

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
(SOUTHERN ZONE), CHENNAI**

Original Application No. 66 of 2020 (SZ)

In the matter of:

Tribunal on its own motion -SUO MOTU
Based on the News item in Times of India Newspaper,
Dt. 07.05.2020, under the caption
"ONGC pipe destroys cotton on 2 acres"

.....Applicant

Versus

1. The Chief Secretary to Govt. of Tamil Nadu,
Govt. Secretariat, Fort St. George,
Chennai, Tamil Nadu – 600 009 & 8 others

.....Respondents

**INDEX TO THE TYPED SET OF PAPERS
FILED BY 8TH AND 9TH RESPONDENT (ONGC)**

S. No.	Date	Description of Document	Pg. No.
1	28.10.2020	Reply by ONGC to the recommendations of the Committee appointed by this Hon'ble Tribunal	1

It is certified that the above documents are true copies of their originals.

Dated at Chennai this the 10th day of November, 2020.



Counsel for 8th & 9th Respondents



OIL AND NATURAL GAS CORPORATION LIMITED
CAUVERY ASSET, NERAVY COMPLEX
KARAIKAL 609604

Date: 28.10.2020

Reference Original Application No 66 of 2020(SZ)
National Green Tribunal, Southern Zone, Chennai

- 1) Present method of flow based measurement at receiving end to identify the leakage of oil is not effective, because exact location of oil leak point is not able to be identified until its physical appearance in the top soil. The flow based measurement shall be carried out by providing flow meters in all pipelines with certain distance from well to receiving point, so that the area of pipeline leak shall be identified easily at initial stage itself. These flow meters shall be connected to any system like SCADA, PLC etc.,

Standard flow meters are meant for Single phase flow only. Well fluid is a combination of Gas, Oil and Water and hence it cannot be measured using flow meters.

Flow lines lengths varies from 1 km to 8 km and of 4 inch dia. Flow rate from each well also varies from 1 m³ to 15 m³/day (About 50 lit/hour to 500 lit/hour) which is very small quantity flowing through individual flow lines. These flow lines are underground lines and laid mostly through agricultural lands.

Fixing flow meters at intermediate points under ground is not possible. If flow meters are to be installed additional land has to be acquired along the route of the flow lines for cabling. This may further affect the farming process. Probability of leakage also increases if there are more joints in the flow lines. Also as already explained above, flow meters will not measure multiphase flow.

Due to the depleting reservoir pressure, the flow of the well fluid in most of the wells is intermittent (flows in surges). With the SCADA reading of no-flow intervals, we cannot conclude whether well has ceased to flow or there is any leakage in the line unless it is observed for a long duration of time. By that time the undesirable damage to the land would be inevitable. If the leakage is of very minor in nature it is not at all possible to detect it with the SCADA system monitoring.

Connecting them with SCADA is a very cumbersome and tedious process as it involves huge wireless transmission infrastructure required for each well which is not viable. Also the protection of these infrastructure and cables at remote locations against any damage

Ganesh

W. Ram

V. S. F. Law

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R. Ravi Kumar

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/miscrant act would be required to be ensured. Such practice doesn't exist in any of the Onshore oil industry.

The present methodology for pipe line monitoring and control measures includes patrolling of the flow lines for visual observation and detection of any leakage on the surface ,sensitising the villagers and public about the consequences of the leakages and inform the ONGC authorities in case of any eventuality of leakage. Important phone numbers are displayed at the well sites in order to contact the concerned person of ONGC for immediate and timely action.

- 2) The periodic assessment of Pipe Integrity (including internal crack, corrosion and erosion) shall be made at least once in five years, so that the status of the pipeline shall be known and accordingly replacement period for the pipe shall be decided.

Pipeline integrity is checked once in five years by way of Hydro-testing of the pipeline and pressure testing of the line with the existing well fluid once in every two years. (OISD 233)

To overcome the above constraints mentioned in Point no 1 and to achieve the aim of safeguarding the lands through which pipelines are laid from any leakages, ONGC is planning to have Intelligent Pigging Studies for all the flow lines through recent Advance Technology for pigging in non-piggable lines. With this study, the present condition of entire length of the flow lines will be ascertained accurately. Wherever the thickness of the line is observed less due to internal corrosion, cracks, erosion etc., proactively those portions will be replaced to avoid future leakages.

Already vendors for this service are identified and the process of entering into a contract is already started. The contract is in initial phase of estimation and likely to be awarded by end of the Financial Year 2020-21. Once the contract is in place, all the major and critical pipelines based on the life, ROU will be tested for internal integrity.

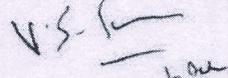
- 3) Pigging operation shall be carried out to reduce water accumulation and subsequent scaling & corrosion inside the pipeline.

Pigging of trunk lines are carried out once in 5 years.

As the existing flow lines are non piggable, regular Liquid N2 application / hot oil circulation is being done, to clear water accumulation and to avoid formation of sludge/scales inside the pipe line thereby minimising the corrosion. Once the contract


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mentioned in earlier points comes into existence, condition of all flow lines will be known and further proactive actions will be initiated.

- 4) External Corrosion Protection of pipeline shall be provided in all underground pipelines such as sacrificial anode method, impulse current method, poly ethylene coating etc., to avoid external corrosion of pipe.

Presently all pipelines laid are 3 layered poly-ethylene coated pipes to avoid external corrosion. Moreover, Cathodic Protection exists for all the trunk pipelines. Measures are also being taken to execute the same in the well flow lines for recently laid pipelines through a contract (Pipeline Integrity Management System) which will be in place by Jan'2021. Remaining pipelines will be Cathodically protected in a phased manner.

- 5) Revalidating of appropriate inhibitors and rate of feeding based on well fluid characteristics (crude oil) can be done by frequent sampling and analysis of well fluid.

Oil Line Corrosion Inhibitor being used is procured as per Standard Corporate Specifications and the efficiency of the chemical is tested at ONGC Regional Labs using the well fluids of the Asset. Dosage Rate and Batch Dosing of Corrosion Inhibitor in flow lines are carried out as per the recommendations of the ONGC Research Institutes. Analysis of well fluid characteristics are being carried out regularly in the field laboratories.

Committee appointed by NGT suggested to confirm whether the effectiveness of the chemical dosed from well head end would get diluted and lose its effectiveness when it passes through sagged portions of the pipelines where water accumulation will be more. The same has been asked to our lab and corrective action in our practice would be incorporated if suggested by ONGC Regional lab.

- 6) ONGC has informed that old pipelines are flushed once if it is not going to be used further in future. Evidence shall be provided to the committee during field visit to ensure that old unused pipelines are flushed properly.

The pipelines are disconnected from the well site end and installation end and the lines are blinded /positively isolated after flushing the line for removal of hydrocarbons. Committee appointed by NGT was shown the isolation of old pipeline at KMP#44 well head.

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- 7) ONGC shall also submit evidence of mothballing of pipeline which is temporarily not in use.

At present there are no pipe lines which are temporarily not in use.

However in the case of flow lines/pipe lines which are not in use and may be required for the future purpose they are disconnected from the well site end and installation end and the lines are blinded /positively isolated after flushing the line for removal of hydrocarbons. Then they are purged and filled with N2 for safe guarding their life for the purpose of using in the future.

- 8) ONGC informed that the spilled soil (contaminated soil) is removed upto affected depth from the farmland and taken for in house bioremediation. The contaminated soil excavated area is re-filled with soil taken from other location. It was informed that the refilled soil is also having good fertility. However, during this course of action the refill soil quality should be tested as well as it should possess similar characteristics of the existing natural farm soil so as to avoid yield loss.

Presently the contaminated soil of excavated area is refilled up to the depth of 1.2 meter with the soil taken from other location. To ensure good fertility and yield, the soil for refilling is taken from suitable location as suggested by the owner of the land after duly testing the soil used for refilling by the local agricultural department

As suggested by Committee appointed by NGT, henceforth the contaminated soil below the pipe line shall also be removed and refilled with tested quality soil. After refilling the soil shall be tested for Mechanical, Biological, Organic and Microbial population to ensure that they have similar characteristics of existing natural farm soil so as to avoid yield loss.

ONGC shall ensure the affected area is refilled with the suitable good quality soil by coordinating with the local village and district authorities and if required Dept of Agriculture.

- 9) ONGC is advised to carry out the assessment of soil quality in all locations, wherever the soil is refilled due to oil spillage / leakage and according corrective measures needs to be taken.

In addition to the reply mentioned in point no 8, ONGC shall periodically take the soil sample at different locations of the operational areas to have the base data for referring with the affected soil where the leakage happens in the future.

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V.S. K. Loya
R. Ram Kumar



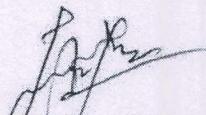
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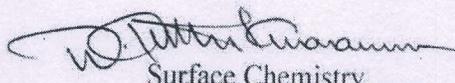
- 10) An action plan for continuous monitoring of affected areas periodically by ONGC shall be submitted to avoid long term issues.

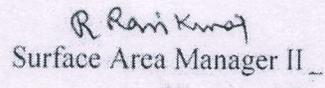
After the removal of contaminated soil and refilling by suitable soil the land is handed over to the land owner. The visit to the affected areas will be carried out by the ONGC crew and regular feedback /soil testing regarding cultivation and crop yield will be collected for records. Based on the feedback, corrective measures shall be taken including the additional crop compensation based on the recommendations by the local village and district authorities.

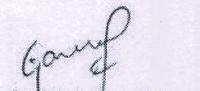
Committee appointed by NGT suggested to take surface soil samples along the routes of vulnerable flow lines during non-cultivation periods to ensure there is no residual leakage of very minute nature. ONGC will implement this suggestion once the present cultivation period is over.

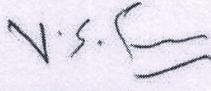
Committee appointed by NGT also suggested to carryout CSR activities along with Department of agriculture to improve fertility of the affected lands. Based on the reports of concerned VAO / Revenue Authorities this will be carried out wherever required.


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