BEFORE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE BENCH AT CHENNAI

ORIGINAL APPLICATION NO. 73 OF 2021

IN THE MATTER OF:

VISAKHA PAWAN PRAJA KARMIKA SANGAM …. …. …Applicant

Versus

UNION OF INDIA & ORS … ….Respondents

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Filed through

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REPLY AFFIDAVIT ON BEHALF OF APPLICANT

I, Mr. Ganga Raju Kola S/o Kola Appalaraju, H.No. 60-33-49, Ambedkar Colony, Malkapuram, Vishakhapatnam, Andhra Pradesh-530011, aged about 49 years presently in Andhra Pradesh do hereby solemnly affirm and declare as under:

1. That I am the Secretary of the Applicant Association in the above mentioned application and I am fully conversant with the facts and circumstances of the case and therefore competent and authorized to swear this affidavit.

2. That the Project Proponent i.e., Respondent No. 7 has filed a misleading counter and Report dated 24.6.2021. That the report dated 24.6.2021 states that there was no adverse impact on the environment due to the massive fire accident occurred at 15.10 pm on 25.5.2021 in the plant. The conclusions mentioned in the report are reproduced as under:

> *"a) The Refinery operations are carried out as per stipulated norms. There is no violation of Consent For Operation (CFO) granted by the environmental authorities. The emissions and discharges resulting from the fire incident in CDU-3 are within the prescribed parameters.*
> *b) The fire incident has not impacted the environment or surrounding habitation and the ambient air quality was within stipulated limits."*

3. It is submitted that the 10 Member Expert Committee appointed by District Collector of Visakhapatnam has found contradictory facts. The Committee found that HPCL Company deviated statuary obligations and also found that there are lapses on the part of the Project Proponent. The relevant extracts of the 'Report of Probing Team on HPCL-VR Fire Accident' by the Experts Committee appointed by District Collector are reproduced as under:

> **"1.0. Preamble:**
>
> A major fire accident was occurred in Hindustan Petroleum Corporation Limited (HPCL) Refinery in Visakhapatnam at Crude Distillation Unit (CDU)-III on 25.5.2021 at about 15.10 Hrs. On hearing the emergency siren blown by HPCL Management, huge numbers of workers were rushed to Main Gate of

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the Refinery and many people from adjoining areas have reached the Refinery. The entire situation become panic and the news spread widely through the Media.

4.0. Documents Submitted by HPCL:

During the interactive session, the team has asked HPCL officials the required documents for verification purpose. The list of documents are annexed after last page of this report for ready reference. **The documents show that the periodical conduct of hydro test of the pipelines is due on August, 2020. The management of HPCL has given the reason that the test was not conducted due to non-availability of the competent authority due to the prevailing COVID situation. The team considered it as major deviation of statutory obligations laid on HPCL.**

6.0. Brief Description of CDU-III:

.....

The existing incident was occurred at 6" SR pipeline which carries Bitumen at 340 Degree Centigrade and 16 kg/cm2 pressure. **The pipeline is insulated one. The hydro test of the pipeline was conducted during the month of April, 2016 since then it is overdue for hydro test.**

7.0. Cause of Outbreak of Fire:

Based on the inspection of the team members, interaction with the HPCL officials and statements collected from eye witness, the cause of the outbreak of the fire is preliminarily identified that the 6" SR pipeline carrying Bitumin at a temperature of 355 Degree C to 400 C and an operating pressure of 14 kg/CM2 has developed a hole of about 2.5" to 3 " may be due to corrosion or erosion. The technical reasons for the corrosion or erosion are to be ascertained after conducting a detailed study on MoC (Material of Construction) of the pipeline. **The Bitumin with such higher temperature has escaped from the hole developed in the pipeline and due to auto ignition temperature (280 Degree C for bitumen), it has released lot of smoke and subsequently fire with loud cracking sound. As the projectile of the fire is vertical, the pipelines passing at an height of 30 mts from the ground level got ruptured at six places and contributed more hydrocarbons to the engulfed fire. The type of the fire can be envisaged as Jet Fire followed by Pool Fire. The pipeline burnt due to fire are shown as Figure Nos. 5 & 6.**

7.1. Initiation and Propagation of Fire (As per the Eye Witness of the Operators)

.....

After the fire incident, it is found that the pipelines are ruptured in six places as mentioned here under:

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1.Vacuume residue pipeline (S.R.Line) at a height of 4.0m from the ground

2. Kerosene Line in 2nd floor

3. Naphtha line in 2nd Floor;

4. Diesel line in pipe line track in between 1st and 2nd floor;

5. Heavy Diesel line;

6. Atmospheric Column vapor line in fifth floor i.e., at a height of 30m from the ground

8.0. Consequences of the Incident

About 78 MT of hydrocarbon was burnt in this fire incident. As per the information given by HPCL, about 24.25 Crores works have to be undertaken immediately to replace the damaged pipelines and machinery in CDU-III. The air pollution monitoring reports from three monitoring stations submitted by HPCL shows higher values of PM2.5 and PM 10 during the fire incident which indicates the considerable extent of air pollution within in plant premises. Due to continuous fire of about 65 minutes, the ambient temperature might be increased to some extent and incremental adverse impact on various meteorological parameters.

9.0. Identification of Lapses:

The following lapses of HPCL are observed during the inspection and document verification:

1. Deviation in implementing preventive maintenance schedules as per the Standard Operating Procedures (SOP) within the time. During inspection, it was observed that industry was not conducted the Ultrasonic test for 6 inch pipeline in CDU-3 (fire incident was taken place) for which the due date for testing is August, 2020.

2. Industry has conducted of hydro test to the pipelines in August, 2012, and not conducted afterwards this test should be conducted every 4 years which is serious lapse on account of HPCL.

3. Failure in identifying corrosion/erosion of the pipelines carrying hydrocarbons at higher temperatures.

4. Preventive Maintenance schedules are not implemented properly.

True copy of the Report of Probing Team on HPCL-VR Fire Accident by the Experts Committee appointed by District Collector dated 7.7.2021 obtained by

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the Applicant under RTI Act from Joint Chief Inspector of Factories, Visakhapatnam, Government of Andhra Pradesh is annexed as **ANNEXURE A1.**

4. That the Project Proponent in its Reply affidavit dated 12.4.2021 to the Original Application filed by the Applicant, it has admitted some of the non-compliances/violations raised by Applicant. Following admissions were made by the HPCL company are mentioned below:

   a. In para 8 of the reply affidavit by the HPCL, the February, 2016 report of IISc is complied and compliance report is attached as Annexure-I. But in subsequent paras the PP admitted that the odour testing equipment was yet to install and operated from April, 2021. Though the PP has filed its reply on 12.4.2021, it has stated that the equipment will start function from April, 2021 but not gave clear factual situation. It is humbly submitted that the report of IISc was submitted in February, 2016 but the recommendations of IISc were not implemented event after 5 years. This shows the careless approach of the Project Proponent. It has left the issues to APPCB for the compliance of the report. Being the PP, it has not followed up/took interest for the implementation and providing safe and healthy environment to the citizens residing near the plant.

   b. In para 9 (ix), it was admitted by PP that there is shortage of space in refinery for tree plantation. This is a clear violation of EC by the PP. That the MoEF mandates this condition to reduce the adverse impact on the neighboring areas. But the PP states that they have planted trees in some other places of Visakhapatnam due to shortage of space in the refinery. It is humbly submitted that on this admission by the PP, the MoEF and APPCB/regulating agencies have to revoke the EC for non-compliance of mandatory conditions and restrict the PP according to the availability of space and compliance of the conditions of EC.

   c. In para 13 (i), the PP mentioned that it has placed purchase order for conducting odour study at Respondent Refinery and stated that the work will commence in April, 2021. It is submitted that Respondent No.7 has filed their reply affidavit on 12.4.2021 and it appears that as on that date they have not installed the odour testing equipment. It is further submitted that the study of IISc was conducted between 2012 to 2016 and detailed report submitted to PP in 2016. But even after 5 years, PP was yet to implement the recommendations of the IISc which shows the careless approach of PP.

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d. In para 12 (viii) and 13 (vi), it was admitted by the PP that **PM levels in ambient air are slightly on higher side inside the Refinery in 2 out of 3 locations.**

e. In para 14, the PP admitted that **there is slight variation in the actual quantities for lighter, middle and heavier distillates (products) against the limits stipulated by APPCB. It was admitted by the PP that they have requested APPCB to revise the limits for quantities of products vide the CFO application dated 4.11.2020.** This shows that the PP has violated the CFO conditions and there is no clarity whether the APPCB has taken action on the violation and modified the CFO.

f. In para 16(iv), it was admitted by the PP that Black smoke is observed in the plant.

g. In para 16(ix), it was stated that the PP **"recycled stripped sour water from process units to the maximum possible extent with the available systems** for use as wash water to the extent of 25 m3/hr. In order to maximize recycle, a new system is being implemented under current expansion project (VRMP). Post implementation of current modernization project (VRMP), the water will be recycled 100 % through Integrated Effluent Treatment Plant (IETP)." It demonstrates that the PP has not recycled the stripped sour water and it was stated that PP has recycled "to the maximum possible extent".

h. In para 16 (xiv), the PP has admitted that **they have shortage of space in refinery for the development of greenbelt.** It has stated that to compensate tree plantation, HPCL has planted trees in various locations other than the plant premises. It is submitted that the MoEF has mandated the condition to develop green belt within the premises of refinery to reduced the pollution/adverse impact on adjoining areas. But due to shortage of the space, PP has not implemented the mandatory condition which is completely violating the condition of EC and requires to be revoked by MoEF on the ground of violation.

i. In para 16 (xvii), it was admitted by PP in their counter dt. 12.4.2021 that **they are in the process of implementing the recommendations made by IISc in their 2016 report.** That the PP stated that "In line with the recommendations of the APPCB for conducting odor study, purchase order is placed on M/s Glens Innovation Lab Pvt Ltd, Chennai, for conducting odour study at Respondents Visakh Refinery, which will be vetted by IIT-Madras. The work will commence in April,

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2021. The same was communicated to APPCB." It is clear that the PP is adopting very careless approach towards the health and concerns of the residents residing near the refinery. It is further submitted that PP failed to implement the directions of APPCB in regard to implementation of recommendations of the IISc Committee.

j. In para 18 of the reply, it was admitted that Black smoke is observed from flare stock only during upset scenarios for very short duration.

k. In para 19, the PP has admitted that the fire accident occurred as alleged by the Applicant. It was mentioned in the reply that **"the incident mentioned in the photographs happened during power failure in the refinery operations and in one of its kind case.** It is a black smoke and is not ash. It is to be noted that the smoke is emanated at elevation of 100 meters which is considered as a safe method of dispersion.

5. It is humbly submitted that Project proponent, a Central government Unit has been continuously violating the mandatory conditions directed by MoEF and APPCB. It is further submitted that there is shortage of space in the refinery for mandatory plantation prescribed in EC granted by MoEF. That the PP being a responsible Public Sector Unit, must have abide by the mandatory rules and conditions imposed by the regulating authorities. But it has failed and trying to mislead this Hon'ble Tribunal and regulating authorities. In the above facts and circumstance, it is prayed that the expansion of the project production capacity may not be allowed/kept on hold since the safety and mandatory conditions are not complied by the Unit.

DEPONENT

VERIFICATION:-

Verified on this the 26th day of July 2021 at Visakhapatnam, Andhra Pradesh that the contents of the above affidavit are true and correct. No part of it is false and nothing material has been concealed therefrom.

DEPONENT

NEMALA SREEVANI, B.A., B.L.
ADVOCATE & NOTARY
D.No: 8-1-112, Jogavanipalem
Opp: Penthulugari Meda
Near Visakha Eye Hospital
Gajuwaka, Visakhapatnam D.
Cell: 9490229889 9247585334

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INDIA

Commission Expires on 29-7-2022

ANNEXURE A1

Government of Andhra Pradesh
Factories Department

***

From;
Sri. J.Sivasankara Reddy,
Public Information Officer,
Joint Chief Inspector of Factories,
Visakhapatnam
D.No.50-50-35/8, B.S.Layout,
Seethammadhara,
Visakhapatnam-530013.

To,
Sri.K. Gangaraju,
Secretary,
Visakha Pawan Praja Karmika
Sangam,
Door no: 60-33-49,
Ambedkar colony.
Malkapuram, Visakhapatnam.

Lr.No.(e.o. 276237 /2021), Date.07-07-2021

Sir,

Sub:- Factories Department – RTI Act 2005 – Application of Sri K. Gangaraju, Secretary, Visakha Pawan Praja Karmika sangam, Malkapuram, Visakhapatnam. – Information requested regarding a fire accident occurred on 25-05-2021 in Hindustan Petroleum Corporation Ltd., Visakha Refinery, Visakhapatnam – Soft & Hard copied of all the reports conducted by the committee formed by the District collector – RTI application received – Processing Fee called for – Fees of Rs.261/- received – Information furnished - regarding.

Ref:- 1) RTI 2005 Application Lr no:Nil, Dt: 15-06-2021 received from Sri K. Gangaraju,Secretary, Visakha Pawan Praja Karmika sangam, Malkapuram, Visakhapatnam.
2) This office Lr even no, dt: 17-06-2021.
3) Lr no: Nil, Dt: 21-06-2021 of the RTI Applicant.

****

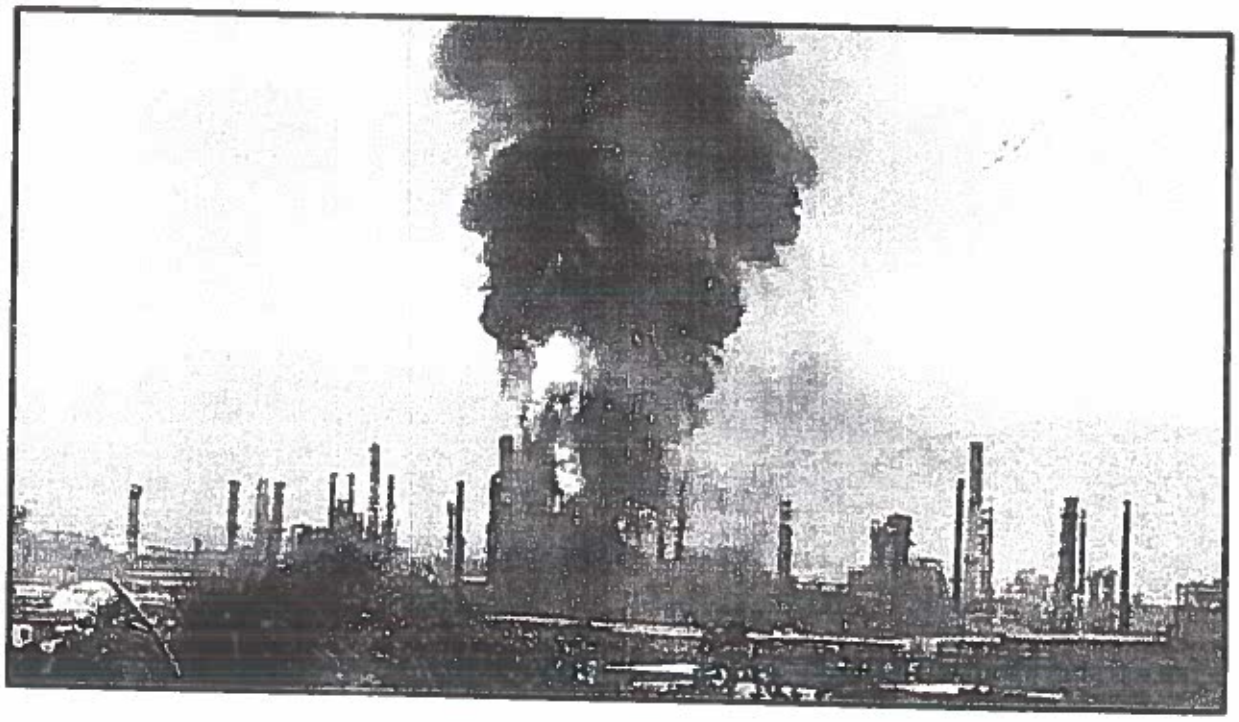
With reference to the above 3rd cited, I am here with furnishing the requested information in both hard and soft copies respectively.

Encl: Hard & Soft copies of information.

Public Information Officer
Joint Chief Inspector of Factories,
Visakhapatnam.

Signed by Jakkireddy Siva Sankara Reddy
Date: 07-07-2021 11:55:33
Reason: Approved

REPORT OF ENQUIRY COMMITTEE ON HPCL-VISAKH REFINERY FIRE ACCIDENT OCCURRED ON 25-MAY-2021 AT ABOUT 15:10 HRS.



Submitted to

The Collector & District Magistrate
Visakhapatnam

Joint Chief Inspector of Factories
Visakhapatnam

1.0 PREAMBLE

A major fire accident was occurred in Hindustan Petroleum Corporation Limited (HPCL) Refinery in Visakhapatnam at Crude Distillation Unit (CDU)-III on 25-May-2021 at about 15:10 Hrs. On hearing the emergency siren blown by HPCL Management, huge numbers of workers were rushed to Main Gate of the Refinery and many people from adjoining areas have reached the Refinery. The entire situation became panic and the news was spread widely through the Media.

Followed by this incident, the Collector & District Magistrate, Visakhapatnam has constituted a team for conducting a discrete probe into the mishap and to report on the following terms of reference.

a) the cause of outbreak of fire in the factory
b) whether sufficient required measures have been taken by the Management of the factory
c) whether any negligence or lapses are noticed in avoiding the mishap on part of the Management
d) whether any departmental failure is noticed
e) any other issue related to the mishap, if any

The committee is headed by The Revenue Divisional Officer, Visakhapatnam and co-ordinated by The General Manager, District Industries Centre, Visakhapatnam.

The list of Committee members are given hereunder:

S.No	Name of the Member	Designation	Committee
1	Sri Penchala Kishore	Revenue Divisional Officer, Visakhapatnam	Head of the Committee
2.	Sri A. Ramalingeswara Raju	General Manager, District Industries Center, Visakhapatnam	Member
3.	Sri J. Sivasankara Reddy	Joint Chief Inspector of Factories, Visakhapatnam	Member
4.	Sri B.V.S. Ram Prakash,	District Fire Officer, Visakhapatnam	Member
5.	Sri M. Pramod Kumar	Environmental Engineer, APPCB, Visakhapatnam	Member
6.	Dr. P. Venkat Reddy	HoD of Chemical Engineering, IIPE	Member

Joint Chief Inspector of Factories
Visakhapatnam

S.No	Name of the Member	Designation	Committee
7.	Dr. Pratibha Biswal	Associate Dean of Students Affairs and Assistant Professor, Chemical Engineering, IIPE	Member
8.	Dr. Raka Mondal	Assistant Professor, Chemical Engineering, IIPE	Member
9.	Prof. Chitti Babu	Professor, Chemical Engineering Department, Andhra University	Member
10.	Prof. P. Jagannadha Rao	Professor, Chemical Engineering Department, Andhra University.	Member

The team of the members visited the place of incident on 28-May-2021 after a preliminary interaction with the officials of HPCL in Conference Hall at 15:00 Hrs.

The team has collected the view point of the Management on the incident and noted down some salient technical features for further technical conclusion. Mr. Ramanathan Ramakrishnan, Chief General Manager (Operations), HPCL has presented the sequence of events of fire along with some technical points related to the occurrence of fire. The team has physically seen the burnt pipelines and adjoining areas which were badly damaged due to the engulfing of fire. The photographs of the site visit are given hereunder.

Fig.1 : Meeting of the Team with HPCL Officials

Joint Chief Inspector of Factories
Visakhapatnam

Fig.2 : Visit of incident site by Team Members

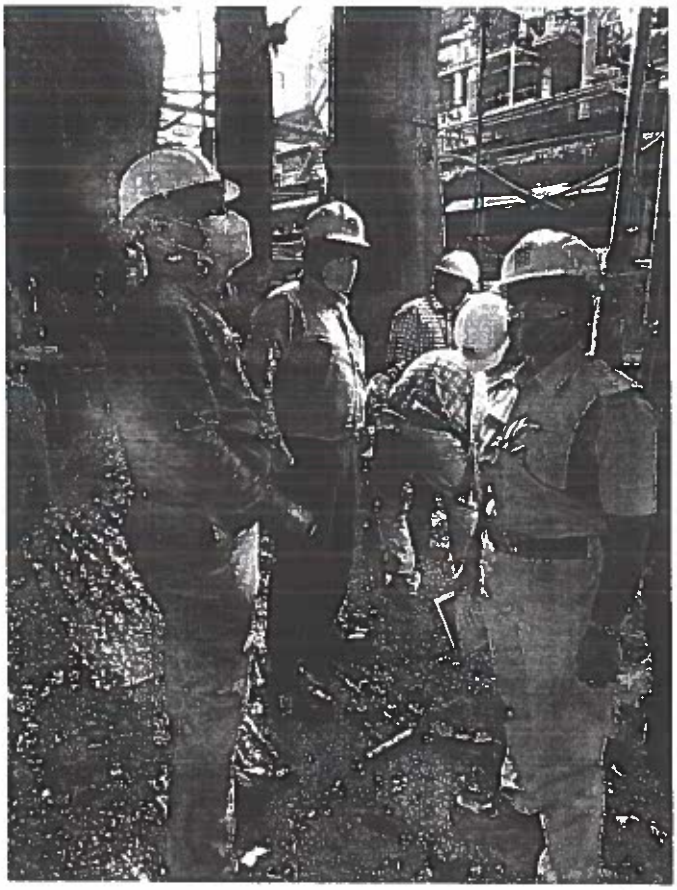


Fig.3 : Damaged area in CDU-III

Joint Chief Inspector of Factories
Visakhapatnam

The RDO has conducted a personal interaction with the employees witnessed the incident on the day of fire and the statements were noted which are placed in this report.

The team has taken due care in finding of the initial cause of the incident but some of the technical studies need to be conducted to ascertain the exact root cause of the mechanical failure of the pipeline carrying Bitumen for which a dedicated technical team from Mumbai is expected to visit the Refinery and conduct technical studies as per the statement of HPCL officials.

This report contains some recommendations for taking avoid repeat measures by HPCL officials. The team has found some deviations of statutory obligations by HPCL which are placed in this report.

The identification of lapses, some environmental consequences of the incident are depicted in this report along with necessary recommendations for implementation by HPCL.

2.0 IMMEDIATE ACTIONS TAKEN BY THE GOVT. OFFICIALS

Soon after the news spread out that there was a huge fire in HPCL Refinery, the official of District Administration i.e., Joint Collector (ASRA & Welfare) reached to HPCL premises at about 15:25 Hrs. as per the instructions of the Collector & District Magistrate. Consequently, the Revenue Divisional Officer, Jt. Chief Inspector of Factories, District Fire Officer, officials from the Industries Department & A.P.Pollution Control Board reached the premises and passed on necessary instructions to the fire combat team of HPCL. On hearing the news, Sri Muttamsetty Srinivasa Rao, Hon'ble Minister of Tourism & Development, Govt. of Andhra Pradesh has visited the factory and interacted with the higher officials of the HPCL. There are several habitations in the vicinity of HPCL. After noticing the fir accident, large group of people gathered on roads to access the impact of the accident. The District administration has conveyed the public around HPCL that the fire incident was limited to Crude Distillation Unit (CDU)-III only and there is no necessary for evacuation.

Due to the immediate action of the District officials as well as the fire team of HPCL, the duration of fire is drastically reduced to about 65 minutes which is, in fact, shows the efficacy of the collective effort. No casualties and injuries are reported out of this incident.

Joint Chief Inspector of Factories
Visakhapatnam

3.0 SEQUENCE OF EVENTS

The sequence of fire combat process on 25-May-2021 is as follows as per the inputs taken by HPCL officials.

Time	Sequence of Events
15:10 Hrs	Emergency message received on fire phone & RT Set
15:11 Hrs	Level-2 Emergency Siren blown
15:11 Hrs	Emergency turnout by F&S crew along with fire tenders (Equipment Tender, Foam Tenders VFT-72 & VFT-68)
15:13 Hrs	Fire Tenders reached the site
15:14 Hrs	Started opening fixed fire monitors and initiated firefighting operation
15:15 Hrs	Water spray system of CDU-III units operated – pump bay, Overhead accumulated drum (42-V-13) and LPG drum (42-V-14)
15:17 Hrs	Water spray system of 5 Nos. hydrocarbon tanks at south of CDU-3 operated
15:20 Hrs	DCP Tender reached site
15:22 Hrs	Fire at first and second floor of technical structure got extinguished using DCP tender
15:45 Hrs	One more Foam tender (VFT-71) reached site
15.50 Hrs	Foam tender from Naval Dockyard reports to the emergency location
15.51 Hrs	Jt. Chief Inspector of Factories reached the incident location and advised the emergency handling operations
15.55 Hrs	Foam tender from AP Fire services reported to the emergency location at South side of the CDU-III unit
16.00 Hrs	Foam tender from Vizag Port Trust reported to emergency location at East side of the CDU-III
16:15 Hrs	Fire was extinguished completely
16:15-16:24 Hrs	Search operation in CDU-III carried out and no casualty was found
16.24 Hrs	Hon'ble Minister of Tourism & Development, Govt. of Andhra Pradesh reached the location for review of the site condition
16:25 Hrs	All Clear Siren given
16:25-17:00 Hrs	Cooling operation carried out in the unit

4.0 DOCUMENTS SUBMITTED BY HPCL

During the interactive session, the team has asked HPCL officials the required documents for verification purpose. The list of documents are annexed after last page of this report for ready reference. The documents show that the periodical conduct of hydro test of the pipelines is due on August '2020. The management of HPCL has given the reason that the test was not conducted due to non-availability of the competent authority due to the prevailing COVID situation. The team considered it as a major deviation of statutory obligations laid on HPCL.

Joint Chief Inspector of Factories
Visakhapatnam

5.0 BRIEF INTRODUCTION OF HPCL

HPCL-Visakha Refinery was commissioned in the year 1956 as Caltex Oil Refining India Ltd. (CORIL). This was the first oil refinery on the East Coast of India and the first major industry in Visakhapatnam, Andhra Pradesh. CORIL was taken over by the Govt. of India and merged with Hindustan Petroleum in 1978.

Starting with a modest installed capacity of 0.65 MMTPA, the refinery has been expanded in phases to the current nameplate capacity of 8.3 MMTPA. Visakha Refinery is a Fuels based refinery generating major products of mass consumption like Petrol, Diesel and Kerosene. The refinery has a flexibility to process a wide range of crude oils procured across the globe and ranging from non-bituminous to bituminous and lube bearing crude oils.

Visakha Refinery Modernization Project (VRMP) envisages substantial expansion of the existing capacity of the refinery from 8.33 MMTPA to 15 MMTPA, which represents an increase in capacity by more than 25% (approx. 80%). It is also proposed to carry out revamp of existing MS and HSD product up-gradation facilities.

M/s. Hindustan Petroleum Corporation Limited, Visakha Refinery is an existing 2m(i) factory with R.No.2014 the manufacturing process in the factory is manufacturing of Petroleum Refinery with licence limits of 264132.44 HP electrical power and to employee maximum of 17000 workers. This factory comes under Major Accident Hazard (MAH) factory as per the inventories available in the factory as mentioned in the MSIHC rule 1989.

This factory has three Crude Distillation Units (CDU'S) in operation. The following are the capacities of Crude Distillation Units.

1	Crude Distillation Unit-I	1.8 MMTPA
2	Crude Distillation Unit-II	3.1 MMTPA
3	Crude Distillation Unit-III	3.4 MMTPA
	TOTAL	**8.3 MMTPA**

The present fire incident took place in Crude Distillation Unit-III

Joint Chief Inspector of Factories
Visakhapatnam

6.0 BRIEF DESCRIPTION OF CDU-III

Crude Distillation Unit-III is designed to produce Liquefied Petroleum Gas (LPG), Straight Run Naphtha (SRN), Heavy Naphtha (HN), Superior Kerosene Oil (SKO), Light Diesel (LD), Heavy Diesel (HD) and Reduced Crude Oil (RCO). The unit is also designed for special products like Aviation Turbine Fuel (ATF), Machine Turpentine Oil (MTO), Jute Batch Oil (JBO-I) & JBO-II. The CDU-III also comprises the Naphtha Stabilizer section and the Straight Run Naphtha (SRH) Caustic and Water Wash sections. The Vacuum Distillation Unit (VDU) is designed to process Reduced Crude Oil (RCO) from CDU and to produce Vacuum Diesel, Light Vacuum Gas Oil (LVGO), Heavy Vacuum Gas Oil (HVGO) and Vacuum Residue (VR).

The process flowchart of the CDU-III is presented in the Figure-4. The crude feed from offsite crude storage tank is fed to desalter after preheating in first stage PHT-I to around 129-136^{o}C. In normal desalting process water will be mixed with crude in the upstream of mixing valve of the Desalter. On mixing, fresh water comes in contact with brine droplets and various water soluble impurities in oil. The water and oil mixture is then pumped into the Desalter vessel where the mixture is metered out at a low velocity into an electric field. The electric field causes the oil and water to separate. The Desalted Crude from Desalter (42-V-10) is pumped by Crude Booster Pumps (42- P-02 A/B) to PHT-II & III.

The existing incident was occurred at 6" SR pipeline which carries Bitumen at 340^{o}C and 16 kg/cm^{2} pressure. The pipeline is insulated one. The hydro test of the pipeline was conducted during the month of April '2016 since than it is overdue for hydro test.

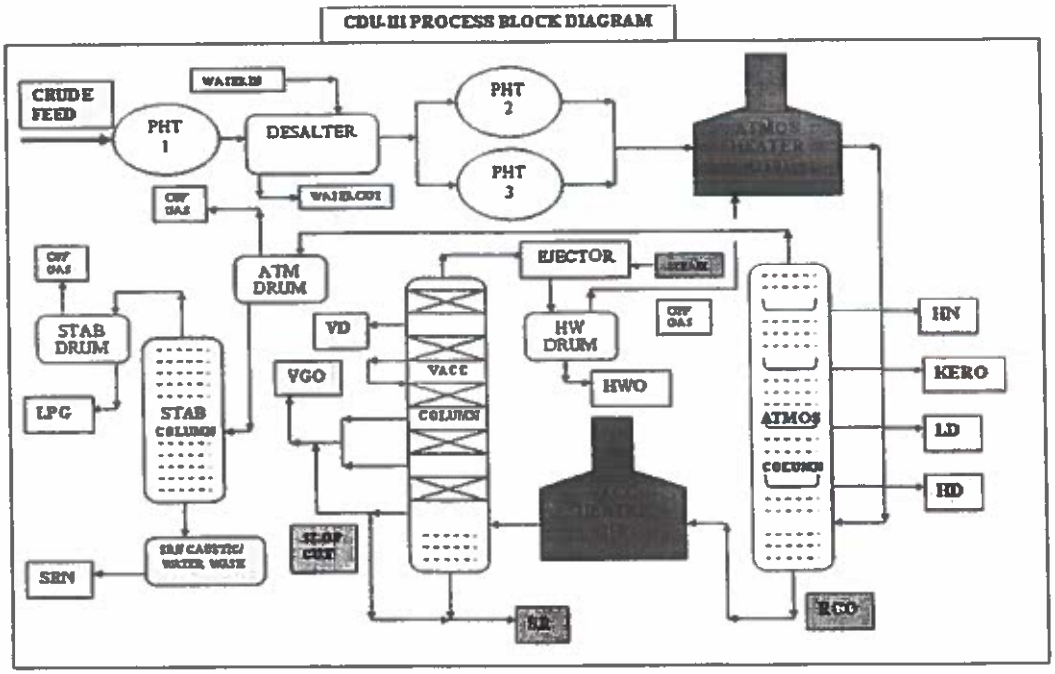
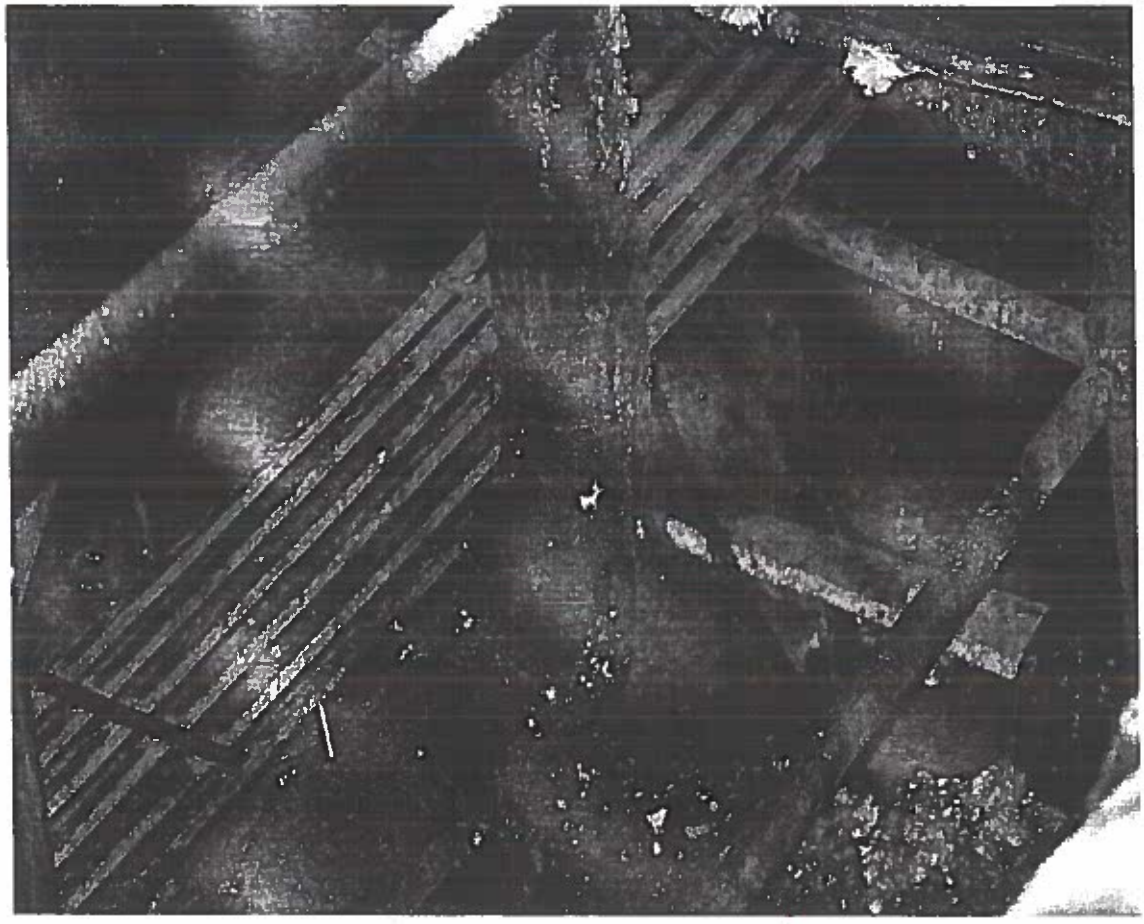


Fig.4 : The process flow chart of CDU-III unit

Joint Chief Inspector of Factories
Visakhapatnam

7.0 CAUSE OF OUTBREAK OF FIRE

Based on the inspection of team members interaction with the HPCL officials and statements collected from the eye witness, the cause of the outbreak of the fire is preliminarily identified that the 6" SR pipeline carrying Bitumin at a temperature of 355°C to 400°C and an operating pressure of 14 kg/Cm^2 has developed a hole of about 2.5" to 3" may be due to corrosion or erosion. The technical reasons for the corrosion or erosion are to be ascertained after conducting a detailed study on MOC (Material of Construction) of the pipeline. The Bitumin with such higher temperature has escaped from the hole developed in the pipeline and due to auto ignition temperature (280°C for bitumin), it has released lot of smoke and subsequent fire with loud cracking sound. As the projectile of the fire is vertical, the pipelines passing at an height of 30 mts from the ground level got ruptured at six places and contributed more hydrocarbons to the engulfed fire. The type of the fire can be envisaged as Jet Fire followed by Pool Fire. The pipelines burnt due to fire are shown as Figure Nos. 5 & 6.



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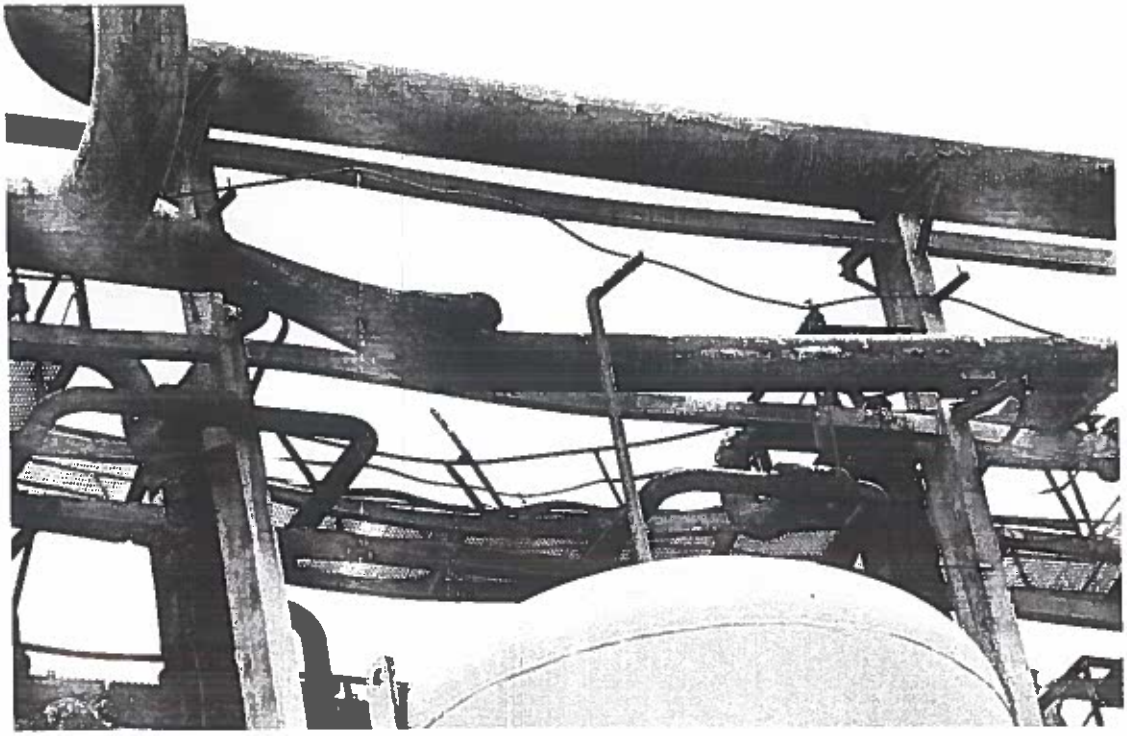

7.1 INITIATION AND PROPAGATION OF FIRE (AS PER THE EYE WITNESS OF THE OPERATORS)

The Crude Petroleum is brought from the different places. The factory distills the crude in the three distillation units; On 25-May-2021, the Superintendents of production Sri B. Madhu and Sri Magatapalli. Prasad came to the duty at 08:00 AM. Along with them the four technicians also reported at the same time, whose names are S. Chandra Mouli, K. Ramesh, R. Nidesh and Y. Eswar Kumar. The four technicians attended the repair and maintenance works under the supervision of Sri B. Madhu, Superintendent Production and Sri. M. Prasad. The superintendent production worked on the DCS (Distributed Control Centre) operations from 13:30 Hrs. Sri B. Madhu was shifted to DCS operations and Sri M. Prasad attended for the supervision of technician works. At around 15:10 Hrs, the four technicians and Sri. M. Prasad who were working in CDU-III heard loud sound from the 4.05m to 5.0m level area pipeline, i.e., Vacresidue pipeline (SR line) and observed fire and smoke from Unit Central Pipe Track. Immediately, Sri M. Prasad passed on the message to the control room and they informed the incident to the safety & fire department. Then this department attempted to operate fire water hydrant points; while the crude oil supply was shut down (as per the standard operating procedure isolated unit battery limited valves). Immediately, the safety & fire department along with the fire tenders came to the spot and fire extinguishing operations were commenced. The fire tenders came from the State Disaster and Fire Services Department and also from other neighboring industries. Those were kept stand by for any potential emergency. The leftover crude in the pipelines was allowed to burn. The whole fire was extinguished by 16:05 Hrs. and all clear sirens were blown about 16:15 Hrs. After confirming that there were no injuries or casualties, the plant was kept in cooling operations up to 17:00 Hrs. It was again confirmed that in this fire incident there were no casualties and no injuries to the workers.

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After the fire incident, it is found that the pipelines are ruptured in six places as mentioned here under

1. Vacuum residue pipe line (S.R. line) at a height of 4.0m from the ground;
2. Kerosene Line in 2nd floor;
3. Naphtha line in 2nd floor;
4. Diesel line in pipe line track in between 1st and 2nd floor;
5. Heavy Diesel line;
6. Atmospheric Column vapor line in fifth floor i.e., at a height of 30m from the ground.

As per the witness statements first fire occurred in Vacuum residue pipeline (SR line) at a height of 4.0 meters from the ground with a small sound followed by the heavy smoke and fire; accordingly, the fire caught on to the other pipelines as stated above. The fire from 4.0 meters level spread to the 2nd floor and raised up to 30m height atmospheric column in 5th floor. The fire at 30 meters height further increased 20m along with heavy smoke to its top level, which is about 50m from the ground.

8.0 CONSEQUENCES OF THE INCIDENT

About 78 MT of hydrocarbon was burnt in this fire incident. As per the information given by HPCL, about 24.25 Crores works have to be undertaken immediately to replace the damaged pipelines and machinery in CDU-III. The air pollution monitoring reports from three monitoring stations submitted by HPCL shows higher values of $PM_{2.5}$ and PM_{10} during the fire incident which indicates the considerable extent of air pollution within the plant premises. Due to continuous fire of about 65 minutes, the ambient temperatures might be increased to some extent and incremental adverse impact on various meteorological parameters.

9.0 IDENTIFICATION OF LAPSES

The following lapses of HPCL are observed during the inspection and document verification:

1. Deviation in implementing preventive maintenance schedules as per the Standard Operating Procedures (SOP) within the time. During inspection, it was observed that industry was not conduced the Ultra sonic test for 6 inch pipeline in CDU -3(fire incident was taken place) for which the due date for testing is August 2020.
2. Industry has conducted of hydro-test to the pipelines in August, 2012, and not conducted afterwards this test should be which will be conducted every 4 years which is serious lapse on account of HPCL.
3. Failure in identifying corrosion / erosion of the pipelines carrying hydrocarbons at higher temperatures
4. Preventive Maintenance schedules are not implemented properly.

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10.0 RECOMMENDATIONS

In view of the fire incident was occurred at HPCL -Visakha Refinery on 25.05.2021 at 3.10PM the committee has suggested the following recommendations to avoid such incidents in future:

1. Industry shall conduct timely Hydro Testing of all pipelines for its efficacy and also shall start the Hydro testing of all pipelines of the other two crude distillation units existing in the same premises immediately by the management to avoid the this type of fire incidents.
2. Industry shall ensure hydrant pressure of 7 kg/cm^2 at any point of time in the fire hydrant network
3. Industry shall ensure the operability of Diesel operated pump dedicated to fire hydrant network. A standby Diesel pump may be installed
4. Industry shall conduct the audit of Foam availability in the plant premises regularly.
5. Industry shall strengthen the mutual aid agreement with the nearby industries
6. Industry shall conduct periodical mock drills and find out any lapses in the mitigation of defined scenario
7. Industry shall mark the flow directions on the pipelines by indicating arrow marks for easy identification.
8. Industry shall conduct HARA study and implement the recommendations therein time to time.
9. Industry shall clear accumulated trash and scrap regularly as the industry is under r expansion.
10. A detailed metallurgically /microstructural analysis of the failed pipeline elbow to be carried out to establish the nature of failure by external qualified agency.
11. The management shall follow the directions to be issued by Hon'able NGT in OA no 73/2021 which is filed case on the fire incident.
12. HPCL should purchase Hydraulic platform and made it available for any fire mishaps at heights, since most of the pipeline elevated structures are upto 30 meters and above.
13. Escape signage boards should be displayed in the entire premises.

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Annexure -I

The following are the attachments to the committee Report,

- ✓ Inspection History of 20" Atmospheric column overhead line and 06" short residue line.
- ✓ Inputs to JCIF.
- ✓ Chronology of events,
- ✓ Form No. 18-A
- ✓ Form 8 certificates and summary (TA-2016)
- ✓ Crude Distillation Unit – III (CDU – III) fire incident – Loss calculation,
- ✓ DCS Chart of atmospheric overhead pressure and temperature, SR flow and temperature
- ✓ Auto Ignition TEMPERATURES
- ✓ Testing Certificate,
- ✓ Photographs (02 No's),
- ✓ Statements,
- ✓ Crude Distillation Unit – III Process flow diagram,
- ✓ Mock Drills 02 No's (12-09-2020 & 12-02-2021).
- ✓ Offsite Mock Drill report dated 12-02-2021.

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Visakhapatnam

SIGNATURES OF ENQUIRY COMMITTEE MEMBERS

Sri Penchala Kishore
Revenue Divisional Officer, Visakhapatnam
Head of the Committee

Sri A. Ramalingeswara Raju
General Manager, DIC, Visakhapatnam
Member

Sri J. Shiva Shankar Reddy
Jt. Chief Inspector of Factories, Visakhapatnam
Member

Sri B.V.S.Ram Prakash
District Fire Officer, Visakhapatnam
Member

Sri M. Pramod Kumar Reddy
Environmental Engineer, APPCB
Member

Dr. P. Venkat Reddy
HoD of Chemical Engineering, IIPE
Member

Dr. Pratibha Biswal
Associate Dean of Studies Affairs &
Asst. Prof. of Chemical Engineering, IIPE
Member

Dr. Raka Mondal
Assistant Professor, Chemical
Engineering, IIPE
Member

Prof. Chittibabu
Professor, Dept. Chemical Engineering, AU
Member

Prof. P. Jagannadha Rao
Professor, Dept. Chemical Engineering, AU
Member

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Visakhapatnam

2015 : 20" : 5.9 – 6.8 mm
12" : 4.5 – 5.8 mm
8" : 4.4 – 5.9 mm.

(2)

Inspection Division
Technical Services Department
Visakh Refinery

Inspection Completion Report

Report No.: 0400/2016-2017	Report Date: 27-AUG-16
Equipment No.: 042HL-088	Unit Name: CDU-III
Equipment Name: 30" From 42C-01 Top To Atmos column reflux condensers I.e. 20"/12" 42E-30A To L I/L.	Date of Inspection: 17-AUG-16
Date of Last Inspection: 27-JUN-12	Commissioning Date:
Next Due date of Inspection:	27-AUG-20
Reason for outage:	T&I 2016

A. Pipeline No:

30" 42C-01 OVHD Vapors From 42C-01 top to Atmos column reflux condensers I.e. 20"/12" 42E-30A to L inlet.-Bare-A9A

B. Detail Observation:

Visual inspection and thickness gauging was carried out. The observation as follows.
* Visually, Condition of the line was found satisfactory.
* 8" - 90 Deg. Elbows, Near AFCs Thickness of 3 Nos. - 8" Elbows (A234 Gr WPB, Sch 20) were found below MAT.
* 8" Pipe, Near AFCs Thickness of 8" pipe was found below MAT over approx. 18 m.
* 30" Pipe from 42-C-01 to AFCs 1. Thickness of 30" pipe was found below MAT over approx. 24 m
* Corrosion Pads on 8" / 12" Pipeline Corrosion pads were not provided at the supports at 18 Nos. locations
* Chemical Injection Lines (1" & 3/4") 1. Chemical Injection lines were found vibrating due to the absence of proper supports near the Injection Points, 1/2" Pressure gauge take-offs are not provided with gusset plates
* 1 MOC job take off done

C. Repairs Carried Out:

All jobs completed as recommended in IWL

D. Major Inspection/ NDT/ Testing:

Visual Inspection
Ultrasonic thickness gauging
radiography for butt welded joints and DPT for socket welded joints
Pneumatic tested at 1.5 Kg/Sq Cm.

E. Deviations:

Joint Chief Inspector of Factories
Visakhapatnam

Inspection Division
Technical Services Department
Visakh Refinery

Inspection Completion Report

I. Attachments:

Prepared By:	Reviewed By:	Approved By:
N M Yogesh Kumar	Saket Kalikar	HEAD INSPECTION

Joint Chief Inspector of Factories
Visakhapatnam

(2)

HP	**Inspection Division** **Technical Services Department** **Visakh Refinery**

Inspection Completion Report

Report No.: 0338/2016-2017	**Report Date: 27-AUG-16**
Equipment No.: 042HL-032	**Unit Name: CDU-III**
Equipment Name: 10",4"VR From42P-19/B,22A/Bdisch To 42E-18A/Bshell I/l, 42E-28A/B U/Sv/vs, 8"startuplineTo42P-19A/B	**Date of Inspection: 10-AUG-16**
Date of Last Inspection: 27-JUN-12	**Commissioning Date:**
Next Due date of Inspection:	**27-AUG-20**
Reason for outage:	**T&I 2016**

A. Pipeline No:

10", 4" VR+Quench VR from 42P-19/B, 22A/B, disch to :
1) 42E-18A/B shell I/l
2) 42E-28A/B U/S v/vs
3) 8" start up line to 42P-19A/B
4) 42F-02 connecting line
5). 3" to 42E-19A/B connecting line.-Insulated-B4F

2016

B. Detail Observation:

Visual inspection and thickness gauging was carried out. The observation as follows.
* Visually, Condition of the line was found satisfactory.
* Thickness of the entire line was found above the MAT.
* 6 Inch line, OVHD of 42PM- 06C(Pipe Track)
a) PMI checked and found 6 inch 2 Nos elbows are of carbon steel metallurgy.
b) Gland leak was observed on 6" valve.
c) Insulation cladding sheet found damaged over approx. 10 mtrs. Corrosion is suspected beneath the insulation.
d) 0.75 inch drain gusset plates are not provided.
* 8 inch line, 42E-18A 0.75 inch vent found corroded, externally.
* 10 inch line, 42PM-19A/B Discharge a) 0.75 inch 2Nos-drains & 2Nos-Vents found severely corroded, externally.
b) Gland leak was observed on 10" valve.
c) PMI checked and found 0.75 inch bypass line is of carbon steel at pump 42PM-19A.
d) Thick scaling was observed on the 0.75" half coupling weld area.
* 4 inch line, 42Pm-22A/B Discharge a) 0.75 inch 2Nos-drains found corroded on 3 inch pipe.
b) 2Nos. 4¿ NRV top flanges & 2Nos flanges gasket leak was observed.
c) 2 Nos. Spring supports found dislodged from position and Supporting - channel supports found corroded.

Joint Chief Inspector of Factories
Visakhapatnam

Inspection Division
Technical Services Department
Visakh Refinery

Inspection Completion Report

H. Previous Recommendations:

Renew the clad sheet over the length of 60 meters

Joint Chief Inspector of Factories
Visakhapatnam

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INSPECTION HISTORY OF 20" ATMOS COLUMN OVER HEAD LINE & 6" SHORT RESIDUE LINE

I) **Pipeline description:** Atmos column overhead line

- Line size: 20"
- Original thickness: 8mm
- Material: Carbon steel
- Operating Pressure: 2.5 kg/cm2g
- Operating temperature: 140deg.C
- Pneumatic test pressure: 1.5 kg/cm2g.

Inspection history of 20" line:

1. Oct 2015 Pre-T&I: Comprehensive UTG and external visual inspection
   - 20" thickness in the range of 5.9mm to 8.0mm

2. August 2016 T&I: Sectional replacements carried out and pneumatic test carried out at 1.5kg/cm2g.

3. Dec 2017: Comprehensive UTG and external visual inspection
   - 20" thickness in the range of 5.8mm to 7.0mm

4. Oct 2019 : Random UTG & external visual inspections carried out.
   - 20" thickness in the range of 5.7mm to 6.4mm

II) Pipeline description: Short Residue line

- Line size: 6"
- Original thickness: 7.11
- Material: Alloy Steel(P5)
- Operating Pressure: 16.5 kg/cm2g
- Operating temperature: 350 deg.C
- Hydro test pressure: 45.1 kg/cm2g.

Inspection history of 6" line:

1. Oct 2012 Pre-T&I: Comprehensive UTG and external visual inspection
   - 6" thickness in the range of 6.0mm to 7.8mm

2. May 2016 Pre-T&I: Comprehensive UTG and external visual inspection.
   - 6" thickness in the range of 7.0mm to 7.5mm(readings after temperature correction)

3. Aug 2016 T&I: Sectional replacements carried out and hydro test done at 45.1 kg/cm2g.

I.V. BALARAM
Sr. Manager - Inspection
Certified in API-510, API-570&API-653
Inspection Division-Technical Service Deptt.
HPCL-Visakh Refinery, Visakhapatnam

Joint Chief Inspector of Factories
Visakhapatnam

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CHRONOLOGY OF EVENTS

(CDU-III FIRE INCIDENT DT.25-05-2021)

Time	Chronology of Events
15:10 Hrs	Emergency message received on fire phone & RT Set
15:11 Hrs	Level-2 Emergency Siren blown
15:11 Hrs	Emergency turnout by F&S crew along with fire tenders (Equipment Tender, Foam Tenders VFT-72 & VFT-68)
15:13 Hrs	Fire Tenders reached the site
15:14 Hrs	Started opening fixed fire monitors and initiated firefighting operation
15:15 Hrs	Water spray system of CDU-III units operated – pump bay, Overhead accumulated drum (42-V-13) and LPG drum (42-V-14).
15:17 Hrs	Water spray system of 5 Nos hydrocarbon tanks at south of CDU-3 operated
15:20 Hrs	DCP Tender reached site
15:22 Hrs	Fire at first and second floor of technical structure got extinguished using DCP tender
15:45 Hrs	One more Foam tender (VFT-71) reached site
15.50 Hrs	Foam tender from Naval Dock yard reports to the emergency location
15.51 Hrs	JCIF sir reached the incident location and advised the emergency handling operations.
15.55 Hrs	Foam tender from AP Fire services reports to the emergency location at South side of the CDU – III unit
16.00 Hrs	Foam tender from Vizag Port Trust reports to emergency location at East side of the CDU – III
16:05 Hrs	Fire extinguished completely
16:05-16:14 Hrs	Search operation in CDU-III carried out and no casualty was found.
16.14 hrs	Minister Sir reached the location for review of the site condition.
16:15 Hrs	All Clear Siren given
16.15 – 17.00 Hrs	Cooling Operation carried out in the unit.

Joint Chief Inspector of Factories
Visakhapatnam

हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड

(भारत सरकार संस्थान) रजिस्टर्ड आफिस 17 जमशेदजी टाटा रोड, मुंबई - 400 020

HINDUSTAN PETROLEUM CORPORATION LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE) REGISTERED OFFICE:17 JAMSHEDJI TATA ROAD, MUMBAI-400 020.

CIN : L23201MH1952GOI008858

विशाख रिफाइनरी, पोस्ट बाक्स नं.15, विशाखपट्नम - 530 011 (आंध्रप्रदेश), फोन - 2895000, 2895100

VISAKH REFINERY, POST BOX NO.15, VISAKHAPATNAM-530 011 (A.P.), PHONES : 2895000, 2895100

27/5/2021

May 26, 2021.
F&S/SCP/DCIF

To

The Deputy Chief Inspector of Factories
50-50-35/8
Sri Gurucharan Marg
Seethammadhara West
Visakhapatnam - 530 013

తేదీ 27.05.2021

Sub: Submission of Form No. 18A

Dear Sir,

Please find enclosed herewith Form No.18A in duplicate, duly filled and signed in respect of the fire incident that occurred on May 25, 2021.

This is for your information and records.

Very truly yours,

R Ramakrishnan
CGM I/C – Operations
HPCL – Visakh Refinery

CC: Joint Chief Inspector of Factories
CC: Inspector of Factories

Joint Chief Inspector of Factories
Visakhapatnam

FORM NO. 18-A
[Prescribed under Rule 96]

Notice of Dangerous occurrence, which does not result in death or bodily injury

[Vide para 2 of the Schedule under Rule 96]

1. Name and address of the Factory : Hindustan Petroleum Corpn Ltd
   Visakh Refinery
   Malkapuram
   Visakhapatnam – 530011
2. Name of the Occupier : Shri V Ratanraj
3. Name of the Manager : Shri R Ramakrishnan
4. Nature of Industry : Petroleum Refining
5. Branch or Department and exact Place where the dangerous occurrence Took place. : CDU – III, Atmos overhead line
6. Date and hour of occurrence : May 25, 2021 at 15.10 hrs.
7. Nature of Dangerous Occurrence (state exactly what happened) :

On May 25, 2021 at around 15.10 hrs, there was a fire reported in Crude Distillation Unit – 3 of HPCL – Visakh Refinery. The Crude Distillation Unit – 3 was shut down due to the fire in the overhead line area. Immediately, emergency response and disaster management plan (ERDMP) of refinery was activated and firefighting was initiated. 6 nos. HPCL fire tenders were pressed into firefighting operations. The duration of fire was from 15.10 hrs.to 16.15 hrs. approximately.

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

Signature : .....

Name : R Ramakrishnan

Designation : CGM I/C – Operations
Visakh Refinery

Date of dispatch
of report:26/5/2021.

Joint Chief Inspector of Factories
Visakhapatnam

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CDU – III FIRE INCIDENT – LOSS CALCULATION

As per preliminary inspection, following jobs are envisaged due to the fire incident.

- Replacement of structural of Tech structure (approx.30 Tons)
- Sectional replacement of Atmos O/H piping
- Exchanger/Coolers overhauling & Testing (16 nos)
- Replacement of HC and Utility Piping (approx.4500 Inch. Dia)
- Blinding and Deblindings
- Hydro testing of piping and equipment (approx.35-40 loops)
- Oil Spill cleaning and housekeeping jobs
- AFCs Testing jobs
- Painting & Insulation Replacement
- Civil Structure rehabilitation jobs
- AFC Fans replacement (6 nos) and overhauling of other fans
- AFC Fans Motors overhauling and Power Cables replacement
- Instrumental Cable replacement (approx. 25 km)
- Control Valves Restorations (approx. 22 nos)
- Inspection NDTs (Thickness Gauging, In-situ metallography, Fitness for Service assessment, Hardness Testings)
- Restoration of EBRFP for grid no. J/K/L-8/9/10/11 of South side Tech structure, Strength Checks and cables laying for additional AFCs and LRVP skid.
- Civil & Structural assessment through EIL & IDDC
- HR services (conveyance, amenities & other arrangements)
- Certifications from competent agencies

COST ESTIMATE FOR SERVICES AND MATERIALS FOR RESTORATION:

S.No	Section	Loss in Lakhs
1	Maintenance – Onsite	770
2	Maintenance – Rotary	51
3	Maintenance – Electrical	36
4	Maintenance – Instrumentation	230
5	Maintenance – Civil	100
6	Insulation & Painting	231
7	Technical	807
8	HR	200
	TOTAL	**2425 Lakhs**

i.e Total loss is estimated as - 24.25 Crores.

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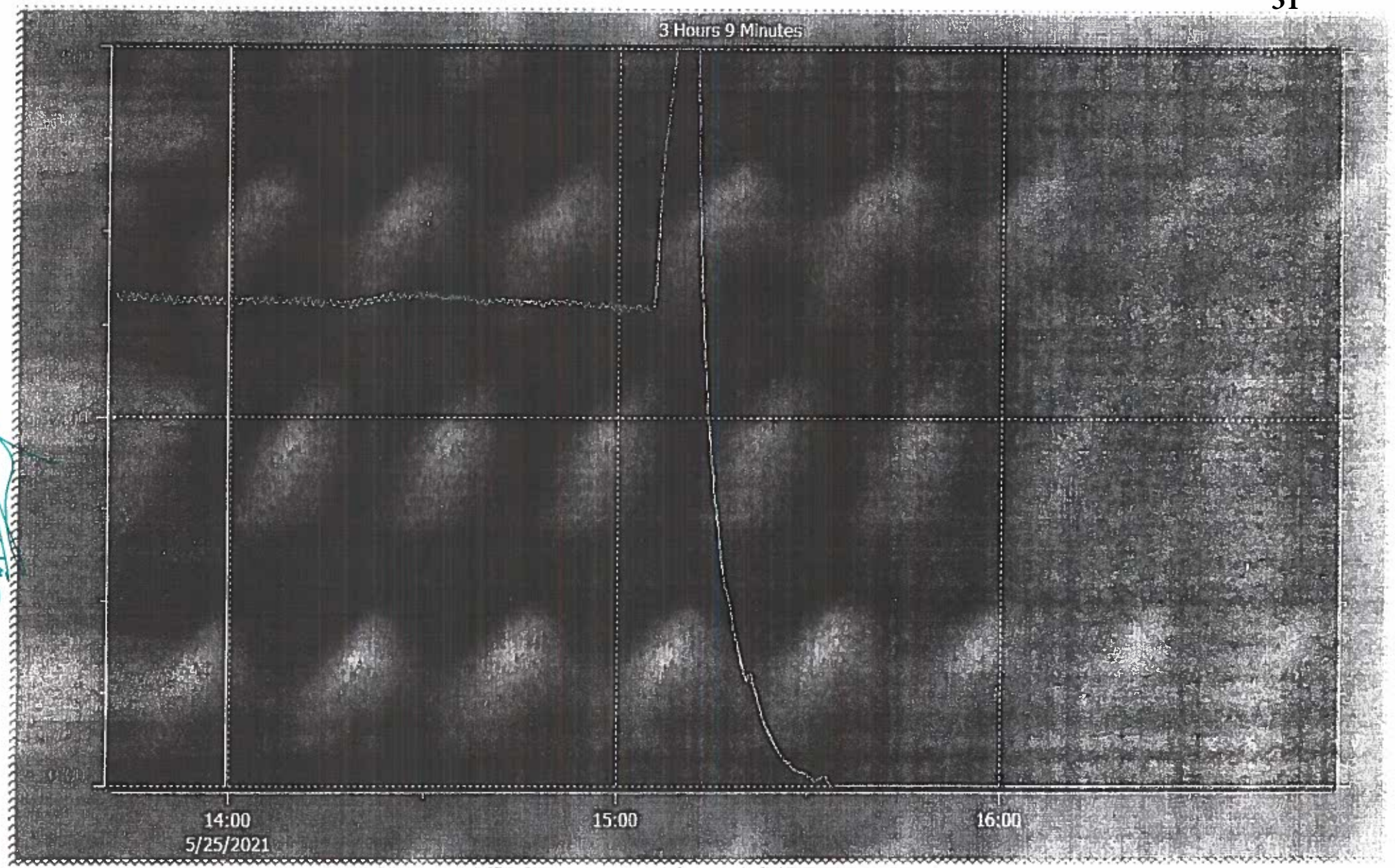
Visakhapatnam



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1	✓				42PC15	01 OVHD VAP	MOD OP	MEASUR	SEAMLE	0.00	0.00	4.00	00:00:	0.00	Linear	5/25/2021 1:59:34 P	2.63	Honest	1.67	None	0.00	4.00	0
2					42PC15	01 OVHD VAP	MOD OP	RESULT	SEAMLE	50.00			00:00:	0.00	Linear			Honest	60.84	None	42.81	114.60	0
3																							

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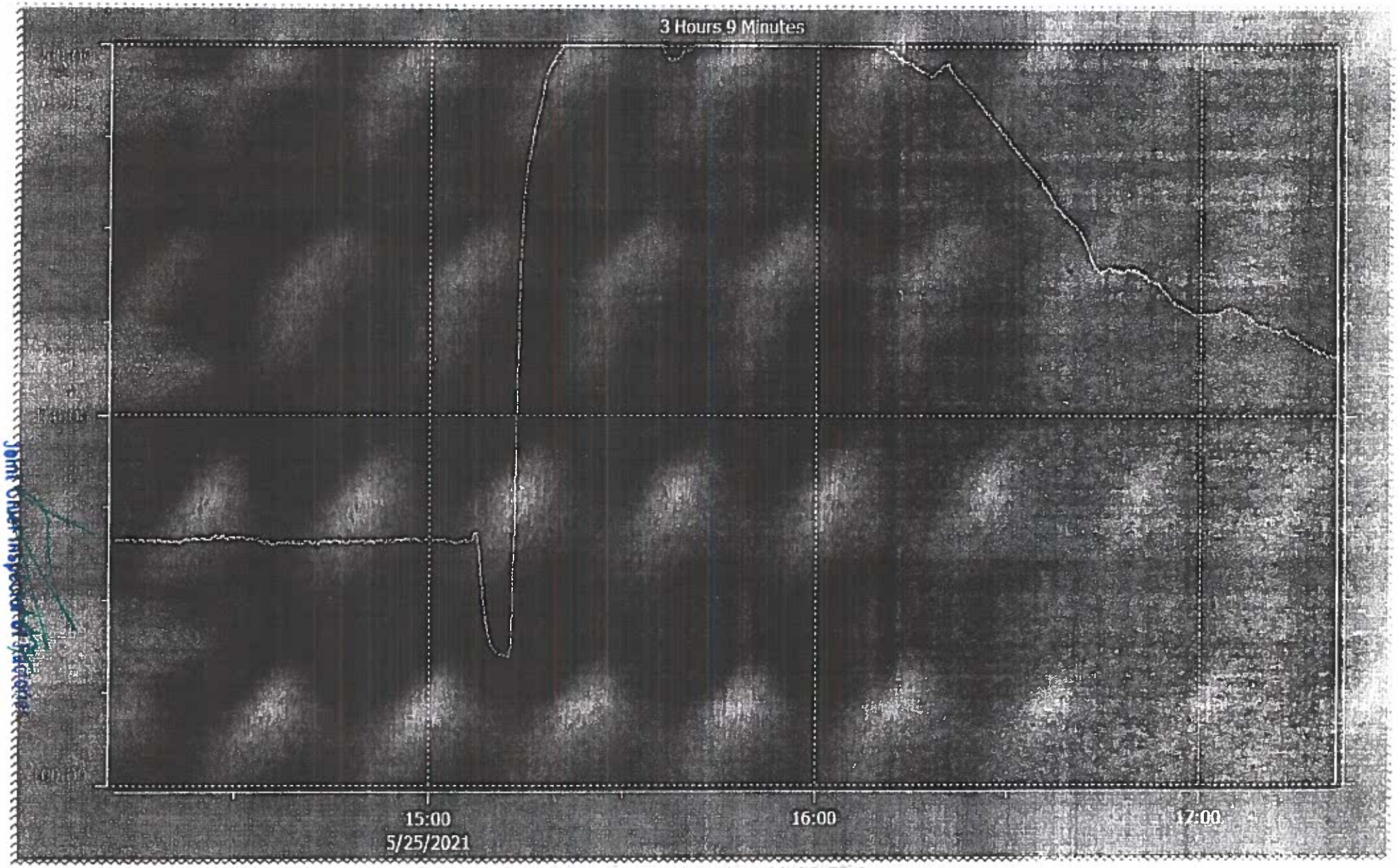

1 Day

	Trace C	Object	Object Nam	Object	Aspect	Property	Log Name	Current	Low Ra	High R	Time Of	Filter	Style	Ruler Time	Ruler V	Treatm	Mean V	Extrap	Min Val	Max Va	Par
1			421C1501	TRAY 5	MOD OP	MEASURE	SEAMLESS	100.00	100.	200.	00:00:	0.00	Linear	5/25/2021 5:21:1			164.77	None			
2			421C1501	TRAY 5	MOD OP	RESULT	SEAMLESS	20.00	-100.	100.	00:00:	0.00	Linear				33.79	None			
3																					

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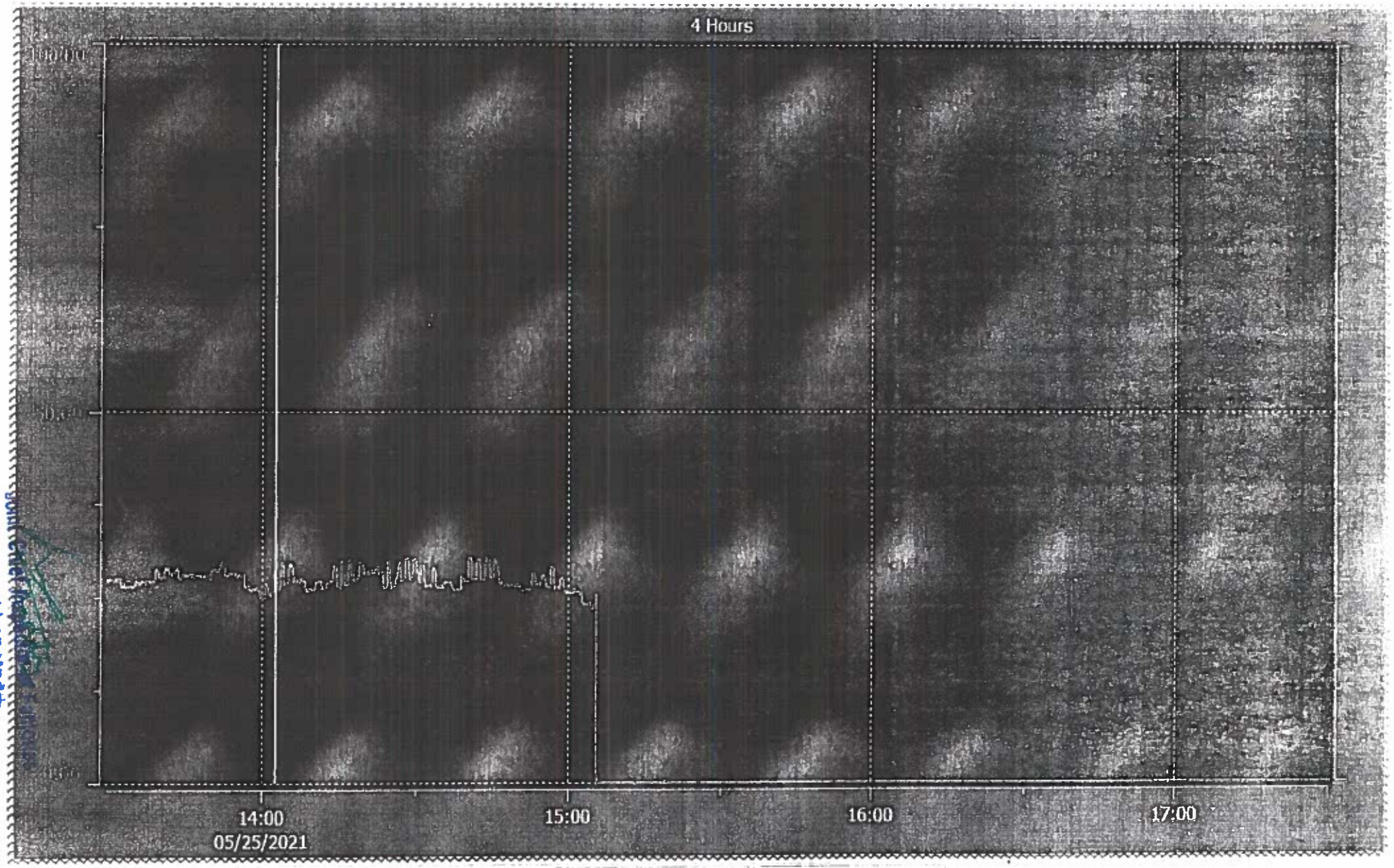

	Visible	Status	Trace C	Object	Object	Object	Aspect	Propert	Log Na	Current	Low Ra	High R	Time Of	Filter	Style	Ruler T	Ruler V	Treatm	Mean V	Extrap	Min Val	Max Val	Pair Pr
1	☑				42FI120	VAC RE	MOD OP	MEASUR	SEAMLE	0.00	0.00	100.	00:00:	0.00	Linear	05/25/2	28.35	Moment	15.03	None	0.00	30.20	0
2	☐																						
3	☐																						

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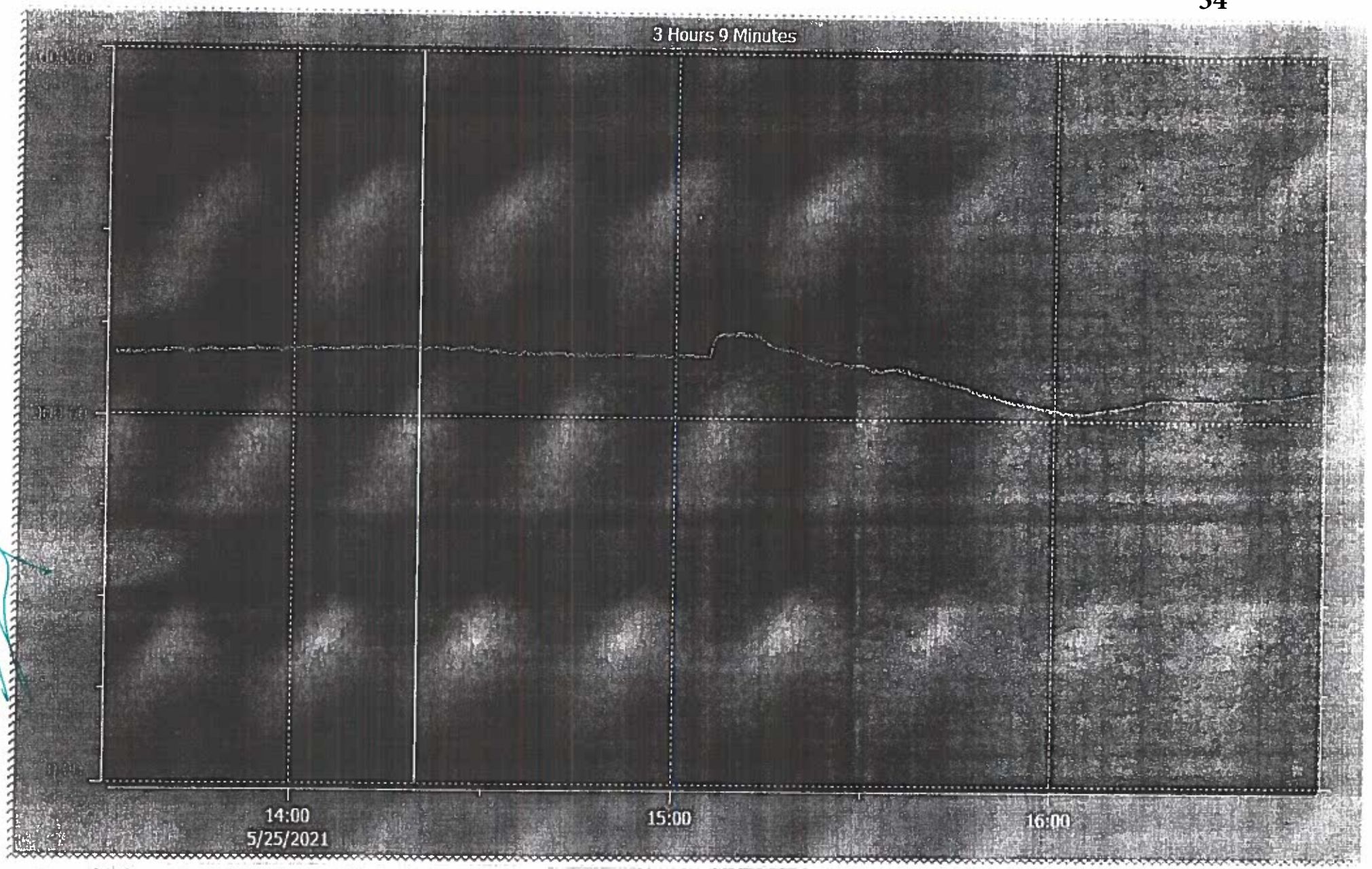

Joint Chief Inspector of Factories
Visakhapatnam

1 Day
05/25/2021 03:06:55 PM

	Visible	Status	Trace C	Object	Object Name	Object	Aspect	Property	Log Na	Current	Low Ra	High R	Time Of	Filter	Style	Ruler Time	Ruler V	Treatm	Mean V	Extrap	Min Val	Max Va
1					42TC2110	VR + Q	MOD OP	MEASURE	SEAMLE	56.63	0.00	600.	00:00:	0.00	Linear	5/25/2021 2:19:43	35.29	Moment	342.10	None	305.81	370.31
2					42TC2110	VR + Q	MOD OP	RESULT	SEAMLE	2.00	-100.	100.	00:00:	0.00	Linear			Moment	9.17	None	2.00	25.0
3																						

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TABLE 1

AUTO-IGNITION TEMPERATURES AND EXPLOSIVE LIMITS

Material	Explosive limits % volume in air		Auto-ignition Temperature
	Lower	*Higher*	Deg.C
Carbon Monoxide	15.7	70.9	610
Hydrogen	9.5	65.2	530
Acytelene	2.4	52.3	335
Hydrogen Sulfide	4.3	45.5	260
Methane	6.3	11.9	645
Ethylene	4.0	28.6	540
Propylene	4.2	9.5	530
Cyclopropane	2.4	10.4	497
Propane	2.4	9.5	
Natural Gas	9.8	24.8	450
Butadiene 1-3	2.0	11.5	
n-Butylene	1.8	12.0	
i-B utane	1.8	8.4	
n-Butane	1.9	11.5	490
Methyl Ethyl ketone	1.81	11.5	404
Methyl n-butyl ketone	1.22	8.0	
n-Pentane	1.3	4.9	309
Benzol	1.4	8.0	580
Cyclohexane	1.31	8.35	
n-Hexane	1.3	8.6	487
Toluene	1.0	7.3	810
Styrene	1.1	6.1	490
n-Heptane	1.0	6.0	233
o- Xylene	1.0	5.3	496
n-Octane	0.84	3.2	232
n-Nonane	0.74	2.9	---
n-Decane	0.6	5.4	463
Petroleum ether	1.4	5.9	246
Stoddard's solvent	1.1	6.0	232-260
Gasoline (Typical)	1.3	6.0	350
Kerosene (Typical)	1.16	6.0	325
Lubricating oil, spindle (Typ)	--	---	248
Lubricating oil, cylinder)Typ.)	--	---	417
Asphalt (Typical)	--	---	280
Reduced Crude (Typical)	---	--	300

(Reference: Most of the data has been taken from Petroleum Refinery Engineering by W.L. Nelson and Lange's Handbook on Chemistry)

FORM NO.8_SUMMARY

T&I-2016

CDU-III- LIST OF EQUIPMENT				
Sr No.	TYPE	No.	Name	Old Form-8 (2012)
1	HEATER	42-F-1	Crude Heater	Available
2	COLUMN	42-F-2	Crude Heater	Available
3	COLUMN	42-C-1	Atmos Distillation Tower	Available
4	COLUMN	42-C-2	Heavy Naphtha Stripper	Available
5	COLUMN	42-C-3	Kerosene Stripper	Available
6	COLUMN	42-C-4	LD Stripper	Available
7	COLUMN	42-C-5	HD Stripper	Available
8	COLUMN	42-C-6	Vacuum column	Available
9	COLUMN	42-C-7	Naphtha Stabiliser	Available
10	COLUMN	42-C-8	Amine Absorber	Not Available
11	EXCHANGER	42-E01	Crude heavy Naptha	Available
12	EXCHANGER	42-E02A	Crude Vac diesel	Available
13	EXCHANGER	42-E02B	Crude Vac diesel	Available
14	EXCHANGER	42-E03	Crude Kero	Available
15	EXCHANGER	42-E04A	Crude VGO	Available
16	EXCHANGER	42-E04B	Crude VGO	Available
17	EXCHANGER	42-E05	Crude Kero CR	Available
18	EXCHANGER	42-E06	Crude Heavy Diesel	Available
19	EXCHANGER	42-E07A	Crude Kero CR	Available
20	EXCHANGER	42-E07B	Crude Kero CR	Available
21	EXCHANGER	42-E10	Crude Kero CR	Available
22	EXCHANGER	42-E11	Crude LVGO	Available
23	EXCHANGER	42-E12A	Crude LD	Available
24	EXCHANGER	42-E12B	Crude LD	Available
25	EXCHANGER	42-E13	Crude HVGO	Available
26	EXCHANGER	42-E14	Crude HVGO	Available
27	EXCHANGER	42-E15A	Crude Vac residue	Available
28	EXCHANGER	42-E15B	Crude Vac residue	Available
29	EXCHANGER	42-E16	Crude Heavy diesel CR	Available
30	EXCHANGER	42-E17	Crude HVGO	Available

Joint Chief Inspector of Factories
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Sr No.	TYPE	No.	Name	Old Form-8 (2012)
31	EXCHANGER	42-E18A	Crude Vac residue	Available
32	EXCHANGER	42-E18B	Crude Vac residue	Available
33	EXCHANGER	42-E18C	Crude Vac residue	Available
34	EXCHANGER	42-E19A	BFW / Vac residue	Available
35	EXCHANGER	42-E19B	BFW / Vac residue	Available
36	EXCHANGER	42-E21	Crude LVGO	Available
37	EXCHANGER	42-E22	Crude HD	Available
38	EXCHANGER	42-E23A	Crude LD Cr	Available
39	EXCHANGER	42-E23B	Crude LD Cr	Available
40	EXCHANGER	42-E24A	Crude HVGO	Available
41	EXCHANGER	42-E24B	Crude HVGO	Available
42	EXCHANGER	42-E24C	Crude HVGO	Available
43	EXCHANGER	42-E24D	Crude HVGO	Available
44	EXCHANGER	42-E25	Crude Vac residue	Available
45	EXCHANGER	42-E26	Crude HD	Available
46	EXCHANGER	42-E27	Crude HVGO	Available
47	EXCHANGER	42-E28A	Crude Vac residue	Available
48	EXCHANGER	42-E28B	Crude Vac residue	Available
49	EXCHANGER	42-E30A	Overhead air cooler	Available
50	EXCHANGER	42-E30B	Overhead air cooler	Available
51	EXCHANGER	42-E30C	Overhead air cooler	Available
52	EXCHANGER	42-E30D	Overhead air cooler	Available
53	EXCHANGER	42-E30E	Overhead air cooler	Available
54	EXCHANGER	42-E30F	Overhead air cooler	Available
55	EXCHANGER	42-E30G	Overhead air cooler	Available
56	EXCHANGER	42-E30H	Overhead air cooler	Available
57	EXCHANGER	42-E30I	Overhead air cooler	Available
58	EXCHANGER	42-E30J	Overhead air cooler	Available
59	EXCHANGER	42-E30K	Overhead air cooler	Available
60	EXCHANGER	42-E30L	Overhead air cooler	Available
61	EXCHANGER	42-E31A	Overhead trim condenser	Available

Joint Chief Inspector of Factories
Visakhapatnam

Sr No.	TYPE	No.	Name	Old Form-8 (2012)
62	EXCHANGER	42-E31B	Overhead trim condenser	Available
63	EXCHANGER	42-E31C	Overhead trim condenser	Available
64	EXCHANGER	42-E32A	Stabiliser feed bottom	Available
65	EXCHANGER	42-E32B	Stabiliser feed bottom	Available
66	EXCHANGER	42-E33A	Stabiliser ovhd cond	Available
67	EXCHANGER	42-E33B	Stabiliser ovhd cond	Available
68	EXCHANGER	42-E34	Stabiliser re-boiler	Available (Replaced with new)
69	EXCHANGER	42-E35A	Stabiliser Naptha cooler	Available
70	EXCHANGER	42-E35B	Stabiliser Naptha cooler	Available
71	EXCHANGER	42-E37	HN Trim cooler	Available
72	EXCHANGER	42-E39	Kero trim cooler	Available
73	EXCHANGER	42-E40A	HD Air cooler	Available
74	EXCHANGER	42-E40B	HD Air cooler	Available
75	EXCHANGER	42-E41A	HD Trim cooler	Available
76	EXCHANGER	42-E41B	HD Trim cooler	Available
77	EXCHANGER	42-E42A	LD Air cooler	Available
78	EXCHANGER	42-E42B	LD Air cooler	Available
79	EXCHANGER	42-E43	LD Trim cooler	Available
80	EXCHANGER	42-E45A	Vac diesel air cooler	Available
81	EXCHANGER	42-E45B	Vac diesel air cooler	Available
82	EXCHANGER	42-E46A	Vac Dsl Trim cooler	Available
83	EXCHANGER	42-E46B	Vac Dsl Trim cooler	Available
84	EXCHANGER	42-E47A	VGO cooler	Available
85	EXCHANGER	42-E47B	VGO cooler	Available
86	EXCHANGER	42-E49A	Vac residue cooler	Available
87	EXCHANGER	42-E49B	Vac residue cooler	Available
88	EXCHANGER	42-E49C	Vac residue cooler	Available
89	EXCHANGER	42-E51A	LB Crude heavy diesel	Available
90	EXCHANGER	42-E51B	LB Crude hvy dsl	Available
91	EXCHANGER	42-E52A	HD-LB Crude	Available

Joint Chief Inspector of Factories
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Sr No.	TYPE	No.	Name	Old Form-8 (2012)
92	EXCHANGER	42-E52B	LD-LB Crude	Available
93	EXCHANGER	42-E53	LB Crude HD CR	Available
94	EXCHANGER	42-E54A	LB Crude HD CR	Available
95	EXCHANGER	42-E54B	LB Crude HD CR	Available
96	EXCHANGER	42-E55	Wash water heater	Available
97	EXCHANGER	42-E56A	Seal Oil Cooler	Available
98	EXCHANGER	42-E56B	Seal Oil Cooler	Available
99	EXCHANGER	42-E56C	Seal Oil Cooler	Available
100	EXCHANGER	42-E56D	Seal Oil Cooler	Available
101	EXCHANGER	42-E61A	Pre condenser	Available (Replaced with new)
102	EXCHANGER	42-E61B	Pre condenser	Available (Replaced with new)
103	EXCHANGER	42-E62	Inter condenser	Available
104	EXCHANGER	42-E63	After condenser	Available
105	DRUM	42-V-10	Desalter Drum	Available
106	DRUM	42-V-11	De salting Water Drum	Available
107	DRUM	42-V-12	Decoking Drum	Available
108	DRUM	42-V-13	OVHD Naptha Drum	Available
109	DRUM	42-V-14	Stab Reflux Drum	Available
110	DRUM	42-V-15	Hot well Drum	Available
111	DRUM	42-V-17	Hot well Hatch pot	Available
112	DRUM	42-V-18	Steam blow Down Drum	Available
113	DRUM	42-V-20A	Caustic Soln. Tank	Available
114	DRUM	42-V-20B	Caustic Soln. Tank	Available
115	DRUM	42-V-21	Steam Drum	Available
116	DRUM	42-V-22	Closed Blow Down	Available
117	DRUM	42-V-25	Naptha Caustic Wash Drum	Available
118	DRUM	42-V-26	Naptha water Wash Drum	Available
119	DRUM	42-V-30	De- Emulsifier	Available
120	DRUM	42-V-31	Corr. Inhb-Drum for Atmos Col.	Available

Joint Chief Inspector of Factories
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Sr No.	TYPE	No.	Name	Old Form-8 (2012)
121	DRUM	42-V-32	Corr. Inhb. Drum for Vac Col.	Available
122	DRUM	42-V-33A	Ammonia Soln. Vessel	Available
123	DRUM	42-V-33B	Ammonia Soln. Vessel	Available
124	DRUM	42-V-34	Flare K/o Drum	Available
125	DRUM	42-V-35	VGO flushing oil Surge Vessel	Available
126	DRUM	42-V-36	HO flushing oil Surge Vessel	Available
127	DRUM	42-V-38	HWOG Catch pot-2	Not Available
128	DRUM	42-V-39	Skim off pot	Not Available
129	DRUM	42-V-41A	Condensate Flash Vessel	Not Available
130	DRUM	42-V-41B	Condensate Flash Vessel	Not Available
131	DRUM	42-X-01A	Vac. Diesel CR Strainer	Available
132	DRUM	42-X-01B	Vac. Diesel CR Strainer	Available
133	DRUM	42-X-02A	LVGO CR Strainer	Available
134	DRUM	42-X-02B	LVGO CR Strainer	Available
135	DRUM	42-X-03A	HVGO CR Strainer	Available
136	DRUM	42-X-03B	HVGO CR Strainer	Available
137	DRUM	42-X-04A	Wash oil Strainer	Available
138	DRUM	42-X-04B	Wash oil Strainer	Available
139	DRUM	42-X-05A	Vac. DSL IR Strainer	Available
140	DRUM	42-X-05B	Vac. DSL IR Strainer	Available
141	DRUM	42-X-07	Steam Silencer	Not Available
142	DRUM	42-X-12A	LP FLO Strainer	Available
143	DRUM	42-X-12B	LP FLO Strainer	Available
144	DRUM	42-X-13A	MP FLO Strainer	Available
145	DRUM	42-X-13B	MP FLO Strainer	Available
146	DRUM	42-K-05	Thermo compresor	Not Available

Joint Chief Inspector of Factories
Visakhapatnam

FORM NO.8

No. HPCL/CDU-III//HEATER/01 **Report of Examination of Pressure Vessel** Date- August2016

1. Name of occupier (or factory)	:	Mr G S V S S Sarma, Executive Director
2. Situation of and address of factory	:	M/s. Hindustan Petroleum Corporation Ltd Visakha Refinery, Malkapuram, Visakhapatnam-11
3. Name, description and distinctive Number of pressure vessel. Location.	:	Crude Heater with 4 pass heating coil, horizontal and round with alloy steel tubes,Iden No. 42-F1
	:	CDU-III
4. Name and Address of the manufacturer	:	BHPV
5. Nature of process in which it is used	:	HC
6. Particulars of Vessel:-		
a) Date of construction	:	1999
b) Thickness of walls	:	–
c) Date on which the vessel was first taken into use	:	1999
d) Maximum permissible working pressure Recommended by the manufacturer	:	30 kg/cm²
e) Design pressure (The history should be briefly given and the examiner should state whether he has been previous report)	:	--
	:	Last Insp. done in August 2012
7. Date of last hydraulic test (if any) and pressure applied	:	August 2012 at 50 kg/cm²
8. Is the vessel in open or otherwise exposed to weather or to damp?	:	Kept in open and exposed to weather
9. What parts (if any) were inaccessible?	:	Nil
10. What examination & test were made? (Specify pressure if hydraulic test was carried out?	:	Visual Inspection, thickness gauging, radiography, DPT and HT at 50kg/cm²
11. Condition of vessel (state any defects Materially affecting the safe working pressure Or the safe working of the vessel) External	:	Satisfactory
Internal	:	Satisfactory (Refractory lined)
12. Are all required fitting and appliances provided In accordance with the Rules for pressure vessels?	:	Yes
13. Are all required fitting and appliances provided and in good condition?	:	Yes
14. Repairs (if any required and period within which They should be executed and any other condition Which the person marking the examination thinks it Necessary to specify for securing safe working	:	Nil
15. Safe working pressure, calculated from dimension And From the thickness and other data ascertained by the Present examination due allowance being made for Conditions of working if unusual or exceptionally severe(state minimum thickness of walls measured during examination)	:	30 kg/cm²
16. Where repairs affecting the safe working pressure Are required state the safe working pressure		
a)Before the expiration of the period specified (14)	:	Nil
b)After the expiration of such period if the required Repairs have not been completed	:	Nil
c)After the completion of the required repairs	:	Nil
17. Other observations/Examinations findings.	:	The Pressure Vessel is fit for operation upto working pressure of 30 Kg/cm²

I Certify that on August 2016 the pressure vessel described above was thoroughly cleaned as far as its construction permits) made accessible for thorough examination and for such test as were necessary for thorough examination and that on the said date, I thoroughly examined the pressure vessel including its fittings and that the above is true report of my examination.

DASIKA SRI RAMA KRISHNA

COMPETENT PERSON

Approval as competent person, by the Director of Factories, Government of Andhra Pradesh

Joint Chief Inspector of Factories
Visakhapatnam

FORM NO.8

No. HPCL/CDU-III/HEATER/03 **Report of Examination of Pressure Vessel** Date- August2016

1. Name of occupier (or factory)	:	Mr G S V S S Sarma, Executive Director
2. Situation of and address of factory	:	M/s. Hindustan Petroleum Corporation Ltd Visakha Refinery, Malkapuram, Visakhapatnam-11
3. Name, description and distinctive Number of pressure vessel. Location.	:	Crude Heater with 4 pass heating coil, horizontal and round with alloy steel tubes,Iden No. 42-F2 CDU-III
4. Name and Address of the manufacturer	:	BHPV
5. Nature of process in which it is used	:	HC
6. Particulars of Vessel:-		
a) Date of construction	:	1999
b) Thickness of walls	:	--
c) Date on which the vessel was first taken into use	:	1999
d) Maximum permissible working pressure Recommended by the manufacturer	:	15 kg/cm² /FV
e) Design pressure (The history should be briefly given and the examiner should state whether he has been previous report)	:	-- Last Insp. done in August 2012
7. Date of last hydraulic test (if any) and pressure applied	:	August 2012
8. Is the vessel in open or otherwise exposed to weather or to damp?	:	Kept in open and exposed to weather
9. What parts (if any) were inaccessible?	:	Nil
10. What examination & test were made? (Specify pressure if hydraulic test was carried out?	:	Visual Inspection, thickness gauging, radiography, DPT and HT at 22.5kg/cm²
11. Condition of vessel (state any defects Materially affecting the safe working pressure Or the safe working of the vessel) External	:	Satisfactory
Internal	:	Satisfactory(Refractory lined)
12. Are all required fitting and appliances provided In accordance with the Rules for pressure vessels?	:	Yes
13. Are all required fitting and appliances provided and in good condition?	:	Yes
14. Repairs (if any required and period within which They should be executed and any other condition Which the person marking the examination thinks it Necessary to specify for securing safe working	:	Nil
15. Safe working pressure, calculated from dimension And From the thickness and other data ascertained by the Present examination due allowance being made for Conditions of working if unusual or exceptionally severe(state minimum thickness of walls measured during examination)	:	15 kg/cm² /FV
16. Where repairs affecting the safe working pressure Are required state the safe working pressure		
a)Before the expiration of the period specified (14)	:	Nil
b)After the expiration of such period if the required Repairs have not been completed	:	Nil
c)After the completion of the required repairs	:	Nil
17. Other observations/Examinations findings.	:	The Pressure Vessel is fit for operation upto working pressure of 15 Kg/cm²

I Certify that on August 2016 the pressure vessel described above was thoroughly cleaned and (So far as its construction permits) made accessible for thorough examination and for such test as were necessary for thorough examination and that on the said date, I thoroughly examined the pressure vessel including its fittings and that the above is true report of my examination.

DASIKA SIVA RAMA KRISHNA

Approval as competent person by the Director of Factories, Government of Andhra Pradesh

Joint Chief Inspector of Factories
Visakhapatnam

FORM NO.8

No. HPCL/CDU-III//COLUMN/01 **Report of Examination of Pressure Vessel** Date- August2016

1. Name of occupier (or factory)	:	Mr G S V S S Sarma, Executive Director
2. Situation of and address of factory	:	M/s. Hindustan Petroleum Corporation Ltd Visakha Refinery, Malkapuram, Visakhapatnam-11
3. Name, description and distinctive Number of pressure vessel.	:	Atmas Distillation Tower, Vertical, Made of Carbon steel with SS410 Clad partially and monel lined at top, Size:Dia 2.8mts x Ht 59.35mts, Mounted on Skirt support, Iden No. 42-C-01
Location.	:	CDU-III
4. Name and Address of the manufacturer	:	BHPV
5. Nature of process in which it is used	:	Crude Destillation
6. Particulars of Vessel:-		
a) Date of construction	:	1999
b) Thickness of walls	:	–
c) Date on which the vessel was first taken into use	:	2000
d) Maximum permissible working pressure Recommended by the manufacturer	:	3.5 kg/cm²
e) Design pressure (The history should be briefly given and the examiner should state whether he has been previous report)	:	–
	:	Last Insp. done in August 2012
7. Date of last hydraulic test (if any) and pressure applied	:	August 2012
8. Is the vessel in open or otherwise exposed to weather or to damp?	:	Kept in open and exposed to weather
9. What parts (if any) were inaccessible?	:	Nil
10. What examination & test were made? (Specify pressure if hydraulic test was carried out?	:	Visual Inspection, thickness gauging, radiography, DPT
11. Condition of vessel (state any defects Materially affecting the safe working pressure Or the safe working of the vessel) External	:	Not seen as the Vessel is insulated
Internal	:	Satisfactory
12. Are all required fitting and appliances provided In accordance with the Rules for pressure vessels?	:	Yes
13. Are all required fitting and appliances provided and in good condition?	:	Yes
14. Repairs (if any required and period within which They should be executed and any other condition Which the person marking the examination thinks it Necessary to specify for securing safe working	:	Nil
15. Safe working pressure, calculated from dimension And From the thickness and other data ascertained by the Present examination due allowance being made for Conditions of working if unusual or exceptionally severe(state minimum thickness of walls measured during examination)	:	3.5 kg/cm² /FV
16. Where repairs affecting the safe working pressure Are required state the safe working pressure		
a)Before the expiration of the period specified (14)	:	Nil
b)After the expiration of such period if the required Repairs have not been completed	:	Nil
c)After the completion of the required repairs		Nil
17. Other observations/Examinations findings.	:	The Pressure Vessel is fit for operation upto working pressure of 3.5 Kg/cm²

I Certify that on August 2016 the pressure vessel described above was thoroughly cleaned and (so far as its construction permits) made accessible for thorough examination and for such test as were necessary for thorough examination and that on the said date, I thoroughly examined the pressure vessel including its fittings and that the above is true report of my examination.

DASIKA SIVA RAMA KRISHNA

Approval as competent person by the Director of Factories, Government of Andhra Pradesh

Joint Chief Inspector of Factories
Visakhapatnam

FORM NO.8

No. HPCL/CDU-III//COLUMN/02 **Report of Examination of Pressure Vessel** Date- August2016

1. Name of occupier (or factory)	:	Mr G S V S S Sarma, Executive Director
2. Situation of and address of factory	:	M/s. Hindustan Petroleum Corporation Ltd Visakha Refinery, Malkapuram, Visakhapatnam-11
3. Name, description and distinctive Number of pressure vessel.	:	Heavy Naphtha Stripper, Vertical, Made of Carbon steel with dished end Size:Dia 1.2mts x Ht7.713mts Design Code:ASME Sec VIII, Div.1, Skirt supported, Iden No. 42-C-02.
Location.	:	CDU-III
4. Name and Address of the manufacturer	:	BHPV
5. Nature of process in which it is used	:	Heavy Naphtha Stripping in the Stream from Crude Tower.
6. Particulars of Vessel:-		
a) Date of construction	:	1999
b) Thickness of walls	:	Shell: 8mm, Dish: 10mm
c) Date on which the vessel was first taken into use	:	2000
d) Maximum permissible working pressure Recommended by the manufacturer	:	5 kg/cm²
e) Design pressure (The history should be briefly given and the examiner should state whether he has been previous report)	:	--
	:	Last Insp. done in August 2012
7. Date of last hydraulic test (if any) and pressure applied	:	August 2012 at 7. 5 kg/cm²
8. Is the vessel in open or otherwise exposed to weather or to damp?	:	Kept in open and exposed to weather
9. What parts (if any) were inaccessible?	:	Nil
10. What examination & test were made? (Specify pressure if hydraulic test was carried out?	:	Visual Inspection, thickness gauging,, and HT at 7.5kg/cm²
11. Condition of vessel (state any defects Materially affecting the safe working pressure Or the safe working of the vessel) External	:	Not seen as the Vessel is insulated
Internal	:	Satisfactory
12. Are all required fitting and appliances provided In accordance with the Rules for pressure vessels?	:	Yes
13. Are all required fitting and appliances provided and in good condition?	:	Yes
14. Repairs (if any required and period within which They should be executed and any other condition Which the person marking the examination thinks it Necessary to specify for securing safe working	:	Nil
15. Safe working pressure, calculated from dimension And From the thickness and other data ascertained by the Present examination due allowance being made for Conditions of working if unusual or exceptionally severe(state minimum thickness of walls measured during examination)	:	5 kg/cm² /FV
16. Where repairs affecting the safe working pressure Are required state the safe working pressure		
a)Before the expiration of the period specified (14)	:	Nil
b)After the expiration of such period if the required Repairs have not been completed	:	Nil
c)After the completion of the required repairs	:	Nil
17. Other observations/Examinations findings.	:	The Pressure Vessel is fit for operation upto working pressure of 5 Kg/cm²

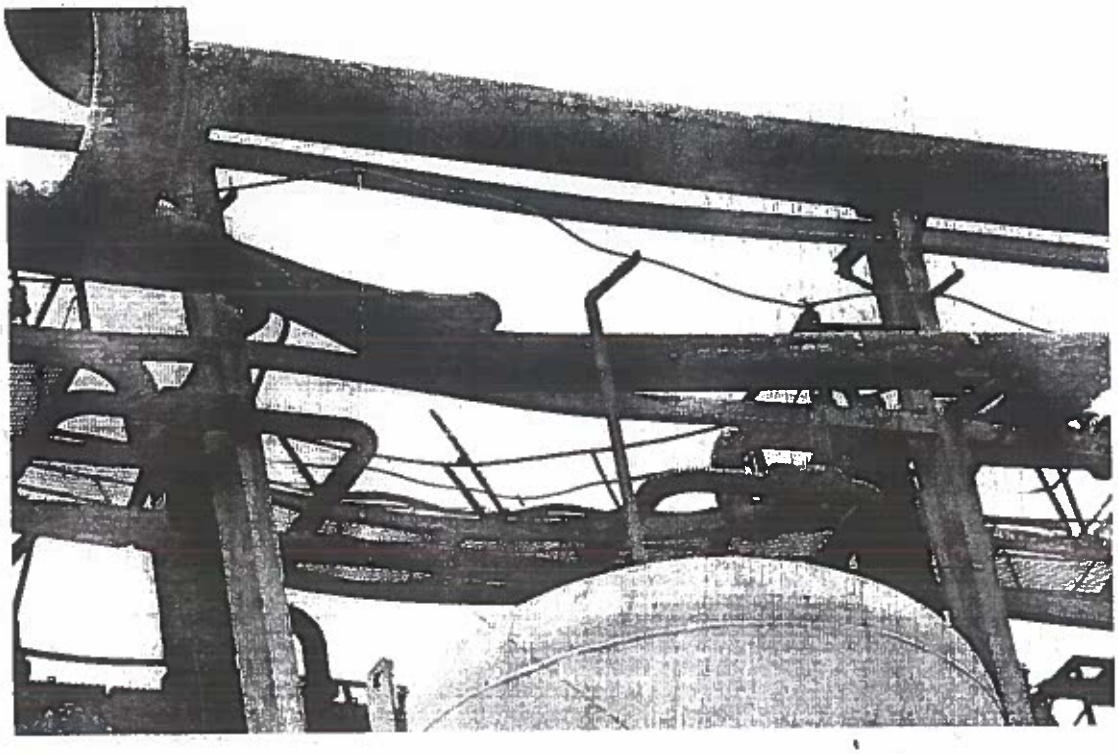
I Certify that on August 2016 the pressure vessel described above was thoroughly cleaned and (so far as its construction permits) made accessible for thorough examination and for such test as were necessary for thorough examination and that on the said date, I thoroughly examined the pressure vessel including its fittings and that the above is a true report of my examination.

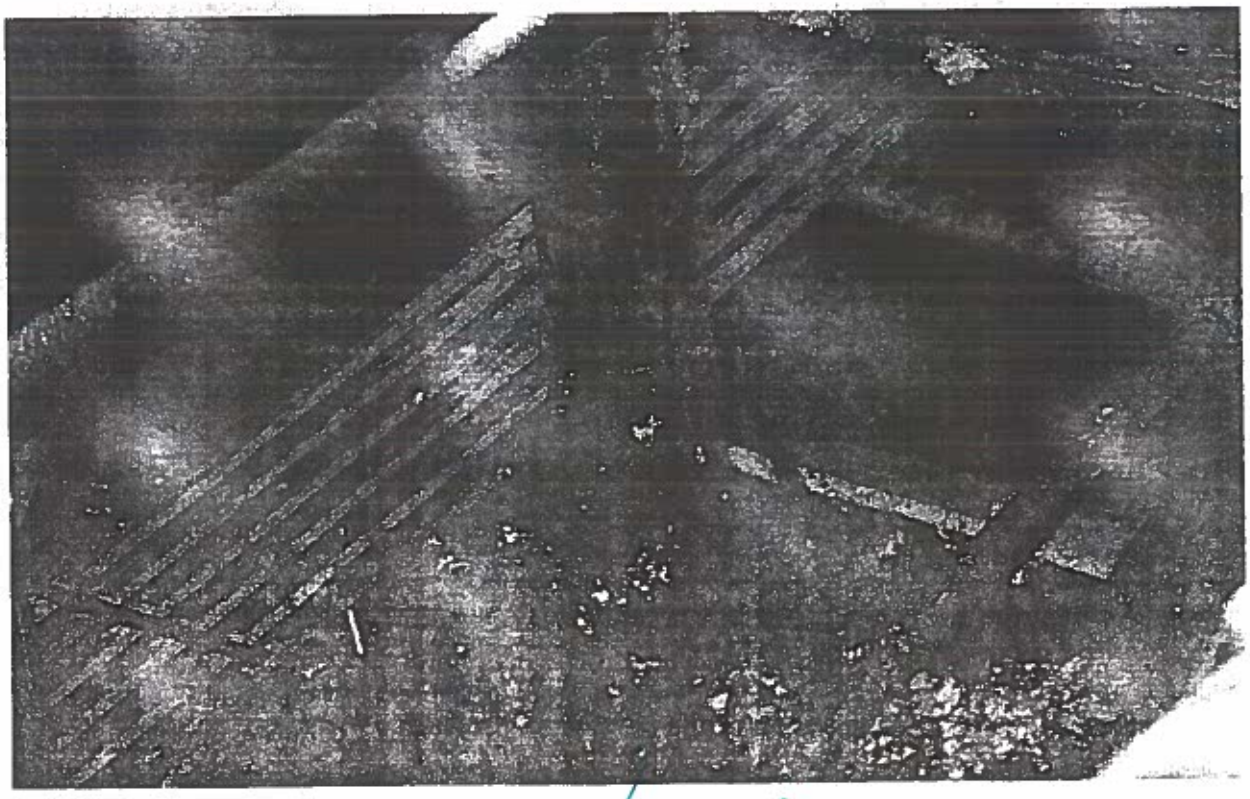
DASIKA SIVA RAMA KRISHNA

Approval as competent person by the Director of Factories, Government of Andhra Pradesh

Joint Chief Inspector of Factories
Visakhapatnam

HPCL, Visakha Refinery, Fire Incident occurred on 25-05-2021 at 03:10 PM
Photographs.





Joint Chief Inspector of Factories
Visakhapatnam

(10)

VIZAG

This statement has been recorded in the presence of S/Sri Dy. Chief Inspector of factories, Visakhapatnam and Inspector of factories - I - Visakhapatnam in connection with a/c accident that took place on 25.05.2021 @ 1500 hrs (approx.) in HPCL Visakh Refinery, Malkapuram.

I, YERUBANDI VENKAT TARAK, am working as Senior manager since 2013. I am section head for CDU-3

On 25.05.2021 I attended to duty at 0800 AM and interacted with my team members and briefed about activities and jobs planned. At around 1500 hrs Sri M. PRASAD (EMP NO. 39831080) superintendant production called me over phone and informed about fire breakout in pipetrack area above 1st floor at CDU-3. I, immediately informed my superiors and rushed to the spot for fire mitigation activities. I instructed my team to proceed for emergency shut-down, stop pumps from substation and close all battery limit valves. In parallel to this all fire monitors were opened and directed towards fire and sprinkler system was operated. HPCL fire and safety dept received information through

True Copy

INSPECTOR OF FACTORIES
VISAKHAPATNAM-I

emergency call (PABX 77) and the team immediately rushed to the spot and started fire fighting operation. fire was extinguished by 1615 hrs and cooling of the incident place and near by place continued till 1700 hrs. It was found that no one was injured during the incident and during fire mitigation activity.

The above information is true as per best of my knowledge and no one influenced me to write above statement.

Regards
V.V. Tarak
Sr. Manager
CDU-3, HPCL

witnessed
25.05.2021
Manoj Chauhan
Manager - F&S
HPCL-Visakh Refinery

INSPECTOR OF FACTORIES
VISAKHAPATNAM-I

VISAKHAPATNAM
29-5-21

This statement has been recorded in the Presence of Deputy Chief Inspector of factories (In-charge) Visakhapatnam and inspector of factories Visakhapatnam I circle in connection with the fire accident took place in HPCL, Visakh-refinery Malkapuram on 25-5-21 @ 15:00 (Approx time).

I MAGATAPALLI PRASAD, S/o M.R.K. SURYA RAO AGE 50 Yrs have been working in CDU III unit as Superintendent-Production in Operations Department Since MARCH 2020. I have 29 yrs of Experience in Various Sections of Operations Department in Visakh refinery for HPCL Visakhapatnam.

I attended to Duty and took over the Charge (H.O.T.O) from Night shift DCS officer and started monitoring DCS operations upto 13:30 Hrs and found no abnormalities. Then after I handed over the DCS to Sri B. Madhu (Superintendent-Production) and Engaged in field Operational responsibilities. While I was doing Preparation for Issuing another onsite work permit in the field room complex in CDU III field room @ around 15:00 Hrs observed abnormal sound with fire in the unit Central Pipe track. Immediately Informed to DCS Officer to take Emergency Shut-down of the unit, and Immediately given fire call to fire and Safety Department through dialing "77" PABX. and Immediately informed to Section head and rushed to the field and Initiated the fire fighting along with my Shift Crew As Per SOP Isolated the unit Battery limit Isolation Block valves with the help of Shift crew handled the Emergency Situation with help of fire and Safety Crew. and Put off the fire Completely @ around 16:25 Hrs. all Clear Siren given by F&S at 16:30 Hrs

I admit that the above statement is true as Per best of my knowledge no one Influenced me.

Regards
M. Prasad 29/5/21
(M. PRASAD)
Emp No 3918 ICPC

True Copy
[signature] 8/7/2021
INSPECTOR OF FACTORIES
VISAKHAPATNAM-I

Visakhapatnam

This statement has been recorded in the presence of I/c Dy. Chief Inspector of factories, Visakhapatnam. and Inspector of factories -I- Visakhapatnam. In connection with accident that took place on 25.05.2021 @ 15:00 hrs (approx) in HPCL - Visakh Refinery, Vishakapatnam.

I, SUNKARI CHANDRA MOULI S/o S. Prabhakara Rao age 32 years working as Assistant Superintendent of operations Since 2010.

On 25.05.2021 I attended to duty at 08:00 AM as part of my regular work I monitored the equipment in CDU-3 and found no abnormalities. At around 15:00 hrs I found fire at above pump bay pipe rack in CDU-3. and Sree. M. Prasad (Superintendent production CDU-3) who is sitting opposite to me also told about the fire. I immediately operated the nearby fire monitors and proceeded to isolate Battery Limit Valves in East, west and South side of CDU-3. I assisted Fire and Safety team

True Copy
8/8/21
INSPECTOR OF FACTORIES
VISAKHAPATNAM-I

The above information is true as per best of my knowledge and no one influenced me to write above statement.

Regards

S. Chandra

SUNDARI CHANDRA MOULI

Assistant superintendent of operations

CDU-3, HPCL

Witnessed

28.05.2021

Manoj Chauhan

Major- F&S

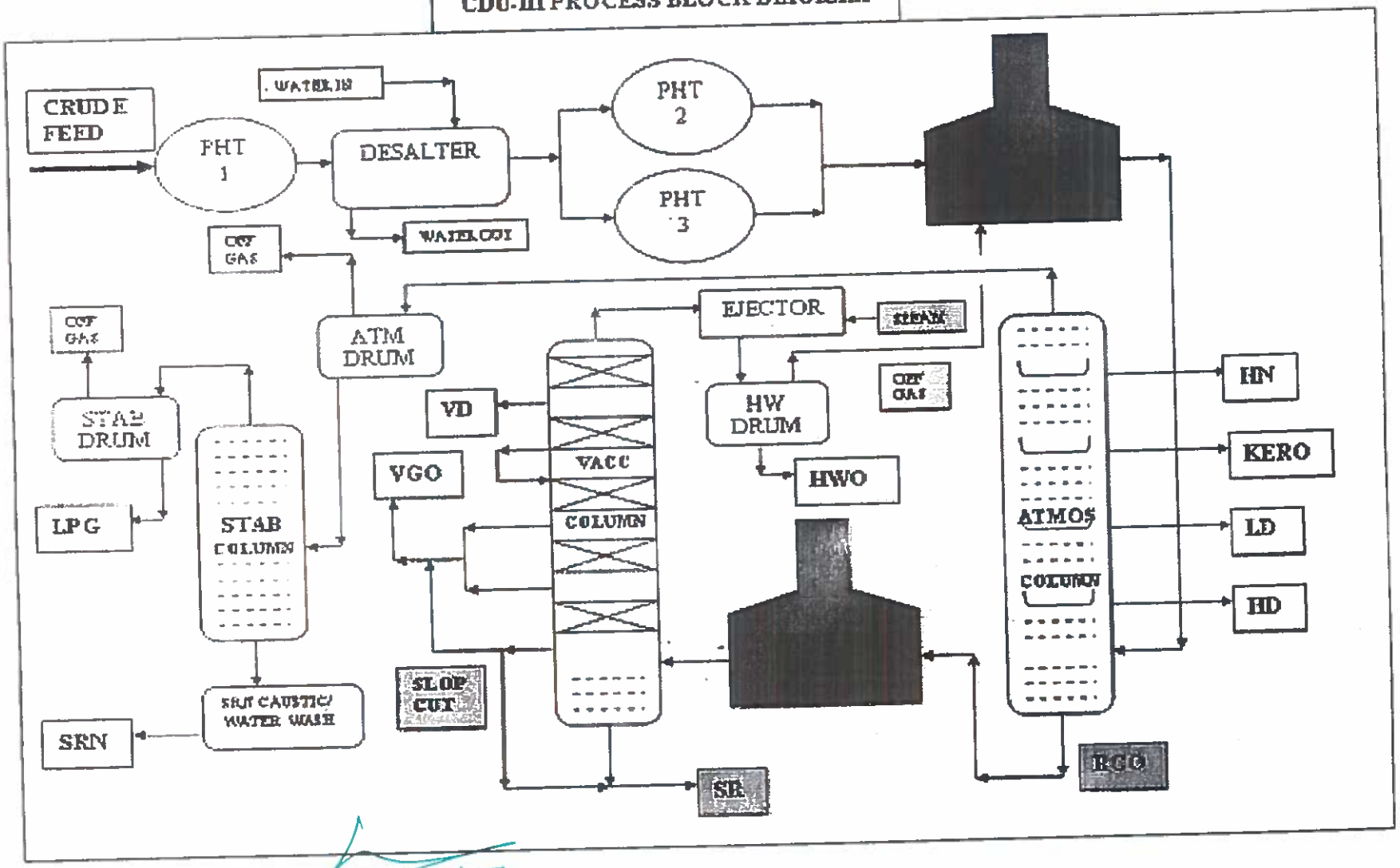
HPCL- Visakh Refinery

18/5/21

INSPECTOR OF FACTORIES

VISAKHAPATNAM-I

CDU-III PROCESS BLOCK DIAGRAM



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VISAKHAPATNAM-I

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VISAKH REFINERY FIRE & SAFETY DEPARTMENT	Doc. No. OCP/F&S/FR/309 Rev. 0 Date: Aug 02,2001 Page: Page 1 of 17
MOCK DRILL REPORT *(Ref. Procedure : OCP/F&S/PR 304)*	

Date: September 12, 2020
Mock drill No: 02/2020-21

Mock Drill Date	: 12.09.2020
Emergency Call	: 21:44 Hrs
Level-1 Emergency Declaration	: 21:45 Hrs
Mutual Aid Call	: 21:53 Hrs
Offsite Emergency Declaration	: 22:03 Hrs
All Clear Declaration	: 22:38 Hrs
Mock Drill Duration	: 54 Minutes
Mock Drill Scenario	: Toxic Gas Release (Hydrogen Sulphide, H2S) due to large hole on bottom line of Cold Separator
Mock Drill Location	: Cold Separator (60-D-02), DHDS Unit

1. BRIEF DESCRIPTION

HPCL – Visakh Refinery conducted a full-scale rehearsal Offsite mock drill at night 21.44 Hrs., of September 12, 2020.The objective of the mock drill was to test the preparedness of the refinery crew in handling toxic gas release emergencies in off shift hours (i.e. at night). Through this mock drill, it was also intended to test the adequacy of emergency equipment available with HPCL – Visakh Refinery and to test the skill level of emergency crew in handling toxic gas release emergency scenarios. The drill was conducted at night hours to test the response of emergency role players in case of similar incident happening at off – shift hours and holidays. Joint Chief Inspector of Factories, Shri J Sivashankar Reddy attended the drill as observer and Chief Guest.

A scenario of Hydrogen Sulphide gas (Toxic gas) release in one of the operating units of refinery (DHDS) resulting in Onsite emergency and later escalating to Offsite emergency was selected for conducting the mock drill.

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Joint Chief Inspector of Factories
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The Mock drill was activated at 21.44 hrs., with message from Operations technician of DHDS unit informing Fire & Safety department that Hydrogen Sulphide gas got released from one Cold Separator drum in the unit resulting in large scale release of toxic H2S gas. Immediately Level – I emergency was declared and Fire & Safety crew rushed to the scene of emergency on Fire tenders, Equipment tender and Ambulance. The refinery ERDMP plan was activated. The wind direction was assessed and roads were closed in the downwind side of the DHDS unit. Fire and Safety crew entered the DHDS unit using Self Contained breathing apparatus (SCBA), started water spray on the drum for dispersing the toxic gas cloud. Operations team initiated the shutdown and equipment isolation procedure of the vessel using Breathing apparatus sets. Using Breathing apparatus sets, search and rescue operations was carried out in the unit and two maintenance personnel who were found unconscious in the unit were rescued and sent to OHC in refinery ambulance.

As the toxic gas cloud was drifting to larger area, Level-3 offsite emergency was declared. The Disaster Control room was activated. The help of Mutual aid members **M/s Coromandel International Ltd (CIL) and M/s Andhra Petrochemicals Ltd (APL)** was also called for and Information communicated to District authorities as per the ERDMP plan. Road in between Refinery and ATP was closed as a precautionary measure. To disperse the toxic vapor cloud and to prevent the toxic gas from crossing the refinery boundary, water curtains were provided at the northeast boundary of refinery. Evacuation of personnel in the downwind side units and in area in between Refinery and ATP was also carried out. Search and rescue operations was carried out in all affected regions and personnel affected were immediately shifted to OHC. As per the directions of Site Incident controller, leak arresting and clamping activity carried out using respiratory protection equipment and leak was arrested. Once the leaking line was clamped, gas testing in the affected downwind side units were carried out. Head count of personnel evacuated from the affected zones were taken at assembly points. After ensuring no gas at the affected zones "All Clear" was declared at 22.38 hrs.

After the mock drill, a review meeting was conducted in Refinery Disaster Control room where in the observers told their observations for improvement. **Joint Chief Inspector of Factories, Shri J Sivashankar Reddy** complimented refinery management for organizing the drill in night time and testing the readiness for handling emergencies. He appraised the management regarding small gaps that were observed while performing the drill and advised management to work on bridging the gaps.

ED – Visakh Refinery Shri V Ratanraj, ED – VRMP Shri P Veerabhadra Rao, CGM I/C – Operations Shri R Ramakrishnan and other CGM's, Emergency role players participated in the drill.

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2. EMERGENCY DESCRIPTION & COMMUNICATION:

At 21:30 Hrs, DHDS DCS Officer observed activation of Hydrogen Sulphide (H2S) and Hydrocarbon (HC) detectors at Cold Separator area. The DCS Officer also observed loss of level in Cold separator boot upon activation of Level Transmitter (LT) low alarm and low level switch. Immediately he called DHDS Technician in PA system, and advised him to check the location immediately. DHDS technician after wearing Self Contained Breathing Apparatus (SCBA) rushed to the field along with personal gas detectors of H2S & H2.

In parallel, DCS Officer announces in unit PA system in all three languages (Telugu, Hindi & English) about the H2S detectors activation and advised all workers to evacuate the plant. DCS Officer informed DHDS Field Shift In Charge (SIC) about the pressure drop in the system and HC level drop in Cold Separator. DHDS Field SIC along with the other two technicians proceeded to field by wearing SCBA sets and carrying personal H2S detectors. After checking in the field, DHDS Technician informed Field SIC that there was heavy leak in Cold Separator boot and the same could not be isolated. Upon assessing the situation, Field SIC decided to proceed for Emergency Shut Down (ESD) of the unit, and advised DCS officer about the major leak and gave clearance to proceed for ESD.

As instructed by Field SIC, DCS Officer took the ESD of the unit and informed Fire & Safety about the incident in fire phone by dialing "77" specifying H2S Toxic Gas release from cold separator at west side of DHDS unit. Immediately after communicating the emergency message to F&S, he alerted Merox DCS regarding the chances of high flaring due to ESD of DHDS. He also informed the downwind units DHDS-SRU, FCCU-II and Cooling Tower about the toxic gas leak. DHDS DCS officer also communicate about the ESD of unit due to toxic gas emergency to Section Head and Division Head of DHDS.

Upon receiving the emergency message in fire phone, F&S control person pressed the internal emergency bell of F&S building. Upon assessing the emergency message, Shift I/C-F&S advised the control room person to declare Level-I Emergency. The F&S Control Room person declared the Level-I Emergency and announced the emergency message stating the location of H2S leak repeatedly on Walkie Talkie in All Talk Group (ATG) channel for the benefit of all the Refinery Employees and Emergency Responders. Fire crew led by Shift I/C-F&S rushed to the site along with Fire Tenders and Ambulance. On the way to site, Shift I/C-F&S assessed the wind direction and it was from South-West to North-East and announced the same in Walkie Talkie. The F&S control room person repeatedly announce the wind direction in Walkie Talkie ATG channel for the benefit of refinery employees. F&S control room person wrote down the details of emergency on the information board provided in F&S control room.

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3. SEQUENCE OF ACTION:

Action at Site

Fire crew rushed to DHDS along with Water Tender, Equipment Tender and Ambulance-325. All the F&S persons wore SCBA set before entering into the gas leak area. They carried H2S personal gas detector and emergency searchlights. Water spray system of Cold Separator was made ON immediately to disperse and dilute the leak. Immediately, two F&S Inspectors proceeded to DHDS for Search & Rescue along with portable stretchers and Emergency Life Breathing Apparatus (ELBA). F&S crew deployed extendable telescopic light and portable hand light of Equipment Tender for emergency lighting by running Diesel Generator.

Meanwhile, Refinery Shift Manager (RSM) reached the site and took charge as Site Incident Controller. Shift I/C-F&S handed over Site Incident Controller jacket, helmet and PA system to Refinery Shift Manager (RSM). The second RSM at MOI took feedback from field RSM and all the units in the down wind direction and nearby (i.e, DHDS-SRU, ETP-I, Cooling Tower, FCCU-II & PP-II) for taking necessary action. MOI RSM contacted GM-Operations and appraised him about the scenario. Forward Control Centre (FCC) was established at N/SS-20 by Site Incident Controller considering the wind direction. Later, all Emergency Controllers were informed by MOI RSM regarding the toxic leak emergency.

First line emergency crew members from Lab, Maintenance Instrumentation and CISF also reached the site and joined F&S crew, after hearing the emergency message & message. They barricaded the roads to prevent the unauthorised entry of persons into gas leak area. CISF persons were directed to different locations to close the roads at S/W of DHDS, S/E of VRMP HGU, N/W of VRMP-HGU, N/E of PP-2 and HLPH Emergency gate.

Maintenance Engineer (Night shift coverage) reached the spot along with his crew and reported to RSM. He contacted site supervisors and ensured that all the maintenance contract workers stopped their jobs and proceeded to safe assembly points. Project Job Engineers (Night Shift Coverage) alerted concerned projects work force and ensured the stoppage of works at project sites. The project workforce working in VRMP-HGU and nearby DHDS-SRU were evacuated safely and assembled at Assembly Point at N/SS-20. Personnel at other projects sites also were evacuated and were directed to nearby assembly points.

Operations field crew carried out shut down of DHDS unit and joined for search & rescue Operations along with F&S using SCBA set. Refinery Ambulance was parked at S/W side of DHDS outside barricaded area facing west side. Ambulance driver (F&S) and First Aider (OHC)

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waited at road side outside the barricaded area along with wheeled stretcher to receive any casualty. During the rounds, rescue team observed that two Maintenance Instrumentation technicians in unconscious condition, one at flare KOD area and another at Chemical drums area. Immediately, both casualties were shifted to South West side of unit (in upwind direction) using portable stretchers and shifted to Refinery Occupation Health Centre (OHC) by Ambulance. All the operation persons reported to FCC after shutting down the unit. F&S crew continued search operation in DHDS and HGU.

Declaration of Offsite Emergency

Since the toxic cloud was spreading to the nearby units and situation was getting worse, Site Incident Controller advised Shift I/C-F&S to call out all F&S personnel and Mutual Aid Members. F&S Shift I/C advised F&S control room person to call out all F&S staff and Mutual Aid Members. Field RSM informed MOI RSM to convey the emergency message to all CGMs and ED-VR.

Upon receiving the message, Mutual Aid members from M/s APL and M/s CIL rushed to the site along with Ambulances and Fire Tenders. Fire tender & Ambulance from M/s CIL approached Refinery through CIL Jetty road and parked their vehicle near ATP South Gate as standby. M/s APL Fire Tender and Ambulance entered through ATP north gate. ATP security personnel directed the mutual aid team to the emergency site and they reported to FCC.

All the Emergency Responders as per ERDMP also rushed to the Refinery. GM-Operations reached the site and took over charge from RSM as Site Incident Controller. GM-F&S also reached the site and assumed charge as F&S Controller. Division Head of DHDS also reached to site and took charge as Operations Controllers. All the other Emergency Controllers also rushed to the scene. Site Incident Controller assessed the situation along with F&S Controller and Operations Controller. He consulted with CGM (I/C) – Operations and ED-VR declared Level-3 Emergency. As directed by Site Incident Controller, F&S controller advised F&S control room person to declare Level-3 Emergency at 22:03 Hrs.

Establishing Disaster Control Room

Disaster Control Room was established immediately upon declaring the Level-3 Emergency. ED-VR, ED-VRMP, CGM (I/C) – Operations, CGM-Technical, CGM-HR, CGM-Finance and CGM-Materials proceeded to DCR and took respective charge as per ERDMP Emergency Organogram. ED-VR communicated (simulation) the emergency message to District Collector and other Local, District & State Authorities as per the Emergency Communication Flow Chart.

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हिन्दुस्तान पेट्रोलियम HP	VISAKH REFINERY FIRE & SAFETY DEPARTMENT **MOCK DRILL REPORT** *(Ref. ERDMP)*	Doc. No. F&S/ERDMP/Annexure-13 Rev. 00 Date: Jan 01, 2021 Page 1 of 20

1.	**Date and Time of Mock Drill**	
	Mock Drill Date	: 12-02-2021
	Emergency Call	: 15:44 Hrs
	Level-2 Emergency Siren	: 15:45 Hrs
	Mutual Aid Call	: 15:55 Hrs
	Level-3 Emergency Siren	: 15:56 Hrs
	All Clear Siren	: 16:28 Hrs
	Mock Drill Duration	: 44 Minutes
2.	**Location**	
	Cold Separator (60-D-02), Diesel Hydro Desulphurisation (DHDS) unit	
3.	**Details of Emergency Scenario**	

Scenario:

Toxic Gas Release (Hydrogen Sulphide, H2S) due to large hole on bottom line of Cold Separator (60-D-02).

Brief Description:

HPCL – Visakh Refinery conducted Offsite Emergency Mock Drill on February 12, 2021 at 15.44 hrs. The objective of the mock drill was to test the preparedness of the refinery crew in handling toxic gas release emergencies. Through this mock drill, it was also intended to test the adequacy of preparedness with respect to effective handling of toxic gas release emergency scenarios. **Joint Chief Inspector of Factories Shri J Siva Shankar Reddy, District Fire Officer Shri B V S Ram Prakash, Assistant Environment Engineer, APPCB Shri Mira Subhan Sheik** and officers from **Police Department** and **GVMC** also attended the mock drill as observers.

A scenario of Hydrogen Sulphide gas (Toxic gas) release in one of the operating units of refinery (DHDS) resulting in Onsite emergency and later escalating to Offsite emergency was selected for conducting the mock drill.

The Mock drill got activated at 15.44 hrs., with message from Operations technician of DHDS unit informing Fire & Safety department that Hydrogen Sulphide gas got released from one Cold Separator drum in the unit resulting in large scale release of toxic H2S gas. Immediately Level – 2 emergency siren was given at 15.45 hrs. and Fire & Safety crew rushed to the scene of emergency on Fire tenders, Equipment tender and Ambulance. The refinery Emergency Response & Disaster Management Plan (ERDMP) was activated. The wind direction was assessed and roads were closed in the downwind side of the DHDS unit. Fire and Safety crew entered the

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	DHDS unit using Self Contained Breathing Apparatus (SCBA), started water spray system on the drum for dispersing the toxic gas cloud. Operations team initiated the shutdown and equipment isolation procedure of the vessel using SCBA sets. As the toxic gas cloud was spreading to larger area, **Level-3 Offsite Emergency** was declared and Level-3 siren was blown at 15.56 hrs. The help of Mutual aid members **M/s Coromandel International Limited** (CIL) and **M/s Andhra Petrochemical Limited** (APL) were also called for and information communicated to District Authorities as per the ERDMP plan. Road in between Refinery and ATP was closed as a precautionary measure. To disperse the toxic vapor cloud and to prevent the toxic gas from crossing the refinery boundary, water curtains were provided at the North-East boundary of refinery. Search and rescue operations was carried out in the affected areas. Evacuation of personnel in the downwind side units and in area in between Refinery and ATP was also carried out. Search and rescue operations were carried out in all affected regions. Affected personnel were shifted to Refinery Occupational Health Centre (OHC) for necessary treatment. After ensuring the safe shut down of DHDS unit, as per the directions of Site Incident Controller, leak arresting and clamping activity was carried out using respiratory protection equipment and leak was arrested. Once the leaking line was clamped, gas testing in the affected downwind side units were carried out. Head count of personnel evacuated from the affected zones were taken at assembly points. After ensuring no gas at the affected zones "All Clear Siren" was blown at 16:28 hrs. Mock Drill Review Meeting was conducted in the Emergency Control Centre after the mock drill in presence of **Joint Chief Inspector of Factories Shri J Siva Shankar Reddy, District Fire Officer Shri B V S Ram Prakash, Assistant Environment Engineer, APPCB Shri Mira Subhan Sheik** and officers from **Police Department** and **GVMC**. **ED – Visakh Refinery Shri V Ratanraj, ED – VRMP Shri P Veerabhadra Rao, CGM I/C – Operations Shri R Ramakrishnan** and other CGMs, Emergency role players, mock drill observers participated in the mock drill review meeting.
4.	**Details of initiation/activation of emergency**
	At 15.40 Hrs, DHDS DCS Officer observed activation of Hydrogen Sulphide (H2S) and Hydrocarbon (HC) detectors at Cold Separator area. The DCS Officer also observed loss of level in Cold separator boot upon activation of Level Transmitter (LT) low alarm and low level switch. Immediately he called DHDS Technician in PA system, and advised him to check the location immediately. DHDS technician

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	VISAKH REFINERY	Doc. No. F&S/ERDMP/Annexure-13 Rev. 00 Date: Jan 01, 2021 Page 1 of 6
HP	FIRE & SAFETY DEPARTMENT	
	MOCK DRILL REPORT	
	(Ref. ERDMP)	

1.	**Date and Time of Mock Drill**	
	Mock Drill Date	: 24-02-2021
	Emergency Call	: 15:29 Hrs
	Level-2 Emergency Siren	: 15:30 Hrs
	All Clear Siren	: 16:15 Hrs
	Mock Drill Duration	: 46 Minutes
2.	**Location**	
	Naphtha Storage Tank 120-T-191, Refinery tank farm area	
3.	**Details of Emergency Scenario**	

Scenario:

Naphtha Storage Tank (120-T-191) on fire

Background & Brief Description:

HPCL – Visakh Refinery conducted Onsite Emergency Mock Drill on February 24, 2021 at 15:29 Hrs. The objective of the mock drill was to test the preparedness level of the refinery crew in handling tank fire emergencies. The mock drill was conducted during the site inspection visit by **Petroleum & Natural Gas Regulatory Board (PNGRB)** accredited Third Party Inspection Agency **(M/s. AMPY Pipeline Solutions LLP.)** as a part of refinery ERDMP document certification process. The auditors, **Shri. Sunil Kumar** and **Shri. B B Prasad** from M/s AMPY Pipeline Solutions LLP, witnessed the mock drill as observers.

A scenario of tank fire in one of the naphtha tanks of refinery tank farm resulting in Onsite emergency was selected for conducting the mock drill. The mock drill got activated at 15.29 Hrs upon reporting the fire emergency message by Operations technician of OM&S (TPH section) to Fire & Safety department. Immediately Level – 2 emergency siren was given at 15.30 Hrs as per the refinery siren policy. Fire & Safety crew rushed to the scene of emergency on Fire tenders, Equipment tender and Ambulance. The refinery Emergency Response & Disaster Management Plan (ERDMP) was activated. Emergency handling activities such as stoppage of works nearby and evacuation of affected area, barricading of affected area and nearby roads, activation of water spray system of the affected tank, application of foam using semi-fixed foam system into the tank, HVLR monitors operation etc were exercised during the drill.

Mock Drill Review Meeting was conducted after the mock drill involving the senior officials and emergency responders of HPCL-VR. The TPIA auditors **Shri. Sunil Kumar** and **Shri. B B Prasad** from **M/s AMPY Pipeline Solutions LLP** also participated in the mock drill review meeting and shared their observations.

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4.	**Details of initiation/activation of emergency**
	TPH Operations Technician during his field round observed fire on the tank roof (TK-120-T-191). Immediately he activated the Manual Call Point MCP-65 at west side of tank. Simultaneously, he communicated the emergency message to TPH Shift I/C. Upon receiving the message, TPH Shift I/C communicated the emergency to Fire & Safety through fire phone (77) and informed his line function & DCS officer through RT set. He rushed to the emergency site along with his operations team. Upon receiving the emergency message in MCP and fire phone, F&S control person pressed the internal emergency bell of F&S building. Upon assessing the emergency message, Site Incident Controller (GM-Operations) advised F&S to blow the Level-2 emergency Siren. The F&S Control Room person blown the Level-2 Emergency Siren and announced the emergency message stating the location of fire repeatedly on Walkie Talkie in All Talk Group (ATG) channel for the benefit of all the Refinery Employees and Emergency Responders. Fire crew led by Shift I/C-F&S rushed to the site along with Fire Tenders and Ambulance. On the way to site, Shift I/C-F&S assessed the wind direction and it was from South-West to North-East and announced the same in Walkie Talkie. The F&S control room person repeatedly announced the wind direction in Walkie Talkie ATG channel for the benefit of refinery employees. F&S control room person wrote down the details of emergency on the information board provided in F&S control room. Upon hearing the siren and emergency message, all the first line emergency handling crew and emergency responders rushed to the site. Upon noticing the fire and hearing the siren, contract workers stopped the jobs and proceeded to nearby assembly points as directed by the concerned supervisors. CISF persons closed the main gates upon hearing the siren.
5.	**Description of the Mock drill (the narrative of the situation, all actions) including response of emergency team and mitigation actions**
	Fire & Safety crew rushed to Tank 120-T-191 along with Equipment Tender, Foam Tender and Ambulance-325. Operations crew and first line emergency handling crew from Lab, Maintenance-Instrumentation & CISF also reached the emergency site. Water spray system of tank was made ON immediately to cool the tank. Operations team stopped all the nearby jobs and guided all the contract workers to proceed to Assembly Points. Meanwhile, GM-Operation reached the site and took charge as Site Incident Controller. F&S team handed over Site Incident Controller jacket, helmet and PA system to GM-Operations. During the fire emergency, Tank 191 was feeding

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Visakhapatnam

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Gmail **sravan kumar <advsravan@gmail.com>**

Reply Affidavit to the Counter and Report of Respondent No.7 in OA No. 73 of 2021 before NGT Southern Zone Bench at Chennai

1 message

sravan kumar <advsravan@gmail.com> Sun, Jul 25, 2021 at 6:59 PM
To: secy-moef@nic.in, sec.png@nic.in, CPCB <ccb.cpcb@nic.in>, ssuresh.cpcb@nic.in, APPCB HO Legal <hopcblegal@gmail.com>, cs@ap.gov.in, membersecy@appcb.gov.in, collector_vspm@ap.gov.in, ratan@hpcl.in, cmd@hpcl.in, Madhuri Reddy <reddymadhuri09@gmail.com>, director@iict.res.in, ro.moefccc@gov.in
Cc: judicial-ngtsz@gov.in

Sir/Madam

Kindly find the Reply affidavit on behalf of the Applicant.

Please acknowledge the receipt of this email.

with regards

Sravan Kumar
Advocate for the Applicant
9811237009

Reply Affidavit 25.7.2021.pdf
7587K