



ऑयल एण्ड नेचुरल गैस कॉरपोरेशन लिमिटेड  
Oil and Natural Gas Corporation Limited

निगमित स्वास्थ्य, संरक्षा एवं पर्यावरण  
तीसरी मंजिल, टॉवर- ए, दीनदयाल ऊर्जा भवन  
5- नेल्सन मंडेला मार्ग, वसंत कुंज, नई दिल्ली – 110070  
Corporate Health, Safety and Environment  
03rd Floor, Tower- A, Deendayal Urja Bhawan  
5- Nelson Mandela Marg, Vasant Kunj, New Delhi-110070  
+91-11-26753148 | chse@ongc.co.in

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## **Safety Alert** **No. 02/ 2025**

<b>Incident:</b>	Fire at Gas compressor
<b>Location:</b>	Onshore plant
<b>Operation Activity:</b>	Nil
<b>Potential Hazard Severity:</b>	High
<b>Consequence:</b>	Property loss

### **What Happened?**

A power dip occurred on the State Transmission Utility side, resulting in an under-voltage condition at the Co-gen Substation, which supplies power to both HT and LT systems. This under-voltage led to the tripping of both HT and LT feeders at the Co-gen Substation.

While most sections were affected, HT system remained operational, and the Compressor continued running. However, due to the LT power supply tripping, the lube oil and seal oil systems associated with the compressor also tripped. The compressor motor got decoupled from the compressor and continued to run without lube oil circulation, resulting in severe mechanical damage, including the breaking of the shaft, coupling, and gearbox.

It was also observed that the compressor did not stop even when the remote stop command was given from the control room. Due to the absence of lubrication, the oil in the gearbox overheated, and with the failure of the bearing housing, the hot oil caught fire, leading to the incident.

### **What Caused It?**

- The functionality tests of the ESD and Stop buttons at the Local Control Panel (LCP) were not carried out.
- Inadequate maintenance of safety equipment, including sensors and relays, was observed.
- The integrity of the compressor, motor, and HT breaker was not adequately monitored. The equipment was kept in continuous operation without regular servicing and maintenance.

### **Preventive Actions:**

- All the protective Relays, Sensors, Detectors and PLC must be checked on a periodical basis as per OISD-STD-137 and Factory Act 1948.
- The ESD or Emergency stop button must be hard wired, directly from control room as well as LCP to HT breaker of compressor so as to Trip the compressor in the event of emergency. These wires do not have to be routed through process trip or any other protective relay, reference section 24 of The Factories Act 1948.
- All the parameters of compressor and motor should be made available in control room DCS, so that timely corrective action can be taken immediately. 7A(2)(c) read with 41(B)(1) of The Factories Act 1948.
- The regular preventive maintenance of compressor- motor- breakers etc. and its associated equipment should be carried out. as per Annexure 9 of OISD-STD-240.
- Automatic fire detection and suppression system should be in place rather than Manual intervention, as per Section 38 of factories act 1948.
- Records of Safety critical equipment associated with compressor and other critical equipment should be thoroughly maintained and if anything bypassed, it should be maintained in Bypass register as per section 7A(2)(c) of Factories Act 1948.
- A contingency plan must be made and roles and responsibilities to be fixed of Cogen, Substation and Control room for proper coordination, line of action, passing information and decision making as per OISD-STD-227.

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"Safety & Well-being Crucial for Viksit Bharat"