Esteemed Readers,

I feel privileged and take pride in assuming the responsibility as Executive Director of this very prestigious safety organization of the country committed to enhance safety and instill safety culture in the entire Oil & Gas industry. The Organization, established in the year 1986, with its ultimate objective of enhancing the overall safety of this vital energy sector has been continually serving the Oil & Gas Industry for the last three decades.

In the intervening period since last edition of this Newsletter, Safety Council, the apex level committee under the chairmanship of Secretary, P&NG has reviewed the safety performance of the Industry. One of the major decisions inter alia taken in the 32nd Safety Council meeting held on 15th March, 2016, was that subsequent to release of new/revised/amended OISD Standards/Guidelines/Recommendatory Practices, the industry must do a gap analysis to identify the enhanced hazard potential in view of stipulation prescribed in such documents; and companies to make a concrete plan to bridge those gaps in a time bound manner. I am hopeful that by implementing this decision the safety of our installations shall be further strengthened.

Similarly, while reviewing the analysis of OISD Safety Audits Compliance status in the 33rd Safety Council meeting held on 7th June, 2016, Chairman, Safety Council, expressed serious concerns on long pending observations of more than 5 years and advised to put sincere effort for liquidating such recommendations at the earliest. Industry, in addition to complying pending Safety Audit recommendations must also strengthen their internal audit mechanism so that both complement each other in enhancing Safety & Productivity.

The Ministry of Petroleum and Natural Gas also reviewed the Safety issues at various levels including the progress of MB Lal Committee recommendations, Disaster Management Plan, setting up Emergency Response Centre, Site Restoration & Abandonment Guidelines in E&P Sector etc.

In the field of further enhancing our knowledge partnerships, OISD joined hands with ASME International Working Group (IWG) by organizing a joint workshop on "ASME Codes & Quality Assurance' highlighting best practices for safe operation of ageing pipelines. I firmly believe that Industry must have definitely benefitted out of such interaction.

OISD team investigated some of the major incidents that took place. In this issue, root cause analysis & learnings from all such incidents have been enunciated in detail. The recommendations made by the investigation team, upon implementation, would further strengthen the safety practices and go a long way in avoiding recurrence of similar incidents across the Oil & Gas Industry.

Friends, I conclude by saying that let us strive towards making the Oil & Gas Industry a better and more safe place to work. We must make our installations so safe that it becomes benchmark for the global industry to follow. Let all our stake holders take pride in associating themselves with our business. Your views, suggestions and ideas to improve upon further are solicited.

Looking forward for your valuable inputs.

V.J. Rao
Major OISD activities January – June, 2016

EXTERNAL SAFETY AUDITS (ESA)

- **IOCL**
  - POL Terminal at Jasidih, Jharkand was carried out during 4th–6th January, 2016.
  - POL Terminal, Rajbandh, West Bengal was carried out during 18th–20th February, 2016.
  - Pondicherry LPG Bottling Plant was carried out during 1st–3rd March, 2016.
  - POL Depot at Jammu was carried out on 10th March, 2016
  - Panipat Refinery was carried out during 15th–18th March, 2016.
  - POL Depot at Bhitoni, Madhya Pradesh during 12th–14th April, 2016.
  - POL Depot at Rajkot conducted during 27th–29th April, 2016.
  - LPG Bottling Plant at Bongaigaon, Assam during 16th–18th May, 2016.
  - POL Depot, Irugur, Tamilnadu was carried out during 25th–27th May, 2016.
  - LPG Bottling Plant at Malda conducted during 20th–22nd June, 2016.
  - POL Depot at Sankari (TN) conducted during 22nd–24th June, 2016.
  - Digboi-Tinsukia product pipeline conducted during 23rd–24th June, 2016.

- **HPCL**
  - LPG Bottling Plant at Goa was carried out during 18th–23rd January, 2016.
  - Tikri Kalan Terminal, Delhi was carried out during 17th–19th March, 2016.
  - LPG Bottling Plant at Gummidipoondi, Tamil Nadu during 18th–20th April, 2016.
  - LPG Bottling Plant at Purnia, Bihar was carried out during 23rd–25th May, 2016.

- **BPCL**
  - LPG Bottling Plant at Trivandrum was carried out during 8th–10th February, 2016.
  - LPG Bottling Plant at Tuticorin (Tamil Nadu) during 7th–9th March, 2016.
  - Cochin SPM & associated pipelines on 14th January, 2016

- **CPCL**

- **GAIL**
  - Dabhol-Panvel Pipeline was carried out during 10th–14th May, 2016.

- **ONGC**
  - ONGC Mangalore Petrochemicals was carried out during 18th–21st January, 2016.
  - Onshore installation of Ahmedabad Asset was carried out during 1st–5th February, 2016.
  - Offshore Platform (WIN & IC) was carried out during 29th–30th March, 2016.
  - Uran GPP was carried out during 28th–31st March, 2016.
  - ESA of 08 (eight) onshore production installations and SSA of 01 (one) drilling rig and (01) one workover rig at OIL Duliyan conducted during 20th–25th June, 2016.

- **GSPC**
  - Onshore installation of GSPC, Ahmedabad was carried out on 23rd January, 2016.

- **GEO-ENPRO**
  - Onshore installation of GEO-ENPRO at Arunachal Pradesh was carried out during 11th–12th January, 2016.

- **HMEL**
  - Mundra-bhatinda Hindustan Mittal Energy Limited’s crude pipeline (28” Dia, 425 Km, Mundra – Dhansa Section), SPM and Tank Farm was carried out during 6th–9th January, 2016.
  - Dhansa-Bhatinda pipeline was carried out from 7th – 9th March, 2016.

PRE-COMMISSIONING SAFETY AUDITS (PCS A)

- **IOCL**
  - Additional facilities at Jatni Depot, Bhubaneswar was carried out on 1st January, 2016.
  - Additional tanks – POL Depot at Kota, Rajasthan was carried out on 09th January, 2016.
  - Additional facilities at TLF Gantry at Meerut Depot, UP was carried out on 9th January, 2016.
  - Additional facilities of Balasore Depot, Odisha was carried out during 16th–17th January, 2016.
  - 22” OD product pipe line at Fore Shore Terminal, Kandla was carried out on 14th January, 2016.
  - New TLF bays at POL Depot, Manglia (Indore) was carried out during 21st–22nd January, 2016.
  - TLF at IOCL POL Depot at Jayant, MP was carried out on 21st January, 2016.
  - Additional Tankages at POL Depot, Trichy, Tamilnadu was carried out during 23rd–24th January, 2016.
  - Alkylation unit, Butamer, SRU and VGO-HDT at Paradip Refinery was carried out during 27th–28th

- Paradip and Jatni stations of PRRPL was carried out from 25th-27th January, 2016.
- Paradip Jetty pipelined was carried out on 28th January, 2016.
- Additional Tankages at POL Depot, Ongolea, AP was carried out on 9th February, 2016.
- Additional Tankages at POL Terminal, Kondapally, AP was carried out on 10th February, 2016.
- “Rajola-Chakusu” pipe line of SMPL De-bottlenecking was carried during 7th-9th February, 2016.
- Additional Tankages at IOCL, POL Depot, Gulbara, Karnataka was carried on 18th February, 2016.
- “Moda-Gauridad” pipe line section under Salaya-Mathura Pipeline De-bottlenecking Project was carried out during 18th-19th February, 2016.
- Barauni-Dumri Crude Pipeline (Loop Line) was carried out during 25th-26th February, 2016.
- Chaksu Station,Jaipur of SMPL Debottlenecking Project was carried out on 4th March, 2017
- Paradip-Jatni mainline (Paradip Ranchi Raiipur Pipeline-PRRPL) was carried out from 12th-13th March, 2016.
- Vadinar station facility of SMPL (Salaya-Mathura Pipeline) debottlenecking project conducted during 16th-17th June, 2016

- **HPCL**

- **BPCL**
  - Additional facilities of POL Depot at Bharatpur, Rajasthan was carried out on 13th January, 2016.
  - Additional tankages, POL Depot at Piyala, Haryana was carried out on 14th January, 2016.
  - Additional facilities at Karari Depot, UP was carried out during 1st-2nd March, 2016.
  - Kochi Refinery for CDU, VDU, Cooling Tower and Gas turbine No. 3 during 27th-28th May, 2016.

- **NRL**
  - Additional Tankages at NRL, POL Terminal, Siliguri, WB was carried out on 10th February, 2016.

- **ONGC**
  - Lakwa-Moran crude pipelines facilities under Assam renewal project conducted on 25th June, 2016.

- **ISPRL**
  - Above ground facilities of Mangalore and Padur Caverns of ISPRL were carried out during 22nd-23rd January, 2016.
  - ISPRL pipeline at Mangalore carried out on 23rd May, 2016.

- **OPaL**
  - Dual Feed Cracker Unit (DFCU) & associated facilities and Polypropylene Unit (PP) at ONGC Petro Addition Limited (OPAL) was carried out during 2nd-5th March, 2016.

**SURPRISE SAFETY AUDITS (SSA)**

- **IOCL**
  - POL Depot, Meerut, UP was carried out on 9th January, 2016.
  - POL Depot, Manglia (Indore) was carried out during 21st-22nd January, 2016.
  - POL Depot, Jayant, MP was carried out on 20th January, 2016.

- **HPCL**
  - POL Terminal, Budge Budge, West Bengal was carried out on 2nd January, 2016.
  - Mumbai Refinery was carried out during 25th-26th February, 2016.
  - POL Depot, Jabalpur, Madhya Pradesh was carried out on 11th April, 2016.
  - POL Terminal, Irrugur, Tamilnadu was carried out on 28th May, 2016.

- **BPCL**
  - POL Depot, Jammu was carried out on 10th March, 2016
  - POL Depot, Manglia conducted during 16th-17th June, 2016.

- **GAIL**
  - Gas Processing Plant, Vijaipur, MP was carried out during 9th-10th February, 2016

- **ONGC**
  - ONGC Rig “Jindal Star” was carried out on 29th March, 2016

**SPECIAL SAFETY AUDITS**

- Special safety audit of Haldia Jetty & docklines of OMCs was conducted during 25th-26th April, 2016.

**CONSENTS TO OPERATE**

- Accorded to ONGC for operation of offshore Jack up drilling rig “ABAN-II” on 1st January, 2016
- Accorded to ONGC for operation of offshore Jack up drilling rig “Parmeswara” on 4th February, 2016
- Accorded to ONGC for operation of offshore Jack up drilling rig “Trident-2” on 26th February, 2016
- Accorded to ONGC for operation of unmanned Well Head Platform N-19 on 18th March, 2016
- Accorded to ONGC for jack-up drilling rig ‘GD-Chitra’ on 8th April, 2016.
- Accorded to ONGC for operation of fixed unmanned wellhead platform N-21 on 21st April, 2016
- Accorded to Oil India Limited for mobile offshore drilling unit – Rig “GSF Rig 140” on 27th April, 2016.
• Acceded to ONGC for operation of offshore Jack up drilling rig “Rowan Louisiana” on 05th May, 2016.
• Acceded to ONGC for operation of offshore Jack up drilling rig “Sagar Kiran” on 12th May, 2016.
• Acceded to ONGC for operation of fixed unmanned wellhead platform N-22 & 24 on 12th May, 2016.
• Acceded to ONGC for operation of Mobile offshore drilling rig (Floater) “Actinia” on 13th May, 2016.
• Acceded to ONGC for operation of offshore Jack up drilling rig “DS Mat Drill” on 18th May, 2016.
• Acceded to ONGC for operation of offshore Jack up drilling rig “Sagar Shakti” on 23rd May, 2016.
• Acceded to ONGC for operation of offshore Jack up drilling rig “SAGAR JYOTI” on 3rd June, 2016.
• Acceded to ONGC for operation of fixed well unmanned platform B-173AB of N&H Asset on 3rd June, 2016.
• Acceded to ESSAR for operation of one SPM and associated pipeline facilities at west coast, Vadinar Oil Terminal (ESSAR) on 2nd June, 2016.
• Acceded to ONGC for operation of offshore drilling rig (Jack up) “Sagar Gaurav” on 6th June, 2016.

MEETINGS
• ED-OISD attended the meeting:
  - With Committee on Sub-ordinate Legislation Rajya Sabha at Mumbai on 5th January, 2016.
  - On Disaster Management Plan of MoP&NG on 20th January, 2016 at Shastri Bhawan chaired by Joint Secretary (M).
  - Of Consultative Committee of the Members of Parliament for the MoP&NG on “Role of new technology in E&P Sector” held on 18th February, 2016 at Dehradun, chaired by Hon’ble Minister of State (I/C), P&NG.
  - On issues related to PNGISB at Shastri Bhawan on 25th February, 2016 chaired by Secretary, P&NG.
  - Of Indian Pipelines Association at BPCL, Noida as an expert Panelist on 5th March, 2016 and outlined the various critical points related to Safety of pipelines. OISD member also presented a paper on “Pipeline Integrated Management System”.
  - On “Site Restoration and Abandonment Guidelines” in E&P Sector at Shastri Bhawan on 31st March, 2016, chaired by Additional Secretary (MoP&NG).
  - On various measures taken by oil PSUs for pipeline security and maintenance at Shastri Bhawan on 5th May 2016.
  - Taken by JS(R) regarding status of implementation of M.B. Lal committee recommendations related to fire safety measures at Shastri Bhawan on 19th May, 2016.
  - OISD experts attended the meeting with OMCs at Mumbai on 11th January, 2016 on proposed amendment in OISD-STD-144.
  - Review meeting on setting up of Emergency Response Centre held on 10th March, 2016 at Shastri Bhawan.

• 32nd Safety Council meeting chaired by Secretary (P&NG) held on 15th March, 2016 at Shastri Bhawan.
• Meeting with ONGC on ‘Deciding the BOP stack policy specially for mobile trailer mounted workover rigs’ held at OISD on 7th April, 2016.
• Industry meeting on Liquid leak detection system held on 19th April, 2016 at OISD, Noida.
• Meeting with BGEPIIL on “Permanent Abandonment of wells in Tapti field (Offshore)” held at OISD on 21st April, 2016.
• Director (MO-LPG) attended meeting at Nagpur on 28th April, 2016 with PESO officials on proposed amendment in OISD-STD-144.
• Addl. Director (Pipelines), OISD attended the meeting with committee on Subordinate Legislation, Rajya Sabha regarding PNRGRB Regulation, 2016 at Bhopal on 19th May, 2016.
• 33rd Safety Council meeting chaired by Secretary (P&NG) held on 7th June, 2016 at Shastri Bhawan.
• ED-OISD along with OISD officials attended the live demonstration of indigenous US Patented CSIR-CBRI’s “Oil Tank Fire Suppression Technology for Petroleum sector” on 10th June, 2016 held at CSIR-CBRI, Roorkie.
• Addl. Director (Process) attended the 82nd meeting of the Central Boiler Board, under the Chairmanship of Secretary (DIPP) and Chairman (Central Boiler Board), held on 13th June, 2016 at Udyog Bhawan, New Delhi.

KNOWLEDGE SHARING BY OISD OFFICIALS
• Expert from OISD delivered lecture on ‘Case studies and general observation in Oil & Gas Pipeline’ at IOCL, Rajkot.
• OISD organized a joint workshop along with ASME on “ASME Codes & Quality Assurance” at IOIB Bhawan, Noida on 5th February, 2016.
• Expert from OISD provided faculty assistance on “Safety Codes and Standards for Pipelines” to IOCL executives, NRPL, Panipat on 6th February, 2016.
• Expert from OISD provided faculty assistance on “Process Safety Management & Case Studies” to IOCL executives at Indian Oil Management Academy, Haldia on 12th February, 2016.
• Expert from OISD presented a paper on “Pipeline Integrity Management System” at a Technical Seminar organized by IOCL at NRPL, Panipat on 17th March, 2016.
• Addl. Director (Pipeline) imparted training to OIL’s pipeline construction group at Guwahati on 22nd June, 2016.

FUNCTIONAL COMMITTEE MEETINGS ON SAFETY STANDARDS
• Revision of OISD-GDN-182 on “Safe Practices for Workover & Well Stimulation Operations” on 9th June, 2016 at OISD.
THE INCIDENT

- A fire broke out in the month of January, 2016 from the strainer flange of VDU column bottom pump in Atmospheric & Vacuum Distillation Unit (AVU) while carrying out the strainer cleaning job of the pump in an Indian Refinery.
- There was no injury to any person during the incident.
- The impact of the fire was felt locally around the source of the hydrocarbon (strainer flange) and damaged some cables, small pipeline sections, a few air fin coolers fans, insulation and cladding.

SEQUENCE OF EVENTS

- The general arrangement view of the VDU column bottom to pumps suction is given in Sketch below.
- In the second shift (starting at 14-00 hrs) the operator started flushing oil (FLO) at the pump suction valve (downstream of isolation valve) valve to flush out the VR. Operator had kept the pump casing drain and the suction strainer flange drain open and after considerable flushing was done, the sample at the OWS point was checked and found that a thin black liquid was coming. Operator shut all the valves including FLO and made ready to be handed over to maintenance.
- Meanwhile the running pump P-25B started which was making heavy noise. Maintenance advised stopping the pump to check. Accordingly, P-25C was started and P-25B was stopped.
- However P-25C was also found cavitating with heavy noise and vibration. The pump was started and stopped several times thinking that lighters are causing the cavitation.
- Meanwhile P-25A was ready for handover and the permit for opening the strainer was given to maintenance crew.
- To ensure that pump P-25A is isolated, the crew was asked to open the flange on the strainer drain line downstream of the isolation valve. Since no liquid was observed, the alternate bolts of the main strainer flange of 14 inches were opened.
- Since again no liquid or gas was observed the other bolts were loosened and a gap of about 1 inch between the two flanges was made. Nothing came out immediately.
- However, some small amount of vapour started coming after a few minutes when maintenance team disturbed the strainer inside using a rod. The amount of vapour coming out increased after another couple of minutes.
• Within another 1-2 minutes some liquid started pouring down from the bottom of the flange.
• Immediately the liquid caught fire and the vapour travelling up also caught fire.
• Firefighting was started with all resources. Fire was put off by around 21-30 hrs.

ANALYSIS
• There was no oil/ vapour coming out of the strainer drain valve flange when it was opened. This indicates that there was no flow from the strainer to CBD/OWS.
• When the strainer flange was opened, again nothing came out indicating that no liquid has flown through the small bore drain line.
• When the contractor workmen started creating space between the two opened flanges and disturbed the strainer inside, small amount of vapour came out indicating that the strainer disturbance created a path for the liquid to flow.
• It was found that lot of structured packing material from inside the column was found in the strainer and the same was removed when the strainer was opened after the fire incident.

Strenuous material in P 025A suction strainer

• The isolation valve of P-25A (which was lying outside) was also observed with structured packing between the valve gate and the valve seat restricting the full closure of the valve. It was observed that about 5-8% of the valve remained open due to this structured packing.

RECONSTRUCTED SEQUENCE OF EVENTS
• When the pump was isolated and allowed to cool for about 4 hours the VR inside the suction & discharge piping partly got congealed but was not depressurized as the suction valve was passing.
• When flushing was done and checked at OWS the liquid was coming from pump casing and not strainer flange. This was because the strainer flange was choked with structured packing material and hence did not allow the partially congealed VR to flow out. FLO flowed past the strainer to the casing and got drained from the casing drain.
• Since the strainer drain flange was kept open during FLO flushing, the operator thought that flushing oil has come out through this strainer drain line also, which was not true as observed.
• When the strainer was disturbed by the contractor workmen, the liquid pressure due to the passing suction valve found a way to come out from the open strainer flange.
• VR started coming out first as vapour and then in large amounts when the congealed VR started de-congealing at the temperature of about 300 deg C and finally the liquid VR came out and started falling down.
• VR temperature being higher than auto ignition temperature (220 deg C), it caught fire immediately.
• Although the common remotely operated isolation valve (XZV-3014) on the line was shut by remote PB as well as local push button but it did not function. It was observed (when the valve was opened up after the fire) that the ball valve was stuck at 90% open position and hence the complete liquid hold up volume in the column fed to the fire which lasted for more than 3 hours.
ROOT CAUSES OF THE FIRE

- The extraneous structured packing material blocking the suction valve and choking the strainer drain flange opening — misguided / misled the operation team to believe that the pump got isolated and depressurised.
- But in reality, it was not depressurised / drained and not positively isolated from the pressurised system.
- This led to Vacuum Residue (VR) at more than auto-ignition temperature to come out of the suction strainer flange (when it was wedge gapped for opening) and continuously fed the fire that broke out.

MAJOR RECOMMENDATIONS

- When the VR pumps are isolated, the cooling period should be reviewed so that it does not get congealed and draining with FLO can be ensured. The SOP on this aspect should be reviewed.
- The isolation valve of the pump was not fully closed as could be seen from the spindle and from the gap in valve gate & seat when the valve was opened. A fool-proof mechanical arrangement to be made (like it is made in all gear operated valves) to ensure that the operator is guided to understand the valve is fully closed or not.
- When flushing is carried out for any isolated equipment (especially congealing liquids), Job Safety Analysis should consider the chances of congealing or extraneous material choking the drain line and accordingly SOPs for handing over of equipment to be made.
- The strainer area of each of the VR pumps to be checked with standards (for congealing/choking VR service) and accordingly modified, if required.
- Before every start-up of the unit the ROV/SOV has to undergo functionality test and recorded.
- Additional escape route on the strainer platform to be provided near the pump.

• People can affect our attitude by teaching us poor thinking habits or unintentionally misinforming us or providing us with negative sources of influence, but no one can control our attitude unless we voluntarily surrender that control.

• Our attitude is an asset, a treasure of great value, which must be protected accordingly.
A Major accident took place at a Deep Drilling onland Rig during drill pipe stand breaking operation. A drilling operational person, who was working at rig floor for drill pipe stands breaking operation was hit on the back side of his head by the stepping board which fell down during drill pipe stands breaking operation. The injured person was immediately shifted to the hospital where his brain surgery was carried out. The injured person had suffered injuries in the back bone, in the ribs and in the head. The injured person was ultimately succumbed to his injuries.

**BRIEF DESCRIPTION**

A deep drilling rig was deployed at an onland location to drill a development well. The well was drilled to target depth, 51/2” production casing was lowered to bottom and cemented. There was around 700M of 2 7/8” tubing in the well and the tubing string was resting on elevator on the rotary table. The rig was waiting for Logging unit. It was decided to break 5” drill pipe stands (which were lying on the derrick floor stacking area) during the waiting period for productive utilization of waiting time. The first stand was picked up and broken into singles and laid down. Second stand was latched in the elevator and picked up to lower into the mouse hole for breaking it. While lowering the stand into the mouse hole, the Travelling block hit the stepping board and as a result the diving board got bent & lock pins on both sides (holding the stepping board with the diving board) got sheared. This caused the stepping board to fell down from a height of around 27M on to the rig floor and hit the person who was working there.

**OBSERVATIONS**

Stepping board (on the derrick floor) and Monkey board

A) Denting of bottom beam on the left side corner.
B) Eye pads found bend outward by approx. by 6 cm from original position.
C) Impact mark on the right corner of the top railing pipe of the step-in-board.
D) One sheared lock pin was found on the derrick floor while the other could not be traced.
E) Front end of the diving board bent downwards by about 1/2 ft.
F) The attaching pin of the diving board and step-in-board was found deformed at both ends.
G) Off-driller side I beam corner of diving board damaged/dented.

A railing of 2” pipe and about one meter height was erected around the three sides of the step-in-board which was not in the original design of the step-in-board.

While the pipe was lowered into the mouse hole, the derrick man noticed that the diving board has bent downwards. He jumped on the driller side fingers platform to escape from falling down. He also observed that the step-in-board got detached from the diving board and fell on the rig floor.

**Analysis for ascertaining root cause of the incident:**

- The drilling rig was waiting for logging unit after hermetrical testing of the well. About 700 meter of production tubing was lowered in the well. The rig crew then started to break drill pipe stands lying on the setback spreader using mouse hole to utilize the waiting time. Before starting the drill pipe stand breaking, it has to be ensured that the axis of inclined stand and mouse hole casing should fall in the same line. Thread protector should have been
put on pin of lower shoulder joint to guide and ease the pipe entry into the mouse hole.

- After latching the drill pipe stand in the elevator, the step-in-board was not folded by the derrick man who was working on the monkey board. While pushing the hanging drill pipe stand into the mouse hole, the travelling block and hook assembly have the tendency to swing and lean towards monkey board side. Also, the horizontal separation between travelling block and step-inboard is approximately 1.5 feet.

- During lowering of the travelling block to put the drill pipe stand in mouse hole, the driller was not monitoring the movement of the travelling block. The driller have to monitor the movement of the travelling block till it crosses the monkey board level to ensure that it is not touching the step-in board / monkey board.

- There was no effective communication between driller and the derrick man who was working on the monkey board.

- Railing was erected around three sides of the step-in-board, which is a wrong practice. It is not recommended by OEM and international safe practices.

- The step-in-board was not folded after latching the drill pipe stand in the elevator.

**RECOMMENDATIONS**

- The driller must monitor the vertical movement of the travelling block till it crosses the monkey board level.

- There should be an effective communication between the driller and the derrick man working on the monkey board.

- Erection of railing around the Step-in-board is not recommended. After latching and unlatching the elevator, the step-in-board must be put in folded position.

- The long pin which attaches the step-in-board with diving board and its lock pins should be checked regularly for any wear & tear. It should be ensured that the pin & lock pins should be as per the OEM specifications.

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- **No other person on earth has dominion over our attitude.**

- **Two Things Define you:**
  
  Your patience when, you have nothing

  and your attitude, when you have everything
TECHNICAL ARTICLE

STATUTORY TESTING OF LPG MOUNDED STORAGE

By S/Shri M. Vamshi Krishna & Ranjan Mehrotra

INTRODUCTION

LPG Mounded Bullets are more effective and safer method to store high capacities of inflammable LPG ranging from volume of 50 M3 to 5000 M3. The intent of this paper is to provide insight towards the current procedures involving Statutory Testing of Mounded Storage Bullets.

Vessel (s) shall be tested every 5 years internally using visual and other techniques for the following:

a) All the weld joints of the vessel shall be examined through Non-Destructive Testing (NDT) techniques e.g., radiography, Wet Magnetic Particle Test (WPT), Dye Penetration Test (DPT), ultrasonic flaw detection to ensure the integrity of the joints.

b) The wall thickness of the vessel shall be measured ultrasonically.

For (a) and (b) above other established NDT techniques may be used for example acoustic emission testing. Vessel (s) shall be subjected to hydro test once every 10 years or at every welding to the vessel (repairs or new connections) whichever is earlier, by a competent person. In case of any indication of defect or doubts about any defect, the mound cover of the vessel shall be removed to expose the outer surface for necessary examination from outside.

PREPARATION FOR VESSEL ENTRY

- Dropping of bottom spool piece and blinding of isolation valves – upstream side.
- Flooding with water and drain till vessel is hydrocarbon free along with foundation settlement check.
- Dropping of line ROV, spool piece with respective ROV’s and blinding of isolation valves (upstream side).
- Blinding of all hydrocarbon entry & exit nozzles and flare line.
- Open the manhole for man-entry.
- Check for oxygen content and conform the suitability for vessel entry.
- Man-entry is to be made only after issue of proper permit by Safety Dep’t.

ERECTION OF SCAFFOLDING AND ITS REQUIREMENTS

- Scaffolding is to be made out of tubular structures (Standard scaffolding pipes of 40mm dia) in order to make entire inner surface of mounded storage safely accessible for visual inspection and non-destructive testing (NDT) work.
- Working platform or stages are to be made by steel / aluminium perforated sheets or similar material and secured firmly.
- Wooden planks, bamboo, coir ropes, nylon ropes, cotton or any combustible material should not be used for making scaffolding.

SURFACE CLEANING AND PREPARATION FOR NDT (BUFFING)

- Buffing is to be carried out in the presence of supervisor of the work.
- Loose scale, oil, dirt etc. shall be removed by manual/ mechanical means by safe and effective technique preferably non-spark producing.
- For NDT, 100% of all the weld joints at circumferential and longitudinal – seams, fillet welds of stiffening and nozzle weld are to be cleaned by buffing from inside by using electrically /
pneumatically driven buffing wheels. Shining metal is required to be exposed after buffing.

- 150 mm on either side of the weld joints shall be cleaned.
- Areas/places where temporary attachment such as cleats, brackets are welded, both sides of circumferential and longitudinal seams are required to be cleaned from inside in similar manner.
- 2”x2” or 2” diameter areas should be cleaned by emery paper or buffing wheels in each shell petal plate centre, four corners in crown plates and at 05 - 10 random locations in each petal & crown plate for ultrasonic thickness measurement.
- Similar cleaning is required to be done in 04 opposite side of each of the nozzle including manhole (about 2”x 2” or 2” dia area) for thickness measurement.
- NDT location reference points should be marked for subsequent measurements.

NON DESTRUCTIVE TESTING

ULTRA SONIC THICKNESS MEASUREMENT & FLAW DETECTION

- The general requirements of thickness measurement by Ultrasonic Flaw Detection shall conform to the requirements of SMPV (U) Rules and relevant codes/standards/specifications.
- Ultrasonic thickness measurements have to be taken by using ultrasonic Thickness Meter. Ultrasonic Flaw Detection shall be done covering points/locations so as to get a profile or wall thickness to meet the requirements of SMPV (U) Rules and relevant codes/standards/specifications. Each location of thickness shall be scanned and minimum thickness shall be marked on Inspection Report.
- Pipeline upto first ROV is treated as part of the vessel.

ULTRASONIC FLAW DETECTION

The Ultrasonic Flaw Detection covering minimum of 25% of total weld seams shall have to be done including the following:

- 100 % of the “T” weld joints covering a straight length of 150 – 200 mm on either side shall be checked for cracks/defects by ultrasonic flaw detection.
- 100% of the nozzle welds of liquid/vapor lines and manhole shall be checked by ultrasonic flaw detection.

WET FLUOROOSCENT MAGNETIC PRACTICLES INSPECTION (WFMPI)

WFMPI is required to be carried out to detect all types of cracks/defects or such other discontinuities and irregularities by using any/all of the following:

a) Articulated A.C. Magnetic yoke.

b) Fluorescent iron powder suspended in water/Kerosene.

c) Ultraviolet light.

WFMPI Procedure

- 100% of the welds including circumferential and longitudinal seams, dish end petal joints, nozzle welds, fillet welds of stiffening rings, welding spot areas on which temporary attachments i.e. brackets, clamps, cleats etc. have been fitted during fabrication are to be checked by WFMPI.
• 150 - 200 mm parent metal on either side of all weld joints is to be covered in WFMP.

![Picture depicting the process of WFMP](image1)

- Depending on the inspection findings, more area in the parent metal, if required may have to be inspected and covered by WMP.

![WFMP](image2)

**HARDNESS MEASUREMENT**

Hardness is to be measured as per the requirements of SMPV (U) Rules 1981 and relevant codes / standards / specifications:

![Hardness Detector](image3)

- Hardness is to be measured on the welds joints, HAZ, parent metal / plate, Nozzle weld, and any leftover cleat and weld areas at random.

- Hardness shall be measured by high sensitive non indentation type measuring equipment. The Hardness measuring equipment to be used shall have the facility of recording, storing and formatting the recorded readings.

**DYE PENETRANT TESTING**

All inaccessible areas which cannot be covered by WFMP should be checked by D.P. Test as per the requirements of SMPV (U) Rules 1981 and relevant codes / standards / specifications.

**LONG RANGE ULTRASONIC TEST (LRUT)**

Thickness of out let pipe lines of vessel shall be measured by Long Range Ultrasonic Test (LRUT) which is not accessible for direct thickness measurement. The long range ultrasonic test is required to ascertain the condition of concealed outlet pipe from vessel bottom to ROV. Flaw Detection covering of 100 % of total weld seams have to be done.

**HYDROSTATIC TESTING (Optional)**

- Hydrostatic test of Mounded Storage is required to be conducted at a pressure as specified / stipulated by the requirements of SMPV (U) Rules 1981 and relevant codes / standards.

- Necessary arrangement including blinding of entry & exit nozzles, instrumentation connections, water connection, water filling, providing calibrated pressure gauges (Range 0-35 Kg/cm² and 0-40 /cm² etc.) are to be done to facilitate hydrostatic testing .

- Two calibrated pressure gauges one near the test pump and other at the top of the vessel are to be provided.

- Settlement of the vessel is to be checked and noted during water filling by suitable means. Settlement to be noted after filling 50% of the vessel and at further steps of 10% each.

- Pressure should be raised up to 50% of test pressure and held for 30 minutes and then gradually raised at a step of 10% up to the test pressure. Test will be witnessed by Competent Person approved by PESO
RADIOGRAPHY (OPTIONAL)
- Radiography shall be carried out for confirming the defects if any observed during the inspection of the vessel.
- In the radiographs, locations of weld joints (circumferential / longitudinal) are to be clearly marked for future reference.
- The report of radiography along with the films shall be used to interpret the findings.

In case during Inspection and NDT, any cracks / defects are noticed the repair of the same has to be taken up only after the permission to undertake such repairs has been accorded by PESO, Nagpur.

The Safety Relief Valves shall be inspected and tested under Rule 18 once. Excess Flow Valves and the Remote Operated Valves shall be inspected and tested during the periodic test under Rule 19.

MINOR REPAIRS
- If any crack / flaw of minor nature has been noticed during the NDT / WFMPI inspection, suitable repairs of the same has to be taken up.
- Once any crack / flaw has been noticed, the depth of the same shall be assessed by the UT method with requisite sensitivity as per ASME code Section VIII Division 1 & 2.

All the cracks having depth lesser than the corrosion allowance provided for, shall be removed by grinding.

MAJOR REPAIRS
If in the opinion of the competent third party inspection authority, any defects / cracks needs to be repaired by welding and stress relieving, such repair jobs shall be carried out as per repair procedures duly approved by the PESO, Nagpur through PESO approved welders/ fabricators.

COMMISSIONING
De-blinding and boxing up of the vessel and also carry out pre-commissioning activities such as purging, pressurization and leak checks shall be done before commissioning.

REPORTING / DOCUMENTATION
Preparation of detailed report to be done which shall include all the preliminary / status reports, all supporting documents & NDT reports including Authenticity/Witness Certificate issued by approved Third Party for the tests carried.

- Our attitude toward life determines life’s attitude towards us
- Having the right attitude is one of the basics that success requires.
ABSTRACT
It has been established by case studies that external corrosion on steel pipelines occur due to coating disbondment on coated pipelines and at welded joints where heat shrink sleeve are used. The external corrosion and metal loss has been detected by ILI. The CIPL and DCVG survey on the pipeline did not indicate any coating defect at the location of external corrosion on the pipeline while no corrosion was observed at the location of coating defect. CIPL and DCVG survey indicate effectiveness of cathodic protection, under-protected and over-protected section of pipeline and coating defect but unfortunately skips giving any indication of external corrosion under disbonded coating. Coating defect located through CIPL and DCVG survey is repaired/replaced but unattended coating disbondment and entrapped moisture through opening in coating flaws may cause external corrosion and metal failure. We will discuss cause and impact of coating disbondment, role and limitation of cathodic protection in controlling external corrosion and remedial measures to avoid external corrosion due to coating disbondment.

INTRODUCTION
Pipeline coating is being used as primary source of corrosion control in steel pipelines. Presently 3LPE and DLFBE coatings are used in pipelines as primary source of corrosion control. As no coating is perfect and coating defect and coating disbondment takes place due to several factors at yard coating process and during pipe laying, cathodic protection as secondary source is employed for corrosion control. However CP as secondary source of corrosion protection has limitation in case of coating disbondment. Further excessive cathodic current to the pipeline may result into cathodic disbondment and may lead to accelerated corrosion. Certain coatings such as 3LPE and HSS have cathodic current shielding effect that is CP current is not passing through these coating to the affected portion of pipeline where coating disbondment has taken place i.e there is no adhesion between metal substrates and coating. Moisture entraps between metal and coating and cause galvanic corrosion, hence for effective corrosion control of pipelines, detailed study of coating characteristics and effectiveness of cathodic protection is required. Further monitoring and maintenance of coating efficacy is required to detect coating disbondment and external corrosion.

THE PHENOMENON OF COATING DISBONDMENT
Coating disbondment is loss of adhesion between metal substrates and protective coating. Coating disbondment may take place due to lapse in coating application process at coating yard, improper construction methodology and soil stress and environmental effect. Coating properties indicate adhesion strength in typical soil environment and working conditions such as operating temperature. The common causes of poor adhesion due to lapse in coating application at yard may be inadequate surface preparation and equipment’s setting and at construction stage, poor handling and lowering process, improper soil compacting and sand packing at rocky terrain, back-filling etc. In most cases pipe rests on hard rock or rock falling on pipe damaging coating. In such cases either coating will be damaged or prevent cathodic current to reach disbonded pipe surface. Both 3LPE and DLFBE coatings have excellent adhesion to steel and resistance to cathodic disbondment with the difference that 3LPE has high impact and abrasion
resistance due to toughness of external PE layer and DLFBE has the advantage of permeability of cathodic current to exposed portion of pipeline having disbondment. HSS at welded joint has also poor adhesion and shielding property. Fig 1 and fig 2 show the photographs of coating disbondment on steel pipelines.

Cathodic protection plays an important role in coating disbondment. Unequal distribution of CP current and consequent high CP potential is the result of CP shielding by coating and earthed structures, AC and DC interference, soil chemistry, TRU setting etc. Over protection is a hazard and under protection shows coating defect. Pipeline needs adequate cathodic protection but at the same time over protection for long duration is not desirable as this may lead to cathodic disbondment due to hydrogen evolution and alkaline environment around coating.

PHENOMENON OF CORROSION UNDER DISBONDED COATING
It is required to understand the phenomenon of corrosion under disbonded coating even when cathodic protection is in place and PSP (ON&OFF) readings are showing adequate protection. It is apparent that electrolyte has permeated between metal substrate and coating and galvanic cell has been formed to accelerate corrosion on pipe because either cathodic current is not reaching pipe surface or current is not adequate to protect the pipeline. This phenomenon can be understood by figure 5 below.

The loss of adhesion between metal substrates and coating is very dangerous for health of pipeline and particularly when CP is not reaching to exposed pipeline due to shielding property of applied coating. Though both DLFBE and 3LPE coatings have high bonding strength, still disbonding takes place due to reasons explained above, water enters into the annular through opening either between HSS and 3LPE or through 3LPE/DLFBE interface creating corrosion cell. Still pipe can be protected from corrosion if corrosion process can be reversed by applying cathodic protection. However, as seen from above figure, CP current reaches to some area near to coating holiday through opening and protects a section of pipeline exposed to electrolyte but this current does not reach beyond certain limit from holiday to other disbonded area and corrosion takes place in those area where CP is not reaching. It has been demonstrated that CP can only go from 5 cm to 10 cm from holiday opening. This phenomenon has occurred in all types of coatings whether DLFBE or 3LPE and particularly at welded joint with HSS. The conditions conducive for such type of external corrosion are due to three reasons. 1. Loss of adhesion. 2. Ingress of water in the annulus between pipe and coating through coating defect. 3. Absence of cathodic protection in the affected area. Certainly prevention is better than the cure so the best method is to apply protective coating with stringent specifications and environmental conditions to achieve fail proof coating and effective cathodic protection by regular CP monitoring and without shielding effect.

WHY EXTERNAL SURVEYS FAIL IN DETECTING EXTERNAL CORROSION
External surveys such as CIPL and DCVG are done to know the effectiveness of cathodic protection and detect location of actual coating defect. CIPL survey measures both ON and OFF potential of pipeline with respect to soil at close interval to detect areas of over-protection and under-protection and possible coating defects. It would not indicate location and intensity of
Corrosion under disbonded coating

corrosion defects as well as corrosion activities on pipeline. Based on the data interpretation of CIPL survey, DCGV survey is carried out to know the location and intensity of coating defects termed as minor, moderate and high. Normally moderate and high coating defects are repaired and minor ones are omitted except if it occurs at close intervals. It has been verified from the inspection at dig verification site after CIPL and DCGV survey that corrosion has taken place at those locations showing cathodically protected while at locations of under-protection or coating defect, there is no corrosion. It means that though CIPL and DCGV survey will indicate coating defect, it will not indicate pipeline corrosion. However it indicates logical conclusion that CP current is reaching non-corroding area under disbonded coating but not sufficient to polarize it and the current is not reaching to the corroded area under disbonded coating as it is remote from holiday or coating fault. It is shown by combined surveys indicating CP status and coating defect. Please refer Fig 5 showing level of cathodic protection under disbonded coating.

Fig 8 shows process of potential measurement on pipeline and how potential measurement indicates status of coating defect and exposed metal to electrolyte. It also shows exposed metal remote from holiday where CP current is not able to reach and corrosion may take place. The limitation of external survey in indicating corrosion under disbonded coating can be understood from Fig 8. It is to be understood that corrosion can be prevented by avoiding either coating fault or coating disbondment. Coating fault location can be identified but not coating disbondment. If both are present, corrosion is bound to occur unless CP current is adequate to protect the pipeline under disbonded coating.

**HOW CORROSION UNDER DISBONDED COATING CAN BE DETECTED AND AVERTED**

As everyone is aware that first line of defence against corrosion is effective coating and second line of defence is cathodic protection. The anti-corrosion methods revolve around these two components and may be categorized in three steps:

1. Preventive measures
2. Predictive measures or monitoring mechanism
3. Corrective measures

**1. Preventive measures:**

The preventive measures are as follows:

(i) Right selection of coating material such as 3LPE or DLFBE considering primarily that 3LPE coating has shielding property and DLFBE coating allows CP current to reach the exposed metal area. The additional advantage in 3LPE coating is mechanical strength and toughness of outer layer of PE. The selection of coating will depend upon environmental condition and pipeline terrain. Both the coatings find application on carbon steel pipeline.

(ii) The adhesion of coating with metal is absolutely essential for which quality control in coating application is a must. The process starts from inspection of pipe observing any scratch, dent, oil, grease etc and taking rectification measures if any abnormalities are observed. The correct process of shot blasting
is ensured by pre-heating the pipe and maintaining humidity, dew point temperature and temperature of environment achieving desired roughness, degree of cleanliness and degree of dust. The pipe is chemically pre-treated with phosphoric acid and chromate solution, water washed and dried before application of epoxy, adhesive and polyethylene maintaining humidity, dew point and temperature. Finally coating thickness and holiday checks are carried out. Various tests are carried out to ensure toughness, mechanical strength and adhesion of coating such as epoxy layer adhesion test, impact test, bond strength or peel test, cathodic disbonding test and air entrapment test.

(iii) The transportation and stacking of coated pipeline should be done in such a manner that there should not be any stress or physical impact on coating damaging it. Proper lifting tools with rubber padding and wooden/sand bag support on coated pipe shall be used.

(iv) The joint coating at site should be done with proper cleaning the surface removing all dust, oil and grease and sand blasting the surface to a degree of SA 2 ½. Again there is shielding problem in using HSS on joint. There is problem of ingress of water through opening in the overlap between 3LPE and HSS and disbondment at joint. Hence either proper application of HSS at joint or PE tape coating compatible with 3LPE may be used.

(v) The construction practice at site of laying the pipeline is important for avoiding coating defect and disbonding. Extra precaution is required in laying the pipeline in rocky terrain where usually rock slides over coated pipe in the trench or pipe is laid in the trench on the rock. Soft padding in the bottom and on top of the pipeline must be ensured to avoid damage of pipe coating. Pipe should be laid in the trench after dewatering the trench.

(vi) Holiday checking of pipe coating must be done very carefully at 25 KV and even minor holiday must be repaired by following proper procedure. Repair should be followed by holiday checking.

(vii) Once pipe is laid inside the trench, the backfilling must be done except tie in where open ends of pipe should be capped to prevent water ingress inside pipeline.

(viii) Temporary cathodic protection is provided till permanent CP is in place. It should be ensured that whole pipeline is cathodically protected and current density is as per design criteria. PCP should be commissioned within 3 months of commissioning of pipeline.

(ix) CP shielding is to be avoided by isolating protected pipeline from earthed structure on unprotected side and maintaining integrity of isolating joint.

(x) Shorted casing is a big drain of CP current with the result that pipeline in the vicinity of shorted casing requires more current to be protected. Sound engineering practice is required for avoiding shorted casing.

2. **Predictive measures or monitoring mechanism:**

This step is very important. Monitoring is a way of life. The process should be adequate to diagnose the problem, analyze the result and take corrective action. The monitoring mechanism may be as follows:

(i) Online monitoring is required for CP potential and current to know the variation in CP parameters. Any variation in CP parameters may be enquired for suspected drainage of CP current through coating defect or interference.

(ii) Polarization coupon should be installed at vulnerable location to measure polarized potential quarterly and knowing protection status of pipeline. In addition current measurement is done annually to know the current consumption of a particular section of pipeline.

(iii) CIPL and DCVG survey is carried out once in five years to know the coating condition of pipeline. Based on the survey results, dig verification survey is carried out to ascertain coating defect. In house CIPL and DCVG survey may be carried out occasionally whenever required to locate coating fault and assess status of adhesion by dig verification.

(iv) ILI is carried out once in ten years primarily to know the internal condition of pipeline but it also indicates external corrosion. The growth in external corrosion can also be known by other methods not waiting for ILI reports such as dig
verification and physical inspection of coating defect and adhesion.

(v) In case of non-piggable pipeline ILI is not possible; hence vigilance is required to detect external corrosion through other methods such as dig verification and physical inspection of coating defect and adhesion.

(vi) Corrosion monitoring is a regular practice. CP parameters, occasional CIPL and DCGV survey, dig verification survey, coating holiday testing, peel test of coating, physical verification of pipe surface etc will indicate degree of external corrosion on pipeline.

3. Corrective measures:
The last but not the least is corrective measures. Timely and appropriate corrective measures are required to hold further corrosion process. The following are proposed corrective measures:

(i) Polarized potential distribution and current requirement along the pipeline should be maintained in steady state by isolating protected pipeline from earthed structures, shorted cased crossing, stray current interference etc and suitably adjusting TRU/CPPPSM output to maintain polarized potential within limit.

(ii) Based on the analysis and report of CIPL and DCGV surveys following corrective actions are recommended:
- The location of coating defect whether minor, moderate or severe may be excavated to an extended length and holiday test may be carried out. Presence of any rock around pipeline should be checked and removed.
- The adhesion test may be carried out at location of coating defect and adjacent to it. If adhesion is poor then external surface of pipe should be checked for corrosion.
- Soil sample adjacent to pipe and corrosion product if any should be tested in laboratory to know any microbial activity around pipeline.
- UT may be carried out.
- Coating repair should be carried out ensuring complete adhesion to pipe surface.
- Coating integrity should be checked by carrying out holiday test.
- CIPL survey is done at the excavated portion to know the status of cathodic protection and can be compared with earlier result prior to coating repair.
- During back filling care should be taken to ensure integrity of pipe coating.

Case studies and physical verification may indicate extent of external corrosion on pipeline due to coating disbondment. Situation becomes critical when external monitoring does not indicate any corrosion till it is found out by ILI. Before that sufficient damage may have taken place. Trial and error method is only solution for locating coating disbondment particularly at rocky terrain and other area where coating fault is suspected.

CONCLUSION AND INFERENCE
The paper describes corrosion problem under disbonded coating, why conventional health surveys fail in detecting external corrosion and measures required to avoid external corrosion. Maintaining coating integrity is a must for avoiding external corrosion. Most of the coating defects happen due to lapse in loading and unloading, stacking, joint coating and lowering and backfilling. Post commissioning health surveys indicate enormous coating defects on pipeline leading to prospect of external corrosion. While it is advisable to maintain sufficient cathodic protection and carry out health surveys periodically, it is imperative to repair all coating defects and check adhesion and verify by carrying out health surveys. Case studies of external corrosion due to coating disbondment give lots of information which may be useful for taking precaution to avoid corrosion.

- It is our attitude at the beginning of a difficult task which, more than anything else, will affect its successful outcome.
- Adopting the right attitude can convert a negative stress into a positive one.
Hon’ble Prime Minister of India had launched Swachh Bharat Abhiyan on 2nd Oct, 2014. Since then OISD is continuously putting efforts for success of Swachh Bharat Abhiyan. As one of the major initiatives, it was decided that whenever External Safety Audit (ESA) of any LPG plant shall be conducted, Audit Team shall also monitor the cleanliness of public places of the visited LPG plant like toilets of drivers, workman & security guards, canteen etc.

During Jan ‘16 to June ‘16, External Safety Audits of 11 LPG plants of various OMCs have been conducted and Swachh Bharat Abhiyan activities were checked at these LPG plants during ESA. Audit team takes the photograph of public places of the plant on 1st day of audit and thereafter plant personnel ensure cleaning of these places and handover photograph of these places to Audit Team during final closing meeting, with a commitment to maintain cleanliness on sustained basis.

Results of this initiative are very encouraging!

Safety Audit : LPG Bottling Plant, Gummudipoondi, HPCL (18th - 20th April, 2016)
Safety Audit: LPG Bottling Plant, Tuticorin, BPCL
(7th – 9th March, 2016)
Safety Audit: LPG Bottling plant, Pondicherry, IOCL (1st to 3rd March, 2016)
OISDiens bid fond farewell to four of its associates S/Shri DK Adhikari, Executive Director (Acting), AK Arora, Addl. Dir. (Engg), NH Patel, Asstt. Dir. (Admin) and SK Sharma, Addl Dir (MIS).

Shri DK Adhikari a technical expert in Marketing (POL) made tremendous contribution in helping oil and gas industry in maintaining highest level of safety standards at locations. He had mature, amicable and a pleasant personality. He superannuated as Executive Director (Acting), OISD on 31st January, 2016.

Shri AK Arora with his vast experience in Hydrocarbon engineering & project related functions played a pivotal role in Pre-commissioning Safety Audits of new projects resulting in timely and smooth commissioning. He was actively associated in multifaceted functions of standard development, safety audits of Refineries, Gas processing plants, pipelines etc. He superannuated on 31st January, 2016.

Shri NH Patel was actively associated in organising Seminar, Workshops, Safety Award functions etc. in OISD and also had vast experience in teaching and Admin activities. He superannuated on 30th June, 2016.

Shri SK Sharma had 36 years of experience in Refinery and at OISD. He was actively associated in multifaceted functions of standard development, safety audits of Refineries, Gas processing plants, pipelines etc. He superannuated on 31st July, 2016.

OISDiens extend warm wishes to them & their families for their future endeavours.
INCOMING OFFICERS

In addition to ED, OISD who has joined on 17th February, 2016, the following officers have joined OISD.

Shri Ranjan Mehratra joined OISD on 11th March, 2016 as Director (MO-LPG). He is a Mechanical Engineer from MNNIT, Allahabad & PGDM in Sales & Marketing. He has 30 years of rich experience in Indian Oil’s LPG Operation, Maintenance & Engineering.

Shri PK Sarma joined OISD on 18th April, 2016 as Addl. Director (Process). He is a Chemical Engineer from BITS, Pilani. He has 30 years of rich experience in Indian Oil’s Refinery operations.

Shri Vivek Kumar joined OISD on 10th May, 2016 as Joint Director (P/L). He is Mechanical Engineer from NIT, Jalandhar. He has more than 15 years of rich experience in IOCL’s Pipelines Division.

Shri GM Gopinath joined OISD on 2nd June, 2016 as Dy. Director (Admin-HR). He is MBA in Finance. He has 19 years of rich experience in Indian Oil’s POL & LPG Finance & HR/ S&D/ Operations.

Shri LL Sahu joined OISD on 12th April, 2016 as Director (MO-POL). He is a Mechanical Engineer from BIT, Mesra, Ranchi & PGDM in Sales & Marketing. He has 30 years of rich experience in Indian Oil’s POL Operations & Maintenance.

Shri Zafar Ali joined OISD on 4th July, 2016 as Joint Director (E&P). He is Mechanical Engineer from Institute of Engineers India and MBA in Operation Management from SMU. He has 26 years rich experience in ONGC’S Well services.

Shri B. Govindarajan joined OISD on 3rd June, 2016 as Joint Director (Finance). He acquired his MBA degree in Finance and Post Graduate Diploma in Personal Management. He has 23 years of rich experience in Indian Oil's Finance functions of LPG Bottling Plants, Terminals, Administrative offices and Dealer Selection Board.

Shri M. Varshini Krishna joined OISD on 2nd June, 2016 as Assistant Director (MO). He is Electronics & Communication Engineer and PGDM in Marketing & Operations. He has 7 years of experience in Indian Oil’s LPG Operation, Maintenance & Engineering Deptt.

TRANSFERRED OFFICERS

Shri Rajesh Uprety was Addl. Director (Pipelines) at OISD. On Transfer, he joined as DGM (HSE) at IOCL Pipeline HQ.

Shri R.D. Danny was Joint Director (E&P) at OISD. On Transfer, he joined as Chief Engineer (Prod), ONGC, Agartala.

Shri Rakesh Agarwal was Joint Director (MO-LPG) at OISD. On transfer, he joined as Chief Manager - MLIIF, HPCL.
NEWS IN BRIEF

32nd SAFETY COUNCIL MEETING

32nd Safety Council Meeting was held on 15th March, 2016, to review Safety performances of Oil & Gas Industry. Shri KD Tripathi, Secretary, MoP&NG & Chairman, Safety Council chaired the meeting. Key issues discussed & reviewed are as under:

- Compliance status of MB Lal Committee recommendations.
- Setting up of Emergency Response Centres (ERCs) in the country.
- Analysis of OISD Safety Audits Compliance status (ESA/SSA)

ISO 9001:2008 RE-CERTIFICATION

In its pursuit for achieving excellence, OISD was accredited with ISO 9001:2008 certification. It enabled OISD to streamline its various systems and procedures and is aimed at the objective of serving its stakeholders in much more efficient and effective manner. Recertification audit by M/s DNV was carried out successfully on 10.12.2015.

JOINT WORKSHOP OF ASME & OISD ON "ASME CODES & QUALITY ASSURANCE"

In view of the need and growing importance of adopting best practices approach to assure safe condition and operation of ageing pipelines, the ASME International Working Group (IWG) in India for ASME B 31.8/ASME B 31.8 S/ ASME B 31.4 codes and Oil India Safety Directorate joined hands for organizing a one day workshop on “ASME Codes & Quality Assurance”, at OIDB Bhawan, NOIDA on the 5th February 2016.

The aim of this workshop was to disseminate information about the role, importance and benefits of International Working Group (IWG), India ASME B 31.8/ASME B 31.8 S/ ASME B 31.4. Technical experience exchange sessions on Magnetic Tomography Method and Contactless Magneto-metric Diagnostics for assessing the health and integrity of the pipeline and Failure Investigation Case Studies from the industry were presented during the joint Workshop.
Site Restoration Guidelines for Petroleum Operations

OISD was a key member of the Committee constituted by MoP&NG for development of ‘Site Restoration Guidelines for Petroleum Operations’. OISD was instrumental in framing the sections related to “Permanent Well Abandonment” and “Offshore Structural Removal Requirements”, in the said Guidelines.

Upon cessation of petroleum activities, all the Operators in the country shall have to mandatorily follow abandonment and site restoration procedures as prescribed in the aforesaid Guidelines.

INTERNATIONAL YOGA DAY CELEBRATION AT OISD ON 21-06-2016

OISD celebrated the 2nd International Yoga Day on 21st June 2016 with full enthusiasm. To make the event successful, all OISDians assembled at OIDB Auditorium at 08:30 hrs. Yoga program was conducted by Sh. RN Mittal, AD (Pipelines), OISD. The program commenced with the inaugural speech by ED-OISD Shri. VJ Rao, wherein he emphasised the positive aspects of practicing Yoga for the overall benefit of individuals, at the very basic level of body, soul and mind.

The program was appreciated by the participants and the same was evident from their enthusiasm & elevated energy levels.

World Environment Day

The World Environment Day was observed at OISD on 5th June, 2016 to stimulate worldwide awareness about the importance of the healthy & green environment in the human lives, and environmental protection. This year’s theme was the fight against the illegal trade in wildlife, which erodes precious biodiversity and threatens the survival of awesome species such as elephants, rhinos and tigers. The slogan for the theme for this year was “Join the race to make the world a better place”.

The tel udhoga sukul sahishnav karo karyavchn samiti (n.s.k.a.s.), noeda dharra 2014-15 ke liye puraskar

The tel udhoga sukul sahishnav karo karyavchn samiti (n.s.k.a.s.), noeda dharra 2014-15 ke dharra karyavchn hindii ke karyavchn samiti ko mukhyak kn kartu huye kaksh karyavchn dharra ke liye farvar, 2016 me dwiagni puraskar se sammanit kiyta hira hai. Nagra karyavchn samiti ko gath bharta siritak ke gaur mangal karo karyavchn 02.06.1995 me kiyta hira tha eva iska sabhavlay 13, sirkar - 1, noeda me hira.
CONGRATULATIONS

Ms. Neha Mehrotra, daughter of Mr Ranjan Mehrotra, Director Mktg Ops (LPG), OISD has completed her Dual Degree course (B.Tech/M.Tech) in Nano Technology from Amity Institute of Nano Technology in June, 2016. She qualified the same with 1st position in the Institute.

Ms Neha Mehrotra has been selected for Ph.D. at Centre for Bio Medical Engineering, IIT, Delhi. She gives the credit to her mother for all her achievement. Congratulations Neha. We wish you all the best in all your future endeavors.

Ms. Bhagya Jayant and Ms. Bhavya Jayant, daughters of Shri Dharmvir, Addt. Dir. (Process) have scored 10 CGPA in 10th Standard of CBSE.

Congratulations Bhagya and Bhavya. We wish you all the best in all your future endeavors.

Ms. G.G. Aishwarya daughter of Sh. Gopinath GM, Deputy Director (Admin) scored 97.2% in 10th Standard (Matric Board) conducted by Tamil Nadu during the month of April, 2016.

Congratulations Aishwarya. We wish you all the best in all your future endeavors.

Master Ritvik Tanwar, student of class VII, Sachdeva Global School Dwarka, son of Sh. Pradeep Tanwar, Joint Director, OISD was awarded the First Prize (Junior) in The Annual Vivekananda Competition 2015-16.

The said competition was conducted by the Ramakrihna Mission, New Delhi for students of schools in National Capital Territory of Delhi to inculcate in them the idea of Enlightened Citizenship.

Congratulations Ritvik. We wish you all the best in all your future endeavors.
Visit of Shri MB Lal to OISD

Launching of web application on digitisation, tour, leave-developed in-house by Shri R Dudi

OISD official imparting training to security personnel during Safety Audit

OIL INDUSTRY SAFETY DIRECTORATE
Ministry of Petroleum & Natural Gas,
8th Floor, OIDB Bhawan, Plot No 2, Sector-73, Noida, Uttar Pradesh-201301,
Fax No. (0120) 2593802 / 2593858, Website: www.oisd.gov.in
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