dated .................

To
Sir,

I hereby give notice under section 88 of the Factories Act, 1948, that a
dangerous occurrence occurred in the factory as detailed below :-

1. Date and hour of dangerous occurrence ........................................

2. Full account of the dangerous occurrence .....................................

3. Names of person who saw the dangerous occurrence and can give important
evidence

Name of the factory ........................................ Name of industry ..............

Branch or department where the dangerous occurrence occurred ..........

Address...............................................................
Signed.............................................................

Note: Any additional information which the manager may wish to give in order to
let the Inspector have a clear idea of the circumstances surrounding the dangerous
occurrence, should be attached to this form.
<table>
<thead>
<tr>
<th>Nature</th>
<th>Fire/ Accident</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Qtr Apr-Jun.</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Qtr Jul-Sep.</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Qtr Oct-Dec.</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; Qtr Jan-Mar.</th>
<th>TOTAL</th>
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<tr>
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<td>Minor</td>
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<td><strong>Total</strong></td>
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<td>Cumulative numbers of Preliminary reports yet to be finalized</td>
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<td>Cumulative nos of Major incident Investigation reports submitted to OISD</td>
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<tr>
<td>Cumulative nos of Major Incident Investigation reports yet to be submitted to OISD</td>
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</tr>
</tbody>
</table>

Quarterly Incident reporting form –W.E.F 17<sup>th</sup> July’2006
## INCIDENT REPORTING FORM

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Organization</td>
<td>2. Sector</td>
</tr>
<tr>
<td>3. Location</td>
<td>4. Incident Sr no</td>
</tr>
<tr>
<td>5. Date of incident</td>
<td>6. Time of incident</td>
</tr>
<tr>
<td>7. Major/ Minor/ Near miss</td>
<td>8. Reports- Preliminary/ Final</td>
</tr>
<tr>
<td>9. Fire/ Accident</td>
<td>10. Duration of Fire- hrs/min</td>
</tr>
<tr>
<td>11. Type of incident with loss of life/injury; Fire, Explosion, Blowout, Electrocution, Fall from Height, Inhalation of Gas Driving, Slip/ Trip, Others, NA</td>
<td></td>
</tr>
<tr>
<td>12. Location of the incident (Name of the Plant /Unit/Area/Facility/Tank farm/Gantry/ Road/Parking area etc)</td>
<td></td>
</tr>
<tr>
<td>13. Whether Plant shutdown/ caused outage of the facility? Yes/no.</td>
<td></td>
</tr>
<tr>
<td>14. Fatalities nos. a) Employee- b) Contractor- c) Others-</td>
<td></td>
</tr>
<tr>
<td>15. Injuries nos. a) Employee= b) Contractor= c) Others=</td>
<td></td>
</tr>
<tr>
<td>16. Man-hours Lost a) Employee- b) Contractor- c) Others-</td>
<td></td>
</tr>
<tr>
<td>17. Direct loss due to the incident (Rs in lacs) Loss to equipment/ Machinery as per Insurance claim etc.</td>
<td></td>
</tr>
<tr>
<td>18. Indirect Losses: T'Put / Production Loss</td>
<td></td>
</tr>
<tr>
<td>20. Brief Description of the Incident including post incident measures. (Attach details in separate sheet)</td>
<td></td>
</tr>
<tr>
<td>21. Whether similar Incident has occurred in past at the same location, If yes, give brief description of the incident and attach details in separate sheet</td>
<td></td>
</tr>
<tr>
<td>22. Whether Internal Investigation has been completed, If no, likely date by which it will be completed.</td>
<td></td>
</tr>
<tr>
<td>23. Whether internal investigation report (Major Incident) has been submitted to OISD. If no, likely date by which it will be submitted.</td>
<td></td>
</tr>
</tbody>
</table>

Sheet 1 of 2

Quarterly Incident reporting form – W.E.F 17th July 2006
24. Cause of the Incident (Tick the most relevant cause preferably one, maximum two):

| a) Deviation from Procedures | i) Not using the PPE |
| b) Lack of job knowledge      | j) Equipment failure  |
| c) Lack of supervision        | k) Poor design / Layout etc. |
| d) Improper inspection        | l) Inadequate facility |
| e) Improper Maint (Mech/Pl/Inst) | m) Poor house keeping |
| f) Improper material handling | n) Natural calamity |
| g) Negligent driving          | o) Pilferage / Sabotage |
| h) Careless walking/ climbing etc. | p) Any other (give details) |

25. Cause of leakage – Oil, Gas or Chemical (Tick one only) NA:

| a) Weld leak from equip / lines | e) Leakage due to improper operation |
| b) Leak from flange, gland etc. | f) Leak due to improper maintenance |
| c) Leak from rotary equipment   | g) Normal operation-Venting/drainin |
| d) Metallurgical failure        | h) Any other |

26. Cause of Ignition leading to fire (Tick only one cause) NA:

| a) Near to hot work             | f) Static electricity |
| b) Near to furnace / flare etc  | g) Hammering / Fall of object |
| c) Auto ignition                | h) Heat due to friction |
| d) Loose electrical Connection  | i) Lightning |
| e) Near to hot surface          | j) Any other (pyrophoric etc) |

27. Was the incident Avoidable? (Yes/No)

28. The incident could have been avoided by the use of/ or by:

| a) Better supervision            | f) Personnel Protective Equipment |
| b) Adhering to specified operating procedure | g) Better equipment |
| c) Imparting Training           | h) Management Control |
| d) Giving adequate time to do the activity through proper planning | i) Adhering to specified maintenance procedure |
| e) Adhering to the work permit system | j) Adhering to specified inspection / Testing procedures |
| k) Any other                     |
Oil Industry Safety Directorate

**Guidelines for filling the Quarterly Incident Report:**

1. All Major, Minor and Nearmiss incidents shall be reported in the quarterly report.
2. Incident Reporting form shall be filled up for all Major, Minor and Nearmiss incidents.
3. Summary report shall be enclosed with every quarterly report.
4. Investigations shall be carried out for all Major, Minor and Nearmiss incidents.
5. Investigation report of all Major incidents shall be submitted to OISD. An incident shall be treated as Major if any of the following occurs;

   - Fatality / Fatal Incident
   - Permanent Loss of Body Part
   - Permanent Disability
   - Fire for more than 15 minutes
   - Explosion / Blowout
   - Failure of Rig Critical Equipment like drew works, casing line etc
   - Loss above Rs. 5.0 Lac
   - Cumulative man-hours lost more than 500 hrs
   - Plant / facility Shutdown / Outage due to the incident

6. Minor Incident: Any Incident not falling under any of the categories of major incident.

7. Near Miss:
   (i) Any incident which does not result in any injury or damage to property but has the potential to result in injury and / or property damage.
   (ii) An undesirable event, if not timely controlled, would have led to a major / minor incident.

8. The following events are to be categorized under major or minor incident as applicable.
   - Hydrocarbon leakage from pipeline, resulting in stoppage of operation
   - Collision between vessel and offshore installation / rig
   - Release of toxic gas

9. Loss time accident shall be monitored till the affected person joins duty. In case the affected person is yet to join the duty, then the status of report submitted will be preliminary. Final report against the same Incident shall be sent once he joins duty and the man-hours lost are known.

10. All columns must be filled up.

11. For any additional information use separate sheets as required.

12. Quarterly report shall be sent to OISD within 45 days of end of the quarter.

13. Immediate reporting of incident through fax / telephone shall be continue as per the prevailing system.

Quarterly Incident reporting form – W.E.F 17th July’2006
<table>
<thead>
<tr>
<th>SL.NO</th>
<th>ITEM DESCRIPTION</th>
<th>COMPANY’S EMPLOYEES</th>
<th>CONTRACTOR’S EMPLOYEES</th>
</tr>
</thead>
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<tr>
<td>01</td>
<td>Fatal Accident Rate per 100 million hours worked (FAR)</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>02</td>
<td>Fatal Incident Rate per 100 million hours worked (FAR)</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>03</td>
<td>Loss Time Injury Frequency per million hours worked (LTIF)</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>04</td>
<td>Total No. of recordable injuries (TRIR)</td>
<td>Nil</td>
<td>Nil</td>
</tr>
</tbody>
</table>

**Note:** Following points are to be kept in mind while calculating FAR, LTIF, TRIR.

1. Calculation to be done separately for company employees and contractor personnel.
2. Loss time injury and recordable injury should include all those who are off the duty for more than 24 hrs. due to accident.
3. LTIF: The no. of lost time injuries (Fatalities + Lost work days cases).
4. TRIR: Total no. of recordable injuries (Fatalities + Lost work day cases + restricted work day cases + medical treatment cases).
Circular for incident reporting

Office of Minister of State (I/C) of Petroleum & Natural Gas
Shastri Bhavan, New Delhi

It is requested to inform this office immediately about any accident (explosion, fire, security incident etc.) or any other incident which is deemed fit to be apprised, under the domain of Public Sector Undertakings.

2. The contact details of the undersigned shall be used for this purpose.

(Bina Pradhan)
PS to MoS(I/C)-P&NG
Email: bingysrikanta76@gmail.com
Mobile no. 9818862638
Tel(Off.): 011-23386622, 23381462

CMD, ONGC
Chairman, IOCL
CMD, HPCL
CMD, BFCI
CMD, GAIL
CMD, OIL
CMD, EIL
CMD, Balmer Lawrie Ltd
MD, OVL
MD, IGL
MD, MRPL
MD, NRL
MD&CEO, Petronet LNG
MD, CPCI
MD, OMPL
CEO, ISPRL

Copy for kind info: Secretary (P&NG) / AS (P&NG) / JS(R) / JS(M) / JS(IC)
## Revision Record

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<th>Drafted/ Changed by</th>
<th>Description of Change</th>
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