



EMERGENCY RESPONSE AND DISASTER MANAGEMENT PLAN - 2025

WRPL SIDHPUR PUMPING STATION

WRPL/ERDMP/SID/2025 || Rev - 01 || Issue: June 2025



IndianOil

EMERGENCY RESPONSE & DISASTER MANAGEMENT PLAN (ERDMP) 2025

INDIAN OIL CORPORATION LIMITED WRPL SIDHPUR PUMPING STATION

Conforming to

PNGRB (Codes of Practices for Emergency Response and Disaster
Management Plan {ERDMP}) Amendment Regulations, 2020



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CERTIFICATE OF CONFORMITY



Certificate of Conformity

Standard: Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)), Regulations, 2010 and amendment 2020.

Certificate Number: **BOSAI/0711**

Certificate Holder: **Indian Oil Corporation Ltd., WRPL Sidhpur Station**

Scope: **Review & implementation of ERDMP as per the PNGRB Regulations.**

This is to certify that **BOSAI SAFETY PRIVATE LIMITED**, approved TPIA by PNGRB vide Registration No. PNGRB/Tech/11-TPIA/(1)/2024 (E-4902) dated 21.03.2025 have reviewed and assessed the **ERDMP document prepared by Indian Oil Corporation Ltd., WRPL Sidhpur Station** and found the same in conformity with the **Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)), Regulations, 2010 and amendment 2020.**

The audit team conducted site assessment visit on 14.06.2025 at **Indian Oil Corporation Ltd. WRPL Sidhpur Station** to review implementation of ERDMP as per the requirement and found the same to be compliant.

This certificate is being issued to **Indian Oil Corporation Ltd., WRPL Sidhpur Station** for their compliance of ERDMP documents as per PNGRB Regulations. 2010 and amendment 2020.

Issued on: 28/06/2025, Valid till: 13/06/2030 (Five Years from the date of Audit)

Dinesh
Kumar Singh
(D.K. SINGH)
Chief Executive Officer

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Dinesh Kumar Singh
Date: 2025.06.28
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Note:

1. This Certificate is valid for maximum 5 years from the date of Audit or till any major Modification/ Revamp in the facility or as per directives of PNGRB whichever is earlier.
2. Certificate is issued on the basis of assessment carried out and valid only with the maintaining the compliance of PNGRB regulations & OISD and other statute including human error on continual basis.
3. BSPL does not take any responsibility of any incident / loss occurred due to violation of any condition in future.

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ERDMP Document name (Mention name of your entity's ERDMP)	Emergency Response and Disaster Management Plan-2025 Indian Oil Corporation Limited Western Region Pipeline, Sidhpur
Name of Entity with Complete address including pin code for which ERDMP is recommended	Indian Oil Corporation Limited, Western Region Pipelines, Sujanpur Highway, Sidhpur, Dist. Patan, Gujarat - 384151
Type of installation	Pipelines pumping & delivery Installation
ERDMP Document Number with latest Revision number	WRPL/ERDMP/SID/2025 Rev No. 01 dated 28.06.2025 as Site visit



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(Mention ERDMP Document Number with latest Revision number on final cover sheet)	observations compliance incorporated. WRPL/ERDMP/SID/2025 Rev No. 01 dated 28.06.2025 is for FINAL ERDMP Manual as per PNGRB 2020 Regulations.
Number of Chapters or Regulations (In PNGRB Notification, 31 Regulations are listed These chapters may vary from entity to entity based on their operations. The Checklist verified during their visit to entity shall be an added as an additional chapter and also of Annexures in Final ERDMP document apart from 31 chapters mentioned above)	33 Nos.
Total number of pages in ERDMP (Please mention clearly whether total no. of pages includes annexures, Schedules, any other miscellaneous	213 Nos.



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documents, additional information or only restricted to chapters)	
Number of Checklists (In PNGRB Notification, total 07 checklists are Listed)	7 Nos.
Number of Annexures (In PNGRB Notification Annexure 1 is listed)	6 Nos.
Number of schedules (In PNGRB Notification total 09 schedules are Listed, no. of schedules may vary from entity to entity based on their operations)	9 Nos.
Onsite audit visit date by team (This data Can be mentioned only on or after onsite visit of audit team to entity)	14.06.2025
Date of recommendation of ERDMP by auditor or audit team.	28.06.2025



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(This date can mention only on or after onsite visit of audit team to entity) (Attach mail communication or report communication along with this document) which states that ERDMP of entity has been recommendation for certification by auditor or audit team.	
ERDMP is valid up to (This date can be mentioned only on or after onsite visit of audit team to entity Refer below Gazette table for knowing numbers of years of validity of ERDMP applicable entity)	13.06.2030
Audit Report No. (This data can be mentioned only on or after onsite visit of Audit team to entity)	BSPL/0709-715
Document prepared by	Amit Kumar Tripathi, COM Indian Oil Corporation Limited, WRPL Sidhpur



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Document Approved by	M/s Bosai Safety Services Pvt Ltd
Document comply to	Codes of practices to Emergency Response & Disaster Management Plan regulators, 2010 and amendment 2020.



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FORWARD BY OCCUPIER

The emergency Response & Disaster Management Plan has been prepared as per Petroleum and Natural Gas Regulatory Board Act 2006 and as per PNGRB dated 18th January 2010 (amended in 2020).

The ERDMP has been prepared based on the "The Gazette of India: Extraordinary Notification [Part - II Sec 3 (i)] format provided therein.

The information furnished in the document on the subject has been verified by me and is submitted seeking modification/ suggestions from your office to make the document viable. I also ensure that I will immediately review and amend the document and seek your consent before any change in the plant, machinery, building, structure, substance, storage and manufacturing process is intended or otherwise after at least every period of twenty four months (for any reason) is not closed for ever, in later case it will be our responsibility to inform closure of the factory to your office and dispose of all hazardous substance/ material of the factory in such a manner rendering those safe for the life and environment.

Amit Kumar Tripathi
Chief Operations Manager
Indian Oil Corporation Limited
WRPL, Sidhpur



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DOCUMENT CERTIFICATION

DOCUMENT CERTIFICATION

This document has been prepared in compliance with the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)), Regulation, 2010 and amendment 2020.

It contains data regarding foreseeable emergencies anticipated in the operation and maintenance of **Indian Oil Corporation Limited, WRPL Sidhpur Station** and the efficient management of these emergencies. This document is hereby certified by **M/S Bosai Safety Private Limited** and issued to all the concerned for effective implementation.

Prepared by

Amit Kumar Tripathi
Chief Operations Manager
Indian Oil Corporation Ltd.
WRPL, Sidhpur Station

Certified by

Dinesh
Kumar Singh

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ABBREVIATIONS

AGI	Aboveground Installations
BGU	Break Glass Unit
CCPL	Cross Country Pipeline
CFM	Cubic Feet per Minute
CIC	Chief Incident Controller
CSA	Cross Sectional Area
DCMP	Disaster Control Management Plan
DCP	Dry Chemical Powder
DCS	Distributed Control System
DDMA	District Disaster Management Authority
ECC	Emergency Control Center
ED	Executive Director
ERDMP	Emergency Response and Disaster Management Plan
FLP	Flame Proof
HSE	Health Safety and Environment
I/C	In-charge
IOCL	Indian Oil Corporation Limited
IPS	Intermediate Pumping Station
KL	Kilo Liter
Km	Kilometer
KV	Kilo Voltage
LFL	Lower Flammability Level



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MCC	Motor control center
MCP	Manual Call Points
MIS	Monthly Inspection System
mm	Millimeter
MoU	Memorandum of Understanding
MOV	Motor Operated Valve
MSDS	Material Safety Data Sheet
MT	Metric Tons
NDMA	National Disaster Management Authority
NGO	Non-Governmental Organizations
NRV	Non-Return Valve
OISD	Oil Industries Safety Directorate
PCVO	Private carrier vehicle operator
PESO	Petroleum and Explosive Safety Organization
PFD	Process Flow Diagram
PHAST	Process Hazard Analysis Software Tool
PIG	Pipeline Inspection Gauge
PNGRB	Petroleum & Natural Gas Regulatory Board
PPE	Personal Protective Equipment
QEHS	Quality Environment Health and Safety
QRA	Quantitative Risk Assessment
ROV	Remote Operated Valve
SCBA	Self-Contained Breathing Apparatus
SDRF	State Disaster Response Force



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SIC	Site Incident Controller
SMCS	Supervisory Monitoring and Control Station
SQC	Statistical Quality Control
SRV	Safety Relief Valve
SV	Sectionalizing Valve
T/L	Tanker/ Lorry
TSV	Thermal Safety Valves

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1. SHORT TITLE AND COMMENCEMENT (REGULATION 1)

These regulations may be called the Petroleum and Natural Gas Regulatory (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Amendment Regulations 2020, namely

They shall come into force on the date of their publication in the Official Gazette.

This document deals with the Emergency Response and Disaster Management Plan as per PNGRB regulations. The document is prepared in line with the PNGRB regulations which defines and specifies roles and responsibilities, classification of emergencies, coordination within and outside agencies etc. The document is strictly in compliance with the PNGRB regulations and no deviation from the regulation or plan is permitted.

Indian Oil Corporation Limited, a Government of India undertaking under the administrative control of ministry of petroleum and natural gas has four division (a) Refineries (b) Marketing (c) Pipeline (d) R&D Centre for administrative convenience.

1.1.LOCATION OF SIDHPUR

Sidhpur is small town located in Patan District in the India state of Gujarat. The nearest airport is Ahmedabad Airport which is located 114 Km away from the installation. The installation is located at near Sujanpur Village.



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The address to reach the location is –

Indian Oil Corporation Limited,

Sujanpur State Highway, near Hotel Milestone, Sidhpur,

Gujarat -384151

The Sidhpur installation is shown on map to understand the site location in figure below:

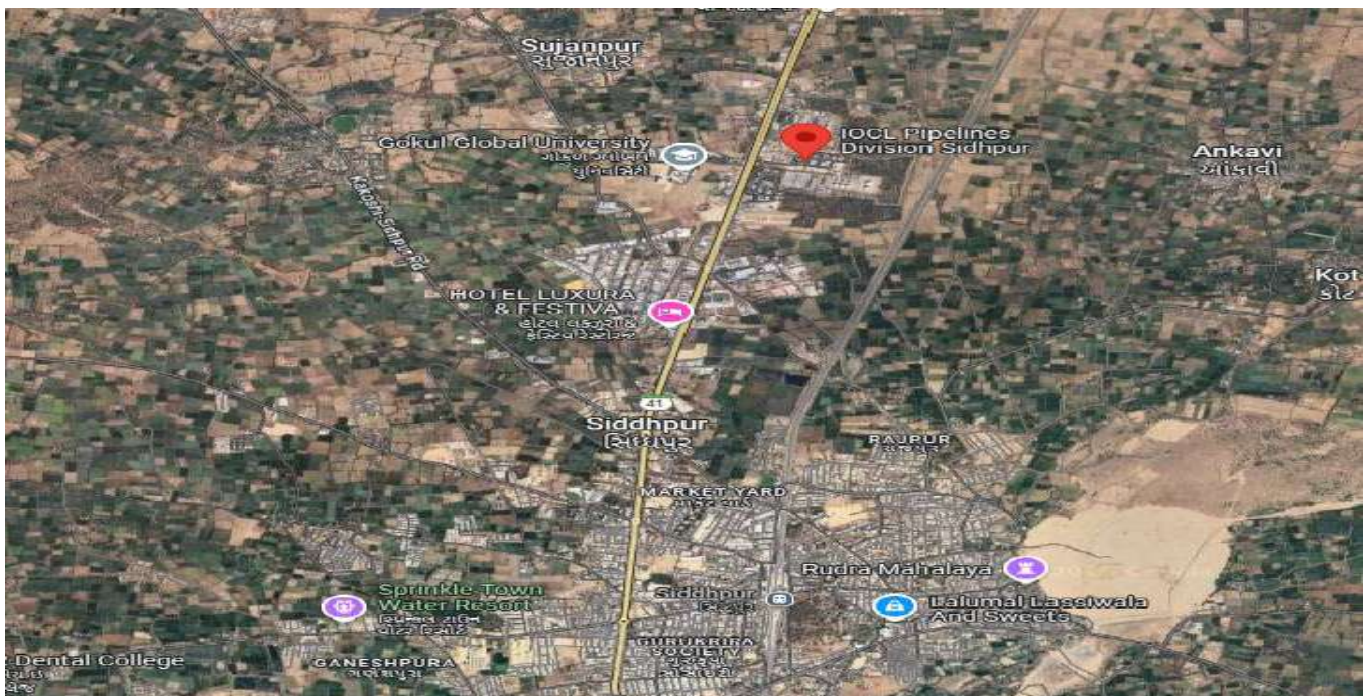


FIGURE 1 – SITE PLAN OF SIDHPUR



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1.2.POPULATION AROUND THE SIDHPUR

The nearest populated area around the Sidhpur Installation is the Sajanpur. Village which is about 2.5 kms from the installation. Sajanpur is a large village with total 1706 families residing. The Sidhpur village has population of 61,867 of which 32,054 are males while 29,813 are females as per the Population Census 2011.

1.3.FACILITIES AT SIDHPUR

- 1) WRPL, Sidhpur is a junction for SMPL, MPPL with KJPPL and in turn became a prime location for pipeline operations and manage 412 KMs Pipelines under Sidhpur Jurisdiction passing through Mehsana, Patan and Banaskatha District of Gujarat State.
- 2) WRPL Sidhpur is an intermediate boosting station of MPPL, boosting cum delivery station of KJPPL, scrapper station for SMPL & SMPL (DBN) pipeline

Following table gives details of storage tanks at the Sidhpur Installation –

SN	Tank	Service	Capacity (KL)
1	MPPL Sump Tank	To store all the crude oil at one place which is collected in the drain lines of MPPL.	20 KL
2	KJPPL Sump Tank	To store HSD/ MS/ PCK/Naptha/ATF etc. which is collected through drain line of KJPPL.	20 KL



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3	SMPL/SMPL (DBN)/SMPL (LL) sump tank	To store all the crude oil at one place which is collected in the drain lines of SMPL.	20 KL
4	FOT tank	For filling daily service tank (DST) to drive MPPL engine & DG unit	100 KL
5	Transmix tank	For taking interface products generated without PCK in between or for taking excess interface products	250 KL

TABLE 1 – DETAILS OF STORAGE TANKS

Following table shows the mainline valves installed on SMPL, MPPL and KSPL,

Table 2 – List of Mainline valves installed on SMPL, MPPL & KSSPL

List of Mainline Valves in SMPL:

SN	Place	Chainages	Types
1	Rupura (RCP)- Under Custody of Viramgam Station	46.178	MOV-8A
2	Rupura (after SSNNL crossing HOV)	47.110	HOV
3	Jetpura	56.285	HOV
4	Multhania	68.349	HOV
5	Saraswati river (Khali)	93.954	HOV
6	SMPL Station Inlet -Sidhpur	97.753	HOV
7	SMPL Station Outlet ML Sidhpur	97.851	HOV



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SN	Place	Chainages	Types
8	Sherpura	114.000	MOV-12
9	Umardashi River U/S- Majadar	114.695	HOV
10	Umardashi River D/S- Kanodar	115.280	Check valve
11	Palanpur	125.850	MOV-101
12	Balaram river	139.192	HOV

List of Mainline Valves in VC Section SMPL - Loop Line:

SN	Place	Chainages	Types
1	SMPL Station Out let LL -Sidhpur	97.851	HOV
2	Sherpura Station Inlet	114.644	MOV-12A

List of mainline valves in VC section SMPL - 28"- SMPL DBN:

SN	Pipeline Unit	Station	Ch. (km)	Village	Location	HOV/ MOV
1	28" SMPL VC	Sidhpur	46.4	Rupura	MOV-8	MOV
2	28" SMPL VC	Sidhpur	49.0	Asjol	MOV-9	MOV
3	28" SMPL VC	Sidhpur	79.2	Dabdi	MOV-10	MOV
4	28" SMPL VC	Sidhpur	94.4	Khali	MOV-11	MOV



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5	28" SMPL VC	Sidhpur	98.0	SMPL Sidhpur Inlet	MOV-801	MOV
6	28" SMPL VC	Sidhpur	98.1	SMPL Sidhpur Outlet	MOV-802	MOV
7	28" SMPL VC	Sidhpur	115.3	Sherpura	MOV-13	MOV
8	28" SMPL VC	Sidhpur	116.6	Umardashi River	MOV-14	MOV
9	28" SMPL VC	Sidhpur	140.4	Chitrasani	MOV-15	MOV
10	28"SMPL VC	Sidhpur	147.3	Rajpuria	Rajpuria	HOV

List of Mainline Valves in Section MPPL and KJPPL

SN	Place	Chainage (Km)	Type
MPPL			
1	Khanpurada	229	HOV
2	Hisor	256.75	HOV
3	Chandesar	258.75	HOV
4	MPPL Sation Inlet	269.6	HOV
5	MPPL Sation Outlet	269.8	HOV
6	Umardasi river - U/S	283.5	HOV
7	Umardasi river - D/S	284.1	HOV
8	Chitrasani RCP	306.8	HOV
9	Balaram river (Rajpuria)	312.1	HOV
KJPPL			
1	Rupura	46.220	MOV



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2	Multhania		68.492	HOV
3	Saraswati river (Khali)		94.320	HOV
4	KSPL Sation Inlet-Sidhpur		102.650	HOV
5	KSPL Sation Outlet-Sidhpur		102.850	HOV
6	Umardasi river - U/S		116.530	HOV
7	Umardasi River - D/S (On diverted route near kanodar)		117.930	HOV
8	Chitrasani RCP		140.560	MOV
9	Balaram river - D/S (Rajpuria)		146.370	HOV

List of RCP Stations under Sidhpur station (SMPL, MPPL & KJPPL)

SN	RCP	Name of Line	Chainage	District
1	Khanpurda RCP	MPPL	289.200	Patan
2	Chitrasani RCP	KJPPL	140.560	Banaskantha
		MPPL	366.800	
		SMPL-DBN-28"	140.40	



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2 DEFINITIONS (REGULATION 2)

In these regulations, unless the context otherwise requires-

- a) “Act” means the Petroleum and Natural Gas Regulatory Board Act, 2006;
- b) “Board” means the Petroleum and Natural Gas Regulatory Board established under sub-section (1) of section 3 of the Act;
- c) “Boiling Liquid Expanding Vapour Explosion (BLEVE)” means the violent rupture of a pressure vessel containing saturated liquid or vapour at a temperature well above its atmospheric boiling point and the resulting flash evaporation of a large fraction of the superheated liquid which produces a large vapour cloud which burns in the form of a large rising fireball due to ignition;
- d) “Chief incident controller” means the person who assumes absolute control of the unit and determines action necessary to control the emergency;
- e) “Codes of practice” means the codes of practice for emergency response and disaster management plan notified by the Board;
- f) “disaster” means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area.”;



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- g) “Disaster management plan” means a well-coordinated, comprehensive response plan to contain loss of life, property, environment and provide speedy and effective recovery by making the most effective use of available resources in case of a disaster and is known as On-site Emergency and Off-site Emergency Management Plan.
- h) “emergency” means a situation or scenario which has the potential to cause serious danger to persons, environment or damage to property and which tends to cause disruption inside or outside the premises and may require the help of outside resources;
- i) “Emergency response vehicle (ERV)” means a vehicle for handling emergencies having necessary equipment meant for rescue and relief operations and ERV can be put to use within installation, outside of installation including road incident;
- j) “hazard” means an event related to the property of substance or chemicals with a potential for human injury, damage to property, damage to the environment, or some combination thereof;
- k) “incident” means an unplanned or unintended or intended event having potential to cause damage to life, property and environment;
- l) “Incident recording system” means a system containing complete information pertaining to all incidents including near misses.”;
- m) “installation” means facilities, namely, gaseous product pipeline, liquid Product pipeline, hydrocarbons processing installation, oil and natural gas Pumpings and commercial storage and transportation, hydrocarbons gas bottling Installations including CNG, city gas distribution facilities and retail outlets;



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- n) "leak" means release or discharge of a hazardous chemical(s) or substances or material in any state into the environment.”;
- o) "Level-I emergency" means an emergency as defined under sub-ERDMP regulation 2010-clause 6 (a);
- p) "Level-II emergency" means an emergency as defined under sub-ERDMP regulation 2010-clause 6
- q) "Level-III emergency" means an emergency as defined under sub-ERDMP regulation 2010-clause 6 (c);
- r) "Mutual aid group" means an industrial mutual aid group in which participating industries as a community shall assist each other in case of emergency. Mutual aid agreement supplement a site's emergency control plan. Services of member industries shall be requested only when the emergency threatens to exceed the capability of otherwise available resources;
- s) "occupier" of an installation means the person who has ultimate control over the affairs of the installation;
- t) "Off-site emergency" means an emergency that takes place in an installation or site and the effects of emergency extends beyond the premises or the emergency created due to an incident, catastrophic incidents, natural calamities, etc. It no longer remains the concern of the installation management alone but also becomes a concern for the general public living outside and to deal with such eventualities shall be the responsibilities of district administration;



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- u) “Off-site emergency plan” means a response plan to control and mitigate the effects of catastrophic incidents in above ground installation (AGI) or underground installations (UGI) or road transportation. This plan shall be prepared by the district administration based on the data provided by the installation(s), to make the most effective use of combined resources, i.e. internal as well as external to minimize loss of life, property, environment and to restore facilities at the earliest;
- v) “On site emergency” means an emergency that takes place in an installation or site and the effects are confined to the Installation premise’s involving only the people working inside the plants and to deal with such eventualities is the responsibility of the occupier and is mandatory. It may also require help of outside resources
- w) “On site emergency plan” means a response plan to contain and minimize the effects due to emergencies within the installations or sites which have a potential to cause damage to people and facilities within the installation premises or sites;
- x) “risk” means the chance of a specific undesired event occurring within a specified period or in specified circumstances and it may be either a frequency or a probability of a specific undesired event taking place;
- y) “risk analysis” means the identification of undesired events that lead to the materialization of a hazard, the analysis of the mechanisms by which these undesired events could occur and, usually, the estimation of the extent, magnitude, and likelihood of any harmful effects;
- z) “risk assessment” means the evaluation of the likelihood of undesired events and the likelihood of harm or damage being caused by them, together with the value judgments made concerning the significance of the results;



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aa) “Risk management” means the programme that embraces all administrative and operational programmes that are designed to reduce or manage the risk of undesired event involving acutely hazardous materials. Such programmes include, but are not limited to, ensuring the design safety of new and existing equipment, standard operating procedures, preventive maintenance, operator training, incident investigation procedures, risk assessment for unit operations, emergency planning, and internal and external procedures to ensure that these programmes are being executed as planned;

ab) “Site incident controller” means the person who goes to the scene of the emergency and supervises the actions necessary to overcome the emergency at the site of the incident;

ac) “Spill” means an unintended release or discharge of hydrocarbon or any other hazardous liquid into the environment;

ad) “Transport emergency (TREM) card” means a card containing details about the nature of hazards, protective devices, emergency telephone numbers and actions related to spillage, fire, first aid and other details of national and international (UN) numbers or signage which is common in India and abroad;

ae) “Unconfined vapour cloud explosion (UVCE)” means the formation of vapour cloud due to release of significant quantity of liquefied hydrocarbons into the atmosphere and its explosion due to ignition which may cause high over pressure and low pressure that cause very heavy damage

af) “Project In-Charge” means an individual that has ultimate control over the affairs of the project and is duly authorized by the entity.”



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(2) Words and expressions used and not defined in these regulations, but defined in the Act or rules or regulations made thereunder, shall have the meanings respectively assigned to them in this Act or in the rules or regulation, as the case may be.



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3 APPLICABILITY (REGULATION 3)

These regulations shall apply to –

1. Hydrocarbons processing installation (refinery, gas processing, LNG Re-gasification installations etc.); - Not Applicable
2. Pipeline such as natural gas, propane, butane etc. and the hydrocarbons products which remain in gaseous state at NTP; - Not Applicable
- 3. Petroleum and petroleum product pipeline - Applicable**
4. Petroleum storage facilities including POL Depot, Installations & Terminals - Not Applicable
5. Natural Gas Storage Facilities including LNG Terminals - Not Applicable
6. Hydrocarbons gas bottling Installations having receiving, storage and handling facilities including storage for LPG, propane and butane; - Not Applicable
7. City or local natural gas distribution facilities; - Not Applicable
8. Retail outlets dispensing like Petroleum, Auto LPG, LNG, CNG and like other retail outlets- Not Applicable
9. Transportation of petroleum products LNG, CNG by road; - Not Applicable
10. Any other installation as may be notified by the Board from time to time; - Not Applicable



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4 SCOPE AND INTENT (REGULATION 4)

4.1. The scope of this ERDMP covers following as a minimum –

- i. The identification of probable emergency scenarios;
- ii. The mitigation measures that attempt to reduce and eliminate the impact on people, assets and environment by bringing it in ALARP Level;
- iii. The preparedness of emergency plans for actions when disaster or emergencies occur;
- iv. The responses that mobilize the necessary emergency services including responders like fire service, police service, medical service including ambulance, government as well as non- governmental agencies;
- v. the post incident or accident or disaster recovery with aim to restore the affected area to its original conditions to the extent possible

4.2. Intent

- 1) As per regulation 4.2, IOCL has made sure that this ERDMP is concise and informative so that members of the emergency control organization will be able to quickly refer to the action plan to determine important functions that are being carried out –



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- (a) to develop a concise and informative ERDMP to enable the entity to mitigate the emergency as quickly as possible
- (b) to prevent escalation of event both on-site and off-site
- (c) to minimize impact on people
- (d) to reduce damage to property, machinery and environment
- (e) to develop a state of readiness for a prompt and orderly response to an emergency and to establish a high order of preparedness (equipment, personnel) commensurate with the risk
- (f) to provide an incident management organogram with clear missions and lines of authority (incident command system, field supervision, unified command)
- (g) to ensure an orderly and timely decision-making and response process (notification, standard operating procedures)
- (h) to maintain good public relations

(2) No two locations shall will be identical in respect of layout, surroundings, products, storage quantities, meteorological data etc. Therefore, ERDMP will be location specific as per the available resources preferably.

—Provided that, in respect of Cross-Country Pipelines, City Gas Distribution Networks, Retails Outlets, Road Transportation, the following methodologies may be adopted with respect to formulation of ERDMP, namely: -

- a. The entity may prepare a single ERDMP document of a Cross Country Pipeline. However, location/installation specific information shall be detailed in the document in accordance with the relevant regulations. Alternatively, entity can make ERDMP document installation/location wise also.
- b. The CGD entity can prepare a single ERDMP document for its Geographical Area. However, specific information and mitigation measures w.r.t CNG Stations, Domestic, Commercial and Industrial supplies shall be detailed in the



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document in accordance with relevant regulations,

- c. Entities owning Retail outlets (ROs) shall identify various format for its RO like (Like RO with LPG, RO without LPG, RO in Cities, ROs on Highways or combination of two or more or other like devices) and prepare typical ERDMP in accordance with these regulations for implementation across all ROs of same format and ensure compliance. These documents shall be certified by the authorized personnel of the concerned entity;
- d. For road transportation, entity shall identify the routes, prepare typical ERDMP and share the same with various stakeholders in accordance with the relevant regulations.

Note: The entity shall formulate Emergency Plan for Constructions or Projects in accordance with the guidelines (Refer Annexure 5), duly approved by Project In-Charge. However, in case of Constructions or Projects in existing installations, the existing ERDMP document should either cover or be modified as per Annexure 5.



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5.CONTENT OF THE REGULATION (REGULATION 5)

The ERDMP shall include -

- (a) classification of emergencies;
- (b) implementation schedule;
- (c) consequences of defaults or non-compliance;
- (d) statutory requirements;
- (e) pre-emergency planning;
- (f) emergency mitigation measures;
- (g) emergency preparedness measures;
- (h) emergency response procedures and measures;
- (i) emergency organisation and responsibilities;
- (j) infrastructure requirements;
- (k) declaration of on-site and off-site emergency;
- (l) resources for controlling emergency;
- (m) demographic information;
- (n) medical facilities;
- (o) evacuation;
- (p) public relations and information to public;
- (q) reporting of the incident;
- (r) emergency recovery procedures;
- (s) ERDMP for tank trucks and pipelines carrying petroleum products;
- (t) integration of the ERDMP with National Disaster Management Authority (NDMA) guidelines and action plan on Chemical Disasters (Industrial);
- (u) security threat plan and action plan to meet the eventualities.



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6.CLASSIFICATION OF EMERGENCIES (REGULATION 6)

Emergencies can be categorized into three broad levels on the basis of seriousness and response requirements, namely: –

- (a) **Level 1:** This is an emergency or an incident which
- (i) can be effectively and safely managed, and contained within the site, location or installation by the available resources;
 - (ii) has no impact outside the site, location or installation.
- (b) **Level 2:** This is an emergency or an incident which –
- (i) cannot be effectively and safely managed or contained at the location or installation by available resource and additional support is alerted or required;
 - (ii) is having or has the potential to have an effect beyond the site, location or installation and where external support of mutual aid partner may be involved;
 - (iii) is likely to be danger to life, the environment or to industrial assets or reputation.
- (c) **Level 3:** This is an emergency or an incident with off-site impact which could be catastrophic and is likely to affect the population, property and environment inside and outside the installation, and management and control is done by district administration. Although the Level-III emergency falls under the purview of District Authority but till they step in, it should be responsibility of the unit to manage the emergency.

Note: Level-I and Level-II shall normally be grouped as onsite emergency and Level-III as off-site emergency.

SN	Scenario	Level
1	Fire in the Pumping Station Area (Major Fire)	Level 2
2	Fire and Explosion in the Station Pipeline Area	Level 3
3	Flood/Earthquake/Third Party Activity in the Station	Level 3
4	Large Oil Spillage in Station	Level 3

Table 3 - Classification of Emergencies at Sidhpur Installation

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Refer HAZOP Doc No. UPC-003-IOC-HAZ-R-006 Rev 01 dated 22.05.2020 and QRA
Doc No. J-5088-S-RT- 1814-Rev C1 dated 15.07.2020 for more details.



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7.IMPLEMENTATION SCHEDULE (REGULATION 7)

These Codes of Practices are implemented for Sidhpur Installation as per the implementation period mentioned in Schedule-I of PNGRB guidelines.

7.1. SCHEDULE - 1

SN	Activity	Implementation Time (from the notification date of Codes of Practices for ERDMP)	Status
1	On-site Emergency Plan	3 months	Complied
2	Off-site Emergency Plan (submission of information to District Authority)	3 months	Complied
3	Resources in position	6 months *	Available
4	Accredited Third Party Certification of ERDMP	1 year	Re-certification under process
5	Testing and Mock Drills (On-site)	3 months	Complied Level 1 mock drill carried out dated 31.05.2025 & (Last on-site Level 2 mock drill was conducted on 21.03.2025)
6	Testing and Mock Drills (Off-site)	** 12 months	Complied (Last Level 3 off site mock drill was conducted on 28.01.2025)

Table 4 - Schedule of implementation of Code of Practice for ERDMP

* Long Delivery Items are tied up with mutual aid organizations upto 12 months.

** These are coordinated with District Authority.



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8. CONSEQUENCES OF DEFAULTS OR NON-COMPLIANCES (REGULATION 8)

(1) There exists a system for ensuring compliance to the provision of these regulations through developing a well-defined Emergency Response and Disaster Management Plan and conduction of mock drill and safety audits during the construction, commissioning and operation phase, as well as on an on-going basis.

(1a) The Board of the concerned entity, within ninety days of the commencement of these regulations shall appoint one of its directors, who shall be responsible for ensuring compliance to these regulations.

(2) The Board shall monitor the compliance of ERDMP, either directly or indirectly by accredited third party through separate regulations on third party conformity assessment.

(3) In case of any deviation or shortfall, in achieving the recommended standards the entities are liable to penal provisions under PNGRB Act, 2006



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9. REQUIREMENTS UNDER OTHER STATUTES (REGULATION 9)

Sidhpur Installation complies all the relevant statutory Rules, regulations and acts given below,

9.1. SCHEDULE - II

IOCL WRPL Sidhpur Installation is conforming to the following statutory requirements as mentioned in schedule II:

SN	Activity	License No. and Validity	Status Yes/ No
1	The Environment (Protection) Act, 1986 (amended 1991) and following rules there under: The Environment (Protection) Rules, 1986 (amended 2004).	MPPL: AWH-71873 valid till- 31.12.2031 KSPL: AWH-78570 valid till- 31.12.2031 SMPL: AWH-64863 Valid till- 30.06.2030	Yes
2	The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (amended, 1994 and 2004).	---	Yes



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3	The Hazardous Wastes (Management and Handling) Rules, 1989 (amended 2000 and 2003).	MPPL: AWH-71873 valid till- 31.12.2031 KSPL: AWH-78570 valid till- 31.12.2031 SMPL: AWH-64863 Valid till- 30.06.2030	Yes
4	The Factories Act, 1948 (amended 1987) State Factory Rules.	Regn. No. – 751/19209/1995 Valid Till: 31.12.2028	Yes
5	The Motor Vehicles Act, 1988 (amended 2001) The Central Motor Vehicles rules, 1989 (amended 2005)	---	Not Applicable
6	The Public Liability Insurance Rules, 1991 (amended 1993)	Insurance No. OG-26- 1113-3304-00000001 From: 01.04.2025 To 31.03.2026	Yes
7	The Petroleum Act, 1934 The Petroleum Rules, 2002	MPPL/KSPL Lic No: P/HQ/GJ/15/1552(P11 925) valid till 31.12.2025 SMPL Lic No: P/HQ/GJ/15/347(P995 0) valid till 31.12.2025	Yes
8	The Insecticide Rules, 1968 (amended 2000) The Insecticide Rules, 1971 (amended 1999)	---	Not Applicable
9	The National Environment Tribunal Act, 1995		Yes
10	The Explosives Act, 1884 (amended till 1983) The Gas Cylinders Rules, 2004.	---	Not Applicable



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11	The Static and Mobile Pressure Vessels (Unfired) Rules, 2004.	---	Not Applicable
12	The Explosives Rules, 1983 (amended 2002)	---	Not Applicable
13	VHF License	NWW31720140111254 valid till: 31.12.2025	Yes



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10. PRE EMERGENCY PLANNING (REGULATION 10)

10.1. HAZARD IDENTIFICATION

- (1) The first step towards ERDMP shall be to identify potential on-site and off-site hazards such as gas leaks, spills, fire, explosion, transportation incident, pipeline ruptures, equipment failure, natural calamities, etc. and the types of damage caused by them. The hazard identification shall include –
- (a) information on toxicological, physical, and chemical properties of the substances being handled in the format of Material Safety Data Sheet (MSDS – Annexure – I);
 - (b) the identification of potential impact on downwind air quality or downstream water quality from an incidental release and possible danger to human, Flora and Fauna and animal health;
 - (c) hazards to the installation shall also include Natural perils such as floods, earthquakes, cyclones or landslides etc.;
 - (d) Refer check points for hazard identification are given at Check list-1.



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10.2. HAZARDS IDENTIFIED DURING RISK ASSESSMENT

IOCL had appointed UPCEM Engineering and Consultancy Private Ltd. to carry out HAZOP study of WRPL Sidhpur. HAZOP report is kept with station with Doc. No. UPC-003-IOC-HAZ-R-006 Rev 01 dated 22/05/2020.

Following recommendations have been identified during the HAZOP study.

Table 5 - Recommendations during HAZOP

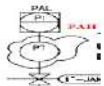
SN	Recommendations	Status
1	Show the DPT-01/02 on strainer in P&ID as Eg. 	Revised P &IDs prepared. Provision for DPT-01/02 on strainer taken into consideration (Complied).
2	Show the DPT-01/02 on strainer in P&ID as Eg. SOP for Strainer Cleaning to be followed.	Revised P &IDs prepared. Provision for DPT-01/02 on strainer taken into consideration. SOP for strainer cleaning is being followed (Complied).
3	Review the possibility of incorporating Scrapper detector 	Revised P &IDs prepared. Provision for SD602 taken into consideration (Complied).



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4	P&IDs to indicate the Vent line and Screen guard to be provided on Gooseneck Vent.	Revised P &IDs prepared. Recommendation taken into consideration (Complied)
5	Review the Possibility of incorporating LAH on LS in P&ID.	Revised P &IDs prepared. Recommendation taken into consideration (Complied).
6	Review the possibility of incorporating PT-401 High Alarm. Correct the P&ID and indicate as Eg 	PT401 high alarm provided. Revised P &IDs prepared. Recommendation taken into consideration (Complied).
7	Review the possibility of incorporating PT-402 High Alarm.	PT402 high alarm provided
8	Review the possibility of incorporating PT 403- High Alarm.	PT403 high alarm provided
9	Review the possibility for incorporating PS with PAH provision at MLPU discharge line	PS with PAH provision at MLPU discharge line has been provided
10	Review the possibility of incorporating PT-508 High Alarm.	PT508 high alarm provided (Complied).
11	Review the possibility for incorporating PS with PAL provision at MLPU suction line.	PS with PAH provision at MLPU suction line has been provided (Complied).
12	Screen guard to be provided on Gooseneck Vent.	Provided
13	Review the Possibility of incorporating LAH on LT-401 in P&ID.	Revised P &IDs prepared. Recommendation taken into consideration (Complied).



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14	Indicate the Vent line on the P&ID and Screen guard to be provided on Gooseneck Vent.	Revised P &IDs is under preparation. Recommendation taken into consideration.
15	Review the Possibility of incorporating LAH on LS in P&ID.	Revised P &IDs is under preparation. Recommendation taken into consideration.
16	SOP for calibration of TRV to be followed	SOP for calibration of TRVs is being followed.
17	SOP for Draining & maintenance to be followed.	SOP for Draining and Maintenance of MLPU MLPU/other equipment is being followed.
18	Statutory guideline of thickness measurement to be followed. After repair (if any) within the system SOP of hydrotest to be followed After the End of design life, SOP to be followed for obtaining enhanced life certificate.	Being followed.
19	SOP for CP System to be followed.	Being followed.
20	SOP for Power Changeover to be followed.	Being followed.
21	Control loop for activation of FCV-RCL at Recycle line is to be shown on P & ID.	Revised P &IDs prepared. Recommendation taken into consideration (Complied).
22	Show the MOVs feedback in P&ID as Eg. 	Revised P &IDs prepared. Recommendation taken into consideration (Complied).

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10.3. **RISK ANALYSIS AND RISK ASSESSMENT (REGULATION 10.2)**

The second step of the ERDMP process is to determine the risk of an incident associated with each hazard. M/s iFluids Engineering were appointed by IOCL. QRA report is kept with station with Doc. No. J-5088-S-RT-1817 -Rev C1 dated 07/07/2020. The risk analysis may be to identify the high risk of scenarios to prioritize the emergency response plans. The risk analysis would also aid in identifying the existing safeguards in place to prevent and mitigate the hazardous event and in reducing the risk as low as reasonably practicable. The basic procedure in a risk analysis shall be as follows:

- (a) identify potential failures or incidents (including frequency) ;
- (b) calculate the quantity of material that may be released in each failure, estimate the probability of such occurrences;
- (c) evaluate the consequences of such occurrences based on scenarios such as most probable and worst-case events;

The combination of consequences and probability will allow the risks to be ranked in a logical manner to indicate the zones of important risk. The risk should also be made "as low as reasonably practicable" (ALARP) and least impacting the neighbourhood. While conducting the risk analysis, a quantitative determination of risk should be categorized in three regions as below: -

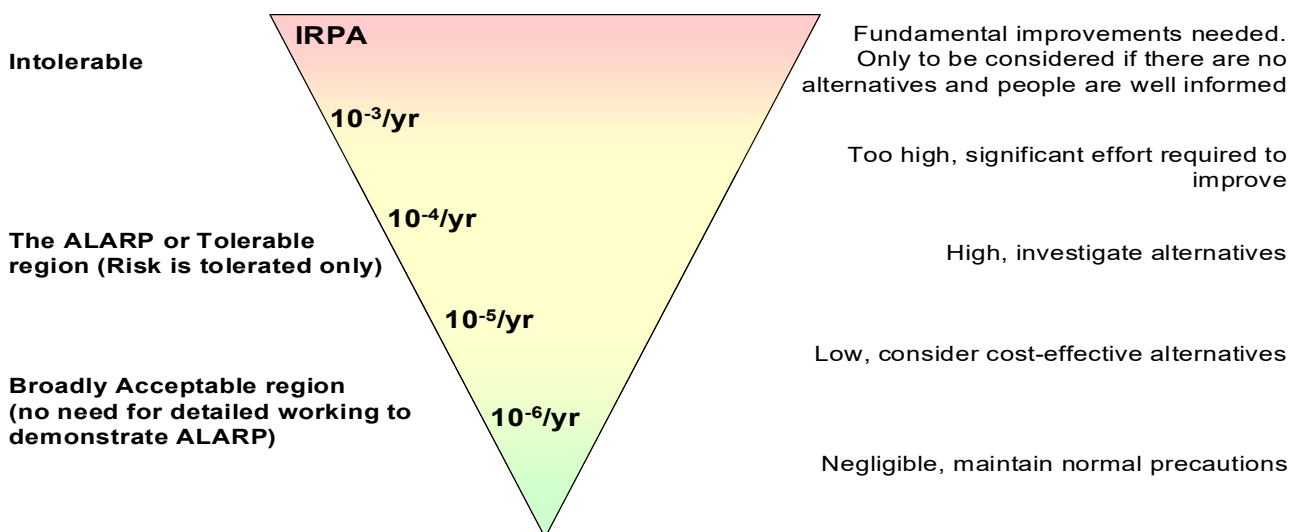


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IRPA (Individual Risk per Annum)



NOTE- a risk of 10 per million per year, or $10^{-5}/\text{Year}$, effectively means that any person standing at a point of this level of risk would have a 1 in 100 000 chance of being fatally injured per year.

10.4. INDIVIDUAL RISK/ LOCATION SPECIFIC INDIVIDUAL RISK (LSIR)

The Individual Risk (IR) gives a measure of the risk that will apply to each location (in this case, each area, generally), independent of the population, where:

The peak values are for Compressor and generator building at $1.516\text{E}-6$ per year.

For the majority of the other process modules, the LSIR is typically between $1.516\text{E}-6$ and $9.262\text{E}-7$ per year.



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Table 6 - Location Specific Individual Risk of MPPL-KSPL Sidhpur

SN	Location	LSIR/ Ave. Year	Benchmarking
1	Compressor & Emergency Generator Building	1.516E-6	ALARP
2	Watchman Cabin	2.356E-7	Broadly Acceptable
3	Maintenance Building	6.539E-7	Broadly Acceptable
4	Store Building	4.016E-7	Broadly Acceptable
5	Control Room	6.316E-7	Broadly Acceptable
6	HT< Building	2.731E-7	Broadly Acceptable
7	MPPL Pump Shed	9.262E-7	Broadly Acceptable
8	KSPL Pump Shed	9.262E-7	Broadly Acceptable



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As per risk acceptance criteria, the LSIR for all the risk ranking locations of IOCL Sidhpur Pumping Station fall within Acceptable and IOCL Sidhpur Mainline, it falls broadly within the ALARP region. Mean Societal Risk: 1.98 E-4 / average year.



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10.6. BENCH MARKING OF RISK ANALYSIS

The risk contours are mapped as per PNGRB guidelines. Below given chart is followed for risk evaluation and benchmarking

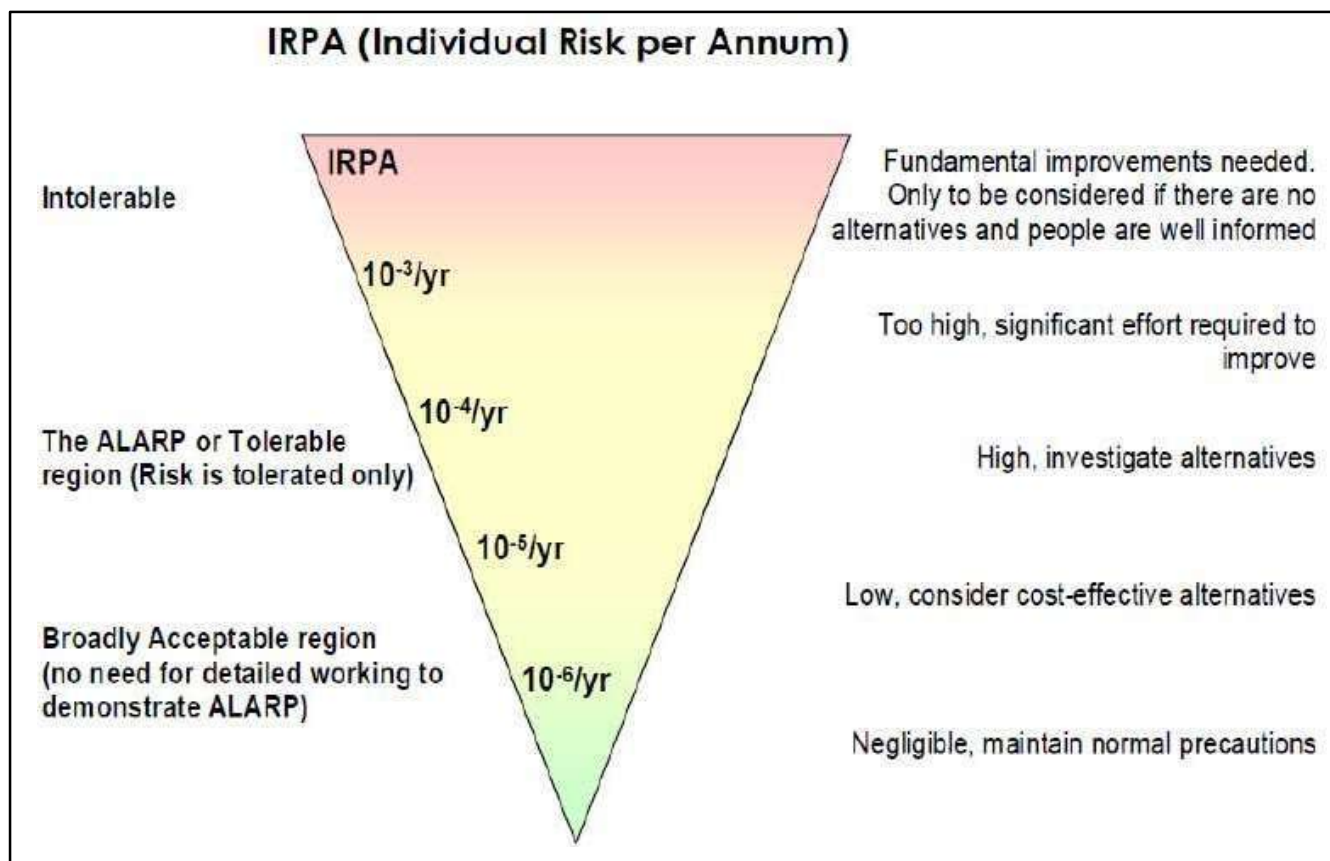


Figure 4 Individual Risk per Annum criteria as per PNGRB



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NOTE –As per PNGRB, a risk of 10 per million per year, or 10-5/Year, effectively means that any person standing at a point of this level of risk would have a 1 in 100000 chance of being fatally injured per year.

As the risk is ALARP or broadly acceptable following risk reduction measures are proposed in QRA report –

SN	Recommendation	Action taken	Compliance Status
1	Design and construction of the pipe supports should be rigid to avoid failure of the pipe supports due to earthquake or other natural calamities.	Considered in Design Stage.	Complied
2	The pipelines should be coated with weather resistant coating or be painted.	Weather resistant coating/Paint available.	Complied
3	Population around station are vulnerable to any accidental Hydrocarbon release and consequences. Updating of ERDMP for both off-site and on-site population is highly recommended.	ERDMP Available for both On-site and Off-site Mock drills.	Complied
4	Population living in the close proximity of the station should be educated about the risks and the causes for incidents. Relevant information like danger and hazard signboards should be displayed wherever required.	Villages Awareness programs are conducted for such purpose. Danger and hazard signboards displayed	Complied



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5	Offsite Mockdrill is to be conducted regularly.	Off-site Mockdrills are being conducted as per Schedule	Complied
6	Ensure regular patrolling of pipeline to capture any undetected leaks and activities like pilferage.	Being done regularly.	Complied
7	Ensure there is proper way of reporting and recording of all instances of asset related failures, damage to environment and third-party property and Reporting system is checked for its effectiveness.	Being ensured	Complied
8	Measures to control the sources of ignition are required in these areas. Common ignition Sources include:	All safety measures provided to ensure control of the sources of ignition.	Complied
	a) Unprotected electrical equipment		
	b) Naked flames including welding and cutting equipment;		
	c) Smoking materials		
	d) Vehicles with internal combustion engines		
	e) Hot surfaces		
	f) Frictional heating or sparking		
	g) Static electricity		
9	Corrosion protection measures, as suitable, shall be in place (Cathodic / Sacrificial Anodic / Surface	Corrosion protection system is working.	Complied



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	Coating / Suitable metal coatings) to prevent unexpected catastrophic failures.		
10	Ensure compliance to OISD standards -244	Being ensured	Complied
11	Ensure compliance to OISD - Standard Operating Procedure For Integrity Assessment Of Petroleum & Natural Gas Pipelines.	Being ensured	Complied
12	Ensure Proper industry type boundary masonry wall at least 8 feet high with an additional 2 feet barbed wire on the top shall be provided all around the installation (PNGRB)	Yes compound wall is available as per PNGRB requirement.	Complied
13	Pumps protection and interlocks has been provided in accordance with manufacturer's recommendations.	Provided.	Complied
14	Ensure pump and pump driver (Engine or motors skids) should be equipped with vibration monitoring devices with provisions for local and/ or remote alarm shut down capabilities.	Vibration monitoring devices are provided.	Complied
15	Ensure Close Circuit Television (CCTV) camera and/ or intrusion alarm system having SCADA facility has been provided. (PNGRB)	Provided.	Complied
16	Ensure Emergency exit (to a safe place) with proper gate(s) has been provided. (PNGRB)	Emergency gate is provided.	Complied
17	Ensure Block valves at the entry and exit of pipeline stations boundary and on each lateral takeoff from a trunk line. (PNGRB)	Block valves available.	Complied
18	Ensure Emergency Shut Down system has been provided (PNGRB)	Yes, ESDs Provided.	Complied
19	Ensure Emergency shutdown system should be operable from at least 2 locations away from the pump shed area of the station out of which one should be located in the field outside the pump	ESDs are operable from field as well as from Control room.	Complied



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	shed building and another in the control room of the pump station. (PNGRB)		
20	Ensure Flame detectors or Heat detectors or a combination of flame and heat detectors shall be installed in the pump shed and it is interlocked with suitable extinguishing system such as foam system for extinguishing the fire.	Flame detectors/Heat detectors and UVIR detectors are provided and interlocked with foam flooding system.	Complied
21	Smoke or multi sensor detectors has been provided in control room, Motor Control Center (MCC) room and utility rooms, cable trenches etc. with provision of indication, alarm and annunciation.	Smoke/multi sensor detectors with alarm provision are available as per requirement.	Complied
22	Ensure Leak detection system effectiveness of operation checked once in a year (PNGRB notification).	Being ensured	Complied
23	Ensure Operation system interlock checking shall be carried out once in a year (PNGRB- 6.11.15.1).	Testing is being done as per schedule.	Complied
24	Ensure Testing of Pressure or Thermal Safety valves or Surge relief system carried out once in a year and proper authenticated document shall be maintained. (PNGRB- 6.11.15.2)	Testing is being done as per schedule.	Complied
25	Ensure dedicated communications facility maintained to assure safe pipeline operations under both normal and emergency conditions and back-up communication link be available to ensure safe operation in an emergency and break of the normal communication.	Communications facilities provided.	Complied
26	“Work Permit” procedures to be followed by maintenance personnel for protection of property from damage and fire etc.	Yes, Being followed	Complied



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27	Ensure arrangements and procedures for periodic proof testing of storage tank overflow prevention systems are in place to minimize the likelihood of any failure that could result in loss of containment. A detailed preventive maintenance plan should be followed.	Being done.	Complied
28	Ensure Lock out and tag out (LOTO) procedure are being followed in operation of tank drain, dyke drain and other critical valves with supervisory control and mechanically locking option.	LOTO procedures are being followed.	Complied
29	Ensure regular inspection of Earthing arrangements and lightning arrestors. Earthing circuits for static electricity shall be maintained separately from Electrical Earthing circuits and records of Earth resistance values shall be maintained.	Testing is being done as per schedule.	Complied

10.7. CAUSES OF DISASTER (REGULATION 10.3)

The common causes for events are tabulated below for reference and the ERDMP has been taken care all these incidents.



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Manmade	Natural Calamities	Third Party
Bursting of pipeline	Flood	Riots/Civil Disorder/Mob Attack
Corrosion leading to heavy leakage	Earthquake	Terrorism
Failure of Tank Integrity/Valves/Gaskets leading to Fire & Explosion	Cyclone/Storm	Sabotage/Pilferage
Failure of Critical Control System	Excessive Rains/Washout	Bomb Threat
Design Deficiency/ Poor Workmanship	Tsunami	War/Hit by Missiles
Unsafe Acts	Pandemic	Unauthorized excavation in ROW
Failure in following SOP in Operation/Maintenance	Lightning	Cyber Attack
	Land Slides	Drone Attack

10.8. MAN MADE CALAMITIES

Any leak or fire explosion can occur due to poor maintenance/ unsafe acts of employees or workers. IOCL conduct regular training to its workers and is having a preventive maintenance schedule.

The impact of fire and explosion is considered in the QRA. The deficiency in the design is not encountered so far and any change in existing system is



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followed with Management of change system. For avoiding fire and explosion due to smoking and vehicles exhaust, securities check is at place for every vehicle and employee at entry gate.

10.9. NATURAL CALAMITIES

1. **Flood** May occur due to very heavy rainfall, sea surge or failure.
2. **Earth Quake** – Earth quake may result into collapse of building/ plants and may further lead to catastrophic failure effects such as bursting of process pipelines/ equipment's, collapse of the buildings and control rooms, cut off utilities like electricity etc. Sidhpur comes under Zone IV Seismic zone.
3. **Cyclone** – In cyclone, weak structures and trees, electric poles etc. are uprooted. Roads are blocked and in sever case; it may result into fire and explosion as well. Sidhpur comes under high damage risk zone of Cyclonic Storm.
4. **Outbreak of Disease** – This may result in non-reporting of the employees on duty from various departments like operations, maintenance etc. Similarly, contractor work force may not be available for regular



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maintenance and housekeeping job. Ultimately the terminal may have to shut down due to non-availability of highly skilled manpower or may have to reschedule the tasks which need more manpower.

5. **Excessive rains** – Patan is one of the heavy rainfall districts in Gujarat. Excessive rains may result in flooding of area. Routes may get damaged or even washed off. The areas will also have chances of failure of electricity.
6. **Pandemic** - a communicable disease that spreads over a whole country or the whole world. Eg Covid 19
7. **Tsunami** - A tsunami is **a series of waves in a water body** caused by the displacement of a large volume of water, generally in an ocean or a large lake.

10.10. EXTRANEIOUS CALAMITIES

1. **Riots/Civil Disorder/ Mob Attack** – Due to unrest in people residing in the nearby city or vicinity of the industry, riots, civil disorders and mob attack can take place. For preparedness of such situation, detailed security threat plan is enclosed in the manual.
2. **Terrorism** – Despite of all security precaution, there are chances of terrorist



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attacking the terminal from inside and outside. Local police and authorities will be informed immediately in such case. DGR Security is appointed for the security and well trained for such hazards.

3. **Sabotage** – IOCL is very much vulnerable for attacks as it contains highly flammable petroleum products and in very large quantity. All precautions are taken to avoid any incident. DGR Security is appointed for the security and well trained for such hazards.
4. **Bomb Threat** – Off-late there are bomb threat in all vital installations, hence bomb squad will be informed whenever there is an emergency. DGR Security is appointed for the security and well trained for such hazards.
5. **War / Hit by missiles** – There are very rare chances; however, the existing facilities will be protected by defense forces stationed nearby. For this IOCL WRPL Sidhpur Installation has to take guidance from District authorizes. DGR Security is appointed for the security and well trained for such hazards.
6. **Abduction** – IOCL has deployed DGR Security round the clock on the facility. In case of abduction or assault, FIR will be lodged with the local police station and matter will be referred to HR department for further actions.



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7. **Drone Attack** – Drone attack is done with the help of drone.

8. **Cyber-attack** - A cyber-attack is a malicious attempt by a cybercriminal or other adversary to access, disrupt, or damage computer systems, networks, or data. It involves unauthorized access, often with the intent to steal information, cause damage, or disrupt services.

10.11. CONSEQUENCES (REGULATION 10.4)

All the possible consequences in case of catastrophic rupture (Maximum hazard and worst case) are given below. During risk assessment of Sidhpur MPPL mainline and Pumping Station following consequences are identified,

Table 7 Isolation Scenario for IOCL Sidhpur MPPL Pumping Station

Section No.	Leak Scenario	Leak Size (mm)		
KSPL				
IS-01	Station inlet MOV 401 to MOV at the suction of MP 1/2/3	5	40	FBR
IS-02	MOV at Pump suction (MP-1/2/3) to Station limit valve (Discharge side)	5	40	FBR
IS-03	Sump tank (SID-ST-401/1)	10	Tank on Fire	
IS-04	Transmix tank	10	Tank on Fire	
MPPL				
IS-05	Station Limit Valve of MPPL Sidhpur (Suction side) to Mainline Pump (MP-1/2) Inlet	5	70	FBR



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IS-06	Mainline pump inlet (MP-1/2) to Station limit valve (Discharge Side)	5	70	FBR
IS-07	Sump tank	10	Tank on Fire	
IS-08	FOT (100 KL) MPPL-KSPL	10	Tank on Fire	

Table 8 Isolation Scenario for IOCL Sidhpur Mainline

Section No.	Description	Leak Size (mm)		
SMPL				
IS 01	Rupura MOV to Jetpura HOV	5	60	FBR
IS 02	Jetpura HOV to Multhania HOV	5	60	FBR
IS 03	Multhania HOV to Saraswati River HOV	5	60	FBR
IS 04	Saraswati River HOV to Sidhpur Station inlet HOV	5	60	FBR
IS 05	Sidhpur Station inlet HOV to Umardasi River U/S HOV	5	60	FBR
IS 06	Umardasi river U/S HOV to Umardasai river D/MOV	5	60	FBR
IS 07	Umardasai river D/S MOV to Balaram river HOV	5	60	FBR
SMPL DBN				
IS 08	Asjol MOV to Vanpur MOV	5	60	FBR
IS 09	Vanpur MOV to Dabdi MOV	5	70	FBR
IS 10	Dabdi MOV to Kanesara MOV	5	70	FBR



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IS 11	Kanesara MOV to Sherpura MOV	5	70	FBR
IS 12	Sherpura MOV to Umardesi River MOV	5	70	FBR
IS 13	Umardesi river MOV to Shivnagar MOV	5	70	FBR
SMPL LOOP LINE				
IS 14	Sidhpur Station inlet HOV to sherpura station inlet HOV	5	60	FBR
MPPL				
IS 15	Khanpurada HOV to Hisor HOV	5	60	FBR
IS 16	Hisor HOV to Chandisar HOV	5	60	FBR
IS 17	Chandisar HOV to MPPL station inlet HOV	5	60	FBR
IS 18	MPPL station inlet HOV to Umardasi river U/S	5	60	FBR
IS 19	Umardasi river U/S HOV to Umardasai river D/S MOV	5	60	FBR
IS 20	Umardasai river D/S MOV to Chitrasani RCP MOV	5	60	FBR
IS 21	Chitrasani RCP MOV to Balaram River HOV	5	60	FBR
KSPL				
IS 22	Rupura MOV to Multhania HOV	5	60	FBR
IS 23	Multhania HOV to Saraswati River HOV	5	60	FBR
IS 24	Saraswati River HOV to Sidhpur Station inlet HOV	5	60	FBR



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IS 25	Sidhpur Station inlet HOV to Umardasi River U/S HOV	5	50	FBR
IS 26	Umardasi river U/S HOV to Umardasai river D/S MOV	5	50	FBR
IS 27	Umardasai river D/S MOV to Chitrasani RCP MOV	5	50	FBR
IS 28	Chitrasani RCP MOV to Balaram River HOV	5	50	FBR

10.12. RESULTS OF CONSEQUENCES ANALYSIS

Following are the results of consequence analysis of Sidhpur mainline and pumping station,



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Table 9 Consequence Results of WRPL Sidhpur Pumping Station

Isolatable Section	Description	Scenario	Weather Category	Impact distance in meter									
				Flash fire 100% LFL	Jet Fire			Overpressure Explosion			Pool Fire		
								Overpressure level					
					4 kW/m2	12.5 kW/m2	37.5 kW/m2	0.1 bar	0.3 bar	1 bar	4 kW/m2	12.5 kW/m2	37.5 kW/m2
KSPL													
IS-01	Station inlet MOV 401 to MOV at the suction of MP 1/2/3	5 mm	1.5 F	35	25.39	19.58	16.13	33.37	31.55	30.82	-	-	-
			3 D	27.23	24.01	17.97	14.41	22.8	21.29	20.69	-	-	-
		40 mm	1.5 F	366.9	163.1	124.8	102.3	398	377.5	369.3	-	-	-
			3 D	369.4	146.4	110.1	88.82	393.2	375.3	368.1	-	-	-
		FBR	1.5 F	1003	478	370.9	307.1	905.5	885.7	883	-	-	-
			3 D	1183	428.1	326.6	266.2	1016	1007	1004	-	-	-
IS-02	MOV at Pump suction (MP-1/2/3) to Station limit valve (Discharge side)	5 mm	1.5 F	34.09	26.65	20.55	16.94	33.38	31.56	30.83	-	-	-
			3 D	28.32	25.17	18.85	15.13	22.87	21.32	20.7	-	-	-
		40 mm	1.5 F	350.4	169	129.8	106.7	387	367	359	-	-	-
			3 D	390.8	150.9	114	92.38	423.1	405.2	398.1	-	-	-
		FBR	1.5 F	1001	496.7	386.9	321.4	896	879.7	875.2	-	-	-
			3 D	1188	442.8	339.3	277.7	975.6	972.6	971.4	-	-	-



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Isolatable Section	Description	Scenario	Weather Category	Impact distance in meter										
				Flash fire	Jet Fire			Overpressure Explosion			Pool Fire			
								Overpressure level						
					100% LFL	4	12.5	37.5	0.1 bar	0.3 bar	1 bar	4	12.5	37.5
						kW/m2	kW/m2	kW/m2				kW/m2	kW/m2	kW/m2
IS-03	Sump tank (SID-ST-401/1)	10 mm	1.5 F	42.8	24.35	18.83	15.39	48.93	44.11	42.18	-	-	-	
			3 D	32.33	22.43	16.97	13.65	34.75	32.19	31.16	-	-	-	
		Tank on Fire	1.5 F	-	-	-	-	-	-	-	79.08	38.38	NA	
			3 D	-	-	-	-	-	-	-	89.62	38.96	NA	
IS-04	Transmix tank	10 mm	1.5 F	44.4	19.03	13.57	10.37	48.47	43.9	42.07	-	-	-	
			3 D	33.27	16.19	11.47	8.681	34.55	32.09	31.11	-	-	-	
		Tank on Fire	1.5 F	-	-	-	-	-	-	-	222.2	NA	NA	
			3 D	-	-	-	-	-	-	-	247.3	NA	NA	
MPPL														
IS-05	Station Limit Valve of MPPL Sidhpur (Suction side)to Mainline Pump (MP-1/2)Inlet	5 mm	1.5 F	35.51	15.06	11.14	8.808	33.13	31.44	30.76	-	-	-	
			3 D	27.88	13.49	9.815	7.602	22.68	21.23	20.65	-	-	-	
		70 mm	1.5 F	576.1	138.6	105.9	86.74	629.5	597.4	584.5	-	-	-	
			3 D	669.2	124.3	93.37	75.26	714.6	685.1	673.3	-	-	-	
		FBR	1.5 F	1122	258.7	199.2	164.1	1008	944.4	918.9	-	-	-	
			3 D	1345	231.8	175.5	142.3	1184	1123	1098	-	-	-	



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Isolatable Section	Description	Scenario	Weather Category	Impact distance in meter									
				Flash fire	Jet Fire			Overpressure Explosion			Pool Fire		
								Overpressure level					
					100% LFL	4 kW/m2	12.5 kW/m2	37.5 kW/m2	0.1 bar	0.3 bar	1 bar	4 kW/m2	12.5 kW/m2
IS-06	Mainline pump inlet (MP-1/2) to Station limit valve (Discharge Side)	5 mm	1.5 F	34.62	15.49	11.49	9.123	33.14	31.45	30.77	-	-	-
			3 D	28.94	13.8	10.08	7.85	22.73	21.26	20.67	-	-	-
		70 mm	1.5 F	563	143.5	110.1	90.43	618.4	586.9	574.3	-	-	-
			3 D	696.4	128	96.63	78.22	744.4	715.1	703.3	-	-	-
		FBR	1.5 F	1066	268.5	207.5	171.4	923.8	913.2	911.7	-	-	-
			3 D	1274	239.3	182	148.2	1034	998.3	994.4	-	-	-
IS-07	Sump tank	10 mm	1.5 F	44.55	19.06	13.6	10.38	48.48	43.91	42.07	-	-	-
			3 D	33.37	16.22	11.5	8.699	34.55	32.1	31.11	-	-	-
		Tank on Fire	1.5 F	-	-	-	-	-	-	-	79.19	36.82	NA
			3 D	-	-	-	-	-	-	-	92.21	37.49	NA
IS-08	FOT (100 KL) MPPL- KSPL	10 mm	1.5 F	44.4	19.03	13.57	10.37	48.47	43.9	42.07	-	-	-
			3 D	33.27	16.19	11.47	8.681	34.55	32.09	31.11	-	-	-
		Tank on Fire	1.5 F	-	-	-	-	-	-	-	152.7	80.59	NA
			3 D	-	-	-	-	-	-	-	172.9	81.23	NA



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter							
					Flash fire	Jet Fire				Overpressure explosion		
										overpressure level		
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
SMPL												
IS-1	Crude	Rupura MOV to Jetpura HOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-	
				3D	2.495	8.25	4.93	2.568	-	-	-	
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67	
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25	
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003	
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9	
IS-2	Crude	Jetpura HOV to Multhania HOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-	
				3D	2.495	8.25	4.93	2.568	-	-	-	
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67	
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25	
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003	
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9	



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
					100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
IS-3	Crude	Multhania HOV to Saraswati River HOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-
				3D	2.495	8.25	4.93	2.568	-	-	-
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9
IS-4	Crude	Saraswati River HOV to Sidhpur Station inlet HOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-
				3D	2.495	8.25	4.93	2.568	-	-	-
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9
IS-5	Crude	Sidhpur Station inlet HOV to	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-
				3D	2.495	8.25	4.93	2.568	-	-	-



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
					100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
		Umardasi River U/S HOV	60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9
IS-6	Crude	Umardasi river U/S HOV to Umardasai river D/S MOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-
				3D	2.495	8.25	4.93	2.568	-	-	-
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9
IS-7	Crude	Umardasai river D/S MOV to Balaram river HOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-
				3D	2.495	8.25	4.93	2.568	-	-	-
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9
SMPL DBN											
IS-8	Crude	Asjol MOV to Vanpur MOV	5	1.5F	2.336	8.806	4.702	0.0941 2	-	-	-
				3D	2.542	8.279	4.959	2.369	-	-	-
			70	1.5F	109.2	74.94	35.01	1.214	132	114.8	107.8
				3D	55.32	70.86	39.37	7.201	80.35	63.98	57.42
			FBR	1.5F	1059	135.8	60.22	2.461	1197	1118	1086
				3D	174.7	129.6	69.48	10.66	235.5	200.2	186
IS-9	Crude	Vanpur MOV to Dabdi MOV	5	1.5F	2.336	8.806	4.702	0.0941 2	-	-	-
				3D	2.542	8.279	4.959	2.369	-	-	-
			70	1.5F	109.2	74.94	35.01	1.214	132	114.8	107.8
				3D	55.32	70.86	39.37	7.201	80.35	63.98	57.42



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter									
					Flash fire	Jet Fire				Overpressure explosion				
										overpressure level				
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar		
			FBR	1.5F	1059	135.8	60.22	2.461	1197	1118	1086			
				3D	174.7	129.6	69.48	10.66	235.5	200.2	186			
IS-10	Crude	Dabdi MOV to Kanesara MOV	5	1.5F	2.336	8.806	4.702	0.0941 2	-	-	-			
				3D	2.542	8.279	4.959	2.369	-	-	-			
			70	1.5F	109.2	74.94	35.01	1.214	132	114.8	107.8			
				3D	55.32	70.86	39.37	7.201	80.35	63.98	57.42			
			FBR	1.5F	1059	135.8	60.22	2.461	1197	1118	1086			
				3D	174.7	129.6	69.48	10.66	235.5	200.2	186			
			IS-11	Crude	Kanesara MOV to Sherpura MOV	5	1.5F	2.336	8.806	4.702	0.0941 2	-	-	-
							3D	2.542	8.279	4.959	2.369	-	-	-
70	1.5F	109.2				74.94	35.01	1.214	132	114.8	107.8			
	3D	55.32				70.86	39.37	7.201	80.35	63.98	57.42			
			FBR	1.5F	1059	135.8	60.22	2.461	1197	1118	1086			



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
					100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
				3D	174.7	129.6	69.48	10.66	235.5	200.2	186
IS-12	Crude	Sherpura MOV to Umardesi River MOV	5	1.5F	2.336	8.806	4.702	0.0941 2	-	-	-
				3D	2.542	8.279	4.959	2.369	-	-	-
			70	1.5F	109.2	74.94	35.01	1.214	132	114.8	107.8
				3D	55.32	70.86	39.37	7.201	80.35	63.98	57.42
			FBR	1.5F	1059	135.8	60.22	2.461	1197	1118	1086
				3D	174.7	129.6	69.48	10.66	235.5	200.2	186
IS-13	Crude	Umardesi river MOV to Shinnagar MOV	5	1.5F	2.336	8.806	4.702	0.0941 2	-	-	-
				3D	2.542	8.279	4.959	2.369	-	-	-
			70	1.5F	109.2	74.94	35.01	1.214	132	114.8	107.8
				3D	55.32	70.86	39.37	7.201	80.35	63.98	57.42
			FBR	1.5F	1059	135.8	60.22	2.461	1197	1118	1086
				3D	174.7	129.6	69.48	10.66	235.5	200.2	186



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar
SMPL Loopine											
IS-14	Crude	Sidhpur Station inlet HOV to sherpura station inlet HOV	5	1.5F	2.389	8.671	4.711	0.1283	-	-	-
				3D	2.495	8.25	4.93	2.568	-	-	-
			60	1.5F	64.67	65.24	31.5	1.289	87.31	72.57	66.67
				3D	48.4	61.56	35.16	8.593	65.58	51.78	46.25
			FBR	1.5F	970.2	133.5	60.93	2.867	1104	1032	1003
				3D	166.3	127.6	69.98	13.17	225.1	190	175.9
MPPL											
IS-15	Crude	Khanpurada HOV to Hisor HOV	5	1.5F	2.346	8.713	4.708	0.1188	-	-	-
				3D	2.455	8.259	4.941	2.509	-	-	-
			60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter							
					Flash fire	Jet Fire				Overpressure explosion		
										overpressure level		
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
IS-16	Crude	Hisor HOV to Chandisar HOV	5	1.5F	2.346	8.713	4.708	0.1188	-	-	-	
				3D	2.455	8.259	4.941	2.509	-	-	-	
			60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72	
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28	
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024	
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9	
IS-17	Crude	Chandisar HOV to MPPL station inlet HOV	5	1.5F	2.346	8.713	4.708	0.1188	-	-	-	
				3D	2.455	8.259	4.941	2.509	-	-	-	
			60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72	
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28	
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024	
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9	
IS-18	Crude		5	1.5F	2.346	8.713	4.708	0.1188	-	-	-	
				3D	2.455	8.259	4.941	2.509	-	-	-	



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
					100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
		MPPL station inlet HOV to Umardasi river U/S	60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9
IS-19	Crude	Umardasi river U/S HOV to Umardasai river D/S MOV	5	1.5F	2.346	8.713	4.708	0.1188	-	-	-
				3D	2.455	8.259	4.941	2.509	-	-	-
			60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9
IS-20	Crude	Umardasai river D/S MOV to Chitrasani RCP MOV	5	1.5F	2.346	8.713	4.708	0.1188	-	-	-
				3D	2.455	8.259	4.941	2.509	-	-	-
			60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter									
					Flash fire	Jet Fire				Overpressure explosion				
										overpressure level				
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar		
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024			
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9			
IS-21	Crude	Chitrasani RCP MOV to Balaram River HOV	5	1.5F	2.346	8.713	4.708	0.1188	-	-	-			
				3D	2.455	8.259	4.941	2.509	-	-	-			
			60	1.5F	59	65.58	31.44	1.202	77.49	62.66	56.72			
				3D	46.82	61.9	35.12	7.994	65.7	51.84	46.28			
			FBR	1.5F	997	134.2	60.71	2.726	1128	1054	1024			
				3D	169.1	128.2	69.83	12.31	225.2	190	175.9			
			KSPL											
			IS-22	MS/HSD/ SKO/PCK/ NAPHTHA	Rupura MOV to Multhania HOV	5	1.5F	2.507	19.36	9.99	0.3993	-	-	-
3D	2.702	18.03					10.74	4.177	-	-	-			
50	1.5F	65.77				121.3	55.44	3.093	127.5	91.11	76.51			



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
						100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar
				3D	56.58	115.5	63.08	11.94	112.7	78.85	65.31
			FBR	1.5F	1019	281.1	118.1	8.147	1393	1186	1104
				3D	144.8	271	140.3	23.12	343.3	233.6	189.7
IS-23	MS/HSD/ SKO/PCK/ NAPHTHA	Multhania HOV to Saraswati River HOV	5	1.5F	2.507	19.36	9.99	0.3993	-	-	-
				3D	2.702	18.03	10.74	4.177	-	-	-
			50	1.5F	65.77	121.3	55.44	3.093	127.5	91.11	76.51
				3D	56.58	115.5	63.08	11.94	112.7	78.85	65.31
			FBR	1.5F	1019	281.1	118.1	8.147	1393	1186	1104
				3D	144.8	271	140.3	23.12	343.3	233.6	189.7
IS-24	MS/HSD/ SKO/PCK/ NAPHTHA	Saraswati River HOV to Sidhpur Station inlet HOV	5	1.5F	2.507	19.36	9.99	0.3993	-	-	-
				3D	2.702	18.03	10.74	4.177	-	-	-
			50	1.5F	65.77	121.3	55.44	3.093	127.5	91.11	76.51
				3D	56.58	115.5	63.08	11.94	112.7	78.85	65.31
			FBR	1.5F	1019	281.1	118.1	8.147	1393	1186	1104



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
					100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
				3D	144.8	271	140.3	23.12	343.3	233.6	189.7
IS-25	MS/HSD/ SKO/PCK/ NAPHTHA	Sidhpur Station inlet HOV to Umardasi River U/S HOV	5	1.5F	2.683	19.65	9.97	n/a	-	-	-
				3D	2.823	18.28	10.75	3.898	-	-	-
			50	1.5F	65.87	123.3	54.98	2.797	128.1	91.38	76.65
				3D	50.61	117.2	62.72	9.959	113.1	79.04	65.41
			FBR	1.5F	1106	285.5	116.1	7.411	1518	1292	1202
				3D	147.9	274.7	138.8	19.79	341.4	232.8	189.2
IS-26	MS/HSD/ SKO/PCK/ NAPHTHA	Umardasi river U/S HOV to Umardasai river D/S MOV	5	1.5F	2.683	19.65	9.97	n/a	-	-	-
				3D	2.823	18.28	10.75	3.898	-	-	-
			50	1.5F	65.87	123.3	54.98	2.797	128.1	91.38	76.65
				3D	50.61	117.2	62.72	9.959	113.1	79.04	65.41
			FBR	1.5F	1106	285.5	116.1	7.411	1340	1211	1159
				3D	147.9	274.7	138.8	19.79	341.4	232.8	189.2
IS-27	MS/HSD/		5	1.5F	2.683	19.65	9.97	n/a	-	-	-



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Isolatable section	Service	Description	Leak Size, mm	Weather category	Impact distance in meter						
					Flash fire	Jet Fire			Overpressure explosion		
									overpressure level		
					100% LFL	4 kW/m ²	12.5 kW/m ²	37.5 kW/m ²	0.1 bar	0.3 bar	1 bar
	SKO/PCK/ NAPHTHA	Umardasai river D/S MOV to Chitrasani RCP MOV		3D	2.823	18.28	10.75	3.898	-	-	-
			50	1.5F	65.87	123.3	54.98	2.797	128.1	91.38	76.65
				3D	50.61	117.2	62.72	9.959	113.1	79.04	65.41
			FBR	1.5F	1106	285.5	116.1	7.411	1518	1292	1202
				3D	147.9	274.7	138.8	19.79	341.4	232.8	189.2
IS-28	MS/HSD/ SKO/PCK/ NAPHTHA	Chitrasani RCP MOV to Balaram River HOV	5	1.5F	2.683	19.65	9.97	n/a	-	-	-
				3D	2.823	18.28	10.75	3.898	-	-	-
			50	1.5F	65.87	123.3	54.98	2.797	128.1	91.38	76.65
				3D	50.61	117.2	62.72	9.959	113.1	79.04	65.41
			FBR	1.5F	1106	285.5	116.1	7.411	1518	1292	1202
				3D	147.9	274.7	138.8	19.79	341.4	232.8	189.2

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11. EMERGENCY MITIGATION MEASURES

(REGULATION 11)

11.1. BASIC REQUIREMENT OF ERDMP (REGULATION 11.1)

Basic requirements are assessed prior to development of ERDMP as per the details provided in Schedule-III.

Table 11 Basic Requirements of ERDMP

SN	Basic Requirements of ERDMP	Details attached in
1	Location Plan of the Installation indicating site of the installation at neighboring details up to a distance of 2 km from the installation in each direction.	Location plan given in Figure 5.
2	Site plan of the installation showing a complete layout of the installation indicating boundary walls, exit and entry gates and location of various facilities.	Layout is attached in Annexure 02.
3	Layout of Fire Water Systems and Fire Fighting Equipment details.	Fire Water Layout Annexure 02
4	Line block diagram of manufacturing process and Process Flow Diagram (PFD) of each unit.	Given in 11.4
5	Material Safety Data Sheet (MSDS) for all hazardous chemicals stored, handled, produced and transported in the installation.	Annexure 01
6	Internal and External Emergency contact numbers and addresses of police, fire station, hospitals, mutual aid industry, factory inspectors, Board, State Pollution Control Board, Petroleum and Explosive Safety Organization (PESO), etc.	Annexure 03

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7	Pipeline route map and details of various facilities such as Sectionalizing Valve (SV), intermediate Pigging (IP) stations, intermediate pumping stations (IPS) across pipeline route	Pipeline Route Map Annexure 02
8	Addresses and Telephone Directory of Technical Support Services such as Environmental Laboratories, firefighting chemical suppliers, public and private consultant associated with emergency handling and Aviation Medical Services, if any.	Suppliers list given here 11.2
9	Security threat plan	Security threat plan is attached Clause No 30.

Location plan of the installation



Figure 5 Location plan of the installation of Sidhpur

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11.2. FIRE-FIGHTING EQUIPMENT SUPPLIER

The following vendors are assigned for supply of firefighting equipment to the installation,

Table 12 Vendors list for Firefighting equipments

SN	Name	Address	Phone No	Remarks
1	Protector Fire safety India Pvt. Ltd	Signature Corporate Park-2 Sarkhej -Sanand Cross Road, Sarkhej-Okaf, Ahmedabad, Gujarat 382210	9377927738	For all fire Equipments
2	Akshar Fire & Safety	207, Chitrarath Complex, C G Road, Navrangpura, near Hotel President, Ahmedabad-380009	9825414646 9825023522	For all fire Equipments
3	Bombay Fire Safety	Nr. Century Market, Outside Prem Darwaja, Kalupur, Ahmedabad, Gujarat 380002	9825336766	For all fire Equipments
4	Innovative Engineering Products Pvt Ltd.	6-Shripal Nagar Society, Opp Fortune Landmark, Ashram Road, Usmanpura , Ahmedabad-380013	9099909460 079-27560043	For Safety Helmets, safety shoes etc
5	ABC Brothers Tech(I) Private Limited	ABC House/ 14 -15 Shivam estate, Nr Ujala Circle, B/h SBI, S.G Highway, sarkhej, Ahmedabad-382210	9909988233	For LEL Calibaration

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6	Reliable Oil seal & Rubber Products	670/19 progressive Bank Bhavan, Relief Road corner, Station Road, Ahmedabad-380002	079-22138998 9227849001 9898236075	For “O” Ring & rubber seal of Hydrant
7	Jk Machinery & Hardware stores	Highway Char Rasta, Bareja Dist: Ahmedabad	9825156567	For Hose, clamp Etc
8	Gurukrupa Valves	19, Ramrajya nagar, Opp. Satyam nagar, N.H. no: 08, Odhav, ahmedabad-382415	9099943797	For Valves Repairing

11.3. FIRE FIGHTING EQUIPMENT AND FIRE WATER NETWORK

The design of the water system is based on the assumption that one major fire shall be fought in the pipeline.

SN	Description of Items	Details
A	Fire Extinguisher	
(i)	Dry Chemical Powder Type	
	a. 6 Kg capacity	05
	b. 9 Kg capacity	38 Nos.
	c. 10 Kg capacity	-
	d. 50 Kg capacity	-
	e. 75 Kg capacity	05 Nos.
(ii)	Carbon Dioxide Type	
	a. 6.8 kg capacity	03 Nos.
	b. 4.5 kg capacity	41 Nos.



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	c. 3.2 kg capacity	-
	d. 2.0 kg capacity	03 Nos.
B	Hoses/Nozzles/Accessories	
1	Universal (triple purpose) nozzle	02
2	Jet nozzle	28
3	Fog Nozzle	02
4	Water curtain Nozzle	02
5	Foam Making Branch FB-5X	05
6	AFFF Compound	19.4 KL
7	Fire Siren- Electric	01 (01 Spare)
8	Fire Siren -Hand Operated	01 (01 Spare)
9	Sand Buckets / Sand Scoops	35
10	Hose box	26
11	Fire hoses	54
12	Dry Chemical Powder	200 kg
13	CO2 cartridges for extinguishers	20
C	Fixed Fire Fighting Facilities	
1	Fire fighting pump Engine Driven	Hookup with mktg. terminal
2	Fire fighting pump Motor Driven	
3	No. of fire water tanks	
4	Fire water Pond/tank Capacity	
5	Fire water mains Size	12"
6	Fire hydrant valves (double headed)	36
7	Fixed foam cum water monitors	21
8	Automatic heat / smoke detectors (in control building)	Installed
9	Water spray system Control building	01
10	Water spray system Storage tanks	02



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11	Automatic Foam / Halon system on storage tanks	01
12	Fixed / Semi-fixed foam pourer system on storage tanks	01
13	Isolation Valve	34
D	Safety Equipments	
1	Helmets	35
2	Hand Gloves Leather	-
3	Hand Gloves Rubber	10
4	Full Body Harness/Safety Belt	02
5	Ear Muffs/Plug	10/250
6	Fire Proximity Suit	01
7	Safety Torch	02
8	Breathing Apparatus Set	02
9	First Aid box	02
10	Water Jet Blankets	2
11	Safety net	1
12	Explosimeter	02
13	Water safety goggles	25
14	Red/Green Flag	02/02



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11.4. PROCESS FLOW DIAGRAM

Mundra-Panipat Pipeline (22" dia):

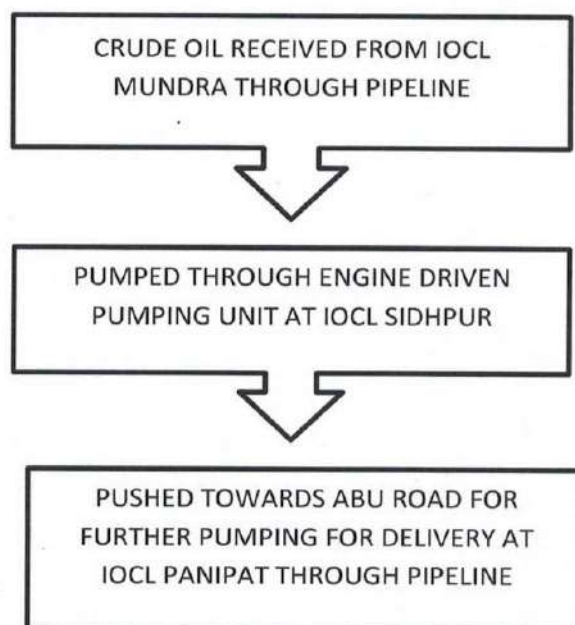


Figure 6 MPPL Process Flow Diagram



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Koyali-Jaipur-Panipat Pipeline (18" dia):

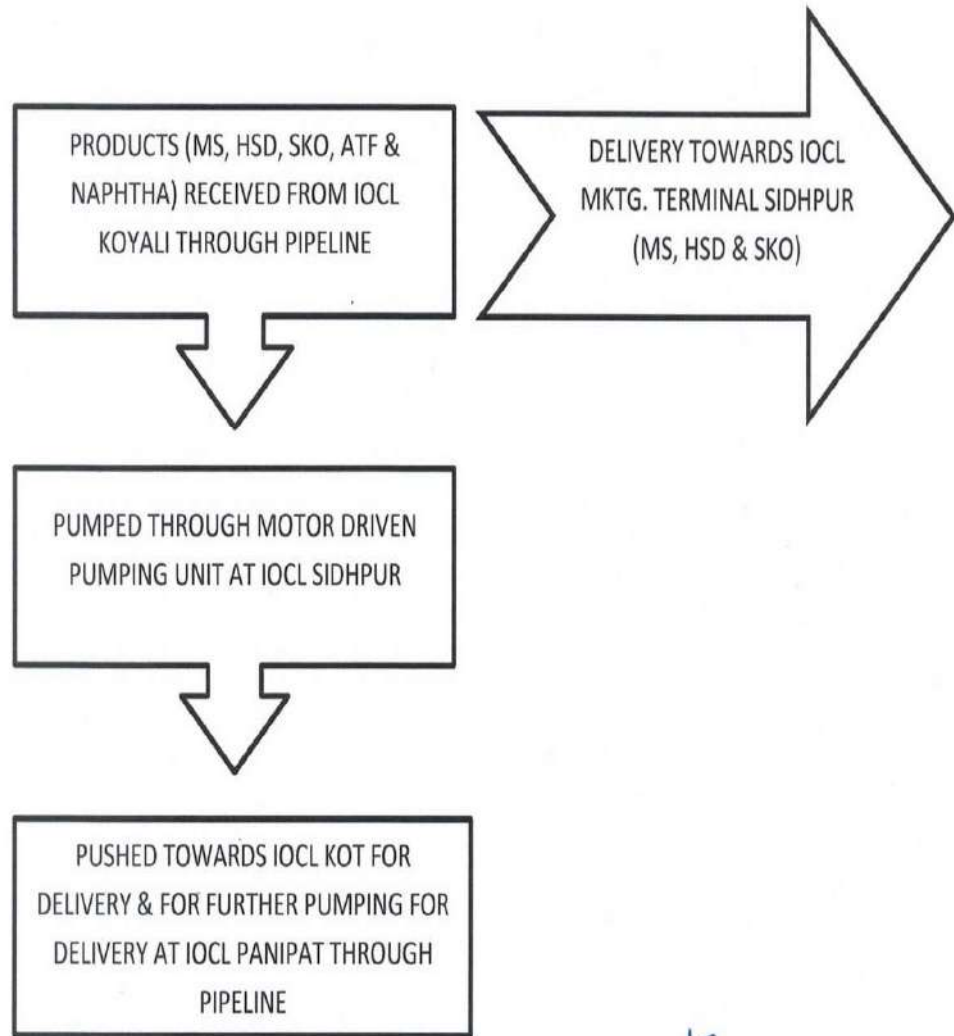


Figure 7 **KSPL Process Flow Diagram**

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11.5. SECURITY THREAT PLAN

Security is a continuous commitment for the safety of the Pipeline and its utilities and the people working therein, both from external and internal threats. Of late, militant activities have increased manifold. The vital oil sector is a tempting target for terrorist groups. With the addition of modern weapons and explosives to the terrorist arsenal, the threat has increased manifold. A contingency plan to deal with such threat to our company's assets is given below.

Objective

The objective of this plan is to prevent, detect and neutralize any attempt to blast its installation by planting any explosive device in the Plant premises

Preventive Measures

For security of Pipeline, we security personnel (covering all the shifts round the clock) equipped with handheld metal detectors, door frame metal detectors and under carriage trolley mirror for preventive checking of explosive from entering the plant. We also have bomb suppression blanket for detection & neutralization of impact of explosives.

1. All employees are required to wear and display their identity cards inside the installation premises
2. Good housekeeping in and around Installation is ensured to reduce the opportunity for planting of any device

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3. Only authorized vehicles (cars, scooters/motor-cycles, etc.) are allowed to park at the designated parking place
4. In-house intelligence cell keeps a watch over undesirable activities/behavior of employees and contractors' workers
5. Perimeter security receives special attention
6. All gates are monitored all the time by security personnel
7. Staff members will be advised to keep close watch on unusual activity or suspicious items. The staff will be encouraged to report matters of security concern.

Training will be provided at regular intervals to all concerned to execute the BTCP successfully. The same will be rehearsed through mock-drills. The above guidelines are general in nature. The management may issue additional guidelines to meet any eventuality.

Bomb threat assessment committee has been formed.



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Ref: WRPL/SID/SEC/BTCP/20

Date-09.06.2020

To,
District Magistrate,
Patan,
Dist:Patan,

Sub: Submission for approval & information of Bomb Threat Contingency Plan for Indian Oil Pipelines Division Sidhpur Installation.

Dear sir,

Indian Oil Corporation Limited is having its vital installation of crude oil and petroleum product pipelines at Western Region Pipelines (WRPL) Sidhpur. This installation at Sidhpur (District Patan) is very crucial for uninterrupted operations of our cross country pipelines for supply of crude oil to Mathura Refinery & Panipat Refinery as well as availability of petroleum products in western & northern india. Four no. of underground pipelines (3. No of crude pipelines and 1 no of product pipeline) are passing through different locations of Patan, Mehsana and Banaskanth district under Sidhpur jurisdiction.

A Bomb threat contingency plan (BTCP) has been prepared considering the importance of the location. This is being submitted for information, review and approval please.

Yours faithfully

Ashwin Dafda

Chief Manager (M/L & Mant)

Security Coordinator.

14/6/20
Inward Clerk
Collector Office
PATAN

Figure 8 Bomb Threat Contingency Plan Vetted

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11.6. RESOURCE MOBILIZATION (REGULATION 11.2)

Resource mobilization includes manpower requirement, firefighting materials, appliances or equipment, safety equipment, communication facilities, transport, list of emergency drugs and appliances, etc. These are enclosed in Schedule-IV.

11.7. SCHEDULE - IV

Schedule IV is given in the table below –

Table 13 Schedule - IV

SN	Total Requirement	Available with Installation	Neighboring Units	Civil Authorities
1	Manpower		----	----
	Regular employees – shift wise (APPROX)	08	12	250(police)
	Security staff	04	25	10
	Personnel Trained in first aid	22	10	10
	Others (Technicians / Helpers)	03	15	02
2	Fire Fighting Appliances/ Equipment/ Chemicals			
	Fire Tenders/ Firefighting engines	5 Nos Engine Driven Pump & 2 Nos Jockey Pump.	-	Nil
	Water storage capacity	9870 KL	-	Nil
	Fire Hoses	54 nos	50 nos	Nil
	Jet/Fog/Spray Nozzles	28 Jet Nozzle 2 Fog Nozzle.	35 nos	Nil
	Foam Branch	04 nos	10 nos	Nil
	Jumbo Jet Nozzles	Nil.	4 nos	Nil
	Foam Compound (KL)	19.4 KL.	14KL.	Nil
3	Safety Equipments			



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	PVC Suit	02Nos.	02Nos.	2 nos
	Compressed air B.A. Set	02 Nos.	02 Nos.	2 nos
	Refill Cylinders for B.A. Set	01Nos.	02Nos.	2 nos
	Cascade B.A Set	Nil.	Nil.	Nil
	Fire Proximity Suit	01Nos.	02 Nos.	2 nos
4	Communication			
	Walkie-Talkie	04Nos.	15 nos	2 nos.
	Public Address System	03Nos.	01 nos.	Nil
	Megaphone	01Nos.	01 nos.	1Nos.
5	Transport			
	Jeeps (On Contract)	05Nos.	1 No.	Fire Jeep(1No).
	Ambulance	Nil	Nil	1 nos
	Trucks	Nil	Nil	2 nos
	Buses	Nil	Nil	1 nos
	Tractors	Nil	Nil	2 nos
	Boats	Nil	Nil	2 nos
	Mobile Cranes	Nil	Nil	2 (10 MT Capacity)
6	Miscellaneous			
	Ropes (Metres)	50M.	50 M X 2 nos	Manila Rope- 100M: Cotton Rope: 1200M.
	Empty drums	05Nos	10	5 nos
	Buckets	20Nos	20 nos	10 nos
	Sand bags	10Nos.	30 nos	50 nos
	Dewatering pump	01Nos	Nil	2 nos
	Pneumatic pump	02Nos	Nil	1 nos
	Photo Camera	01Nos	01No.	1 Nos.
	Video Camera	01Nos.	01 No.	1 Nos.



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7	Equipments For Corps Disposal			
	Light Metal Stretchers	01Nos	02Nos	2 no.
	Tarpauline 12' X 12"	02Nos.	02Nos.	1 no.
	Rope fibre 3/8"	01Nos	01Nos	1 no.
	Bucket	20Nos	40Nos	40 nos.
	Rubber gloves	04Nos.	10Nos.	30 nos.
8	List Of Emergency Drugs And Appliances			
	Canvas Stretcher	01Nos.	2 nos	5 nos.
	Oxygen Cylinder	02Nos.	NIL	5 nos.
	Sterile Bandages	04Nos.	10 Nos.	10 nos.
	Cotton Sterilized	04Nos.	10Nos	10 nos.
	Antibiotics	01Nos	10Nos	1 Strip.
	Analgesics	01Nos	10 nos.	1 strips.
	Tetanus Toxoid	01Nos	Nil	10 vials.
	Dressing Instruments	04Nos	2 nos.	1 no.
	Sterilizers	02Nos	Nil	1 no.
	Autoclave for sterilizing Instruments, dressing	02Nos.	Nil	1 no.
	B.P. Apparatus	01Nos	1 Nos.	2 no.
	Suction Apparatus	Nil	Nil	1 no.
	I. V. Set	Nil	1Nos.	10 nos.
	Antishock drugs	Nil	Nil	1 no.
	Gluco Saline Set	Nil	1nos	10 nos.
	Gluco Saline bottle	Nil.	1 Nos.	10 nos.

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11.8. HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT (REGULATION 11.3)

The incident prevention measures and procedures at installation or other locations include following –

Specifications by PNGRB	Details attached in
(i) Health safety and environment (HSE) policy	Given in 11.9
(ii) Proper layout and inter facility distances	Attached in Annexure 2
(iii) Safety committees with fair participation of workers	Details are given in 11.10
(iv) safety audits and inspections shall be carried out with the help of prescribed checklists. The entity shall follow the periodicity and guidelines for inspection as per regulations of Petroleum and Natural Gas Regulatory Board on process / procedure/methodology for ensuring adherence and its protocol for third party conformatory assessment;	Conducted every year as per OISD 144
(v) Work Permit System	Details given in 11.12
(vi) Early warning alarm system in the installation (gas monitoring system, heat /smoke detection, high level alarms, low pressure/high pressure alarms etc.) especially in the vicinity of storage tanks, filling station and delivery points and along with periphery with the indication in the central control room;	Details are given here below in 11.13
(vii) In-built safety interlocks system in design such as safety relief valves (SRVs), thermal safety valves (TSVs), non-returning valves (NRVs), remote operated valves (ROVs) and other various emergency trip systems in Installations;	Details are given here below in 11.14 & 11.15
(viii) Fire protection (preferably automatic)	Details are given in Regulation 11.3

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(ix) Visitor safety briefing including, do's and don'ts in case of emergency including assembly points and escape routes and like other points and routes;	Dos and Don'ts are given in 11.16
(x) Setting up of safety MIS system and sending Exception reports to the head of organizations or CEO.	Details are given in 11.17
(xi) All standby equipment should be tried and operated periodically and recorded. Similarly, backup power for safety equipment and instrument should be checked periodically and observations be recorded.	Refer 11.18 Preventive Maintenance Schedule

(xii) Check points for incident prevention measures are given at Check list -2.

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11.9. HSE POLICY (ENGLISH)



Figure 9 HSE Policy



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11.10. SAFETY COMMITTEE

At Sidhpur pumping Station, Shop floor Safety Committee have been constituted,

11.11. SHOP FLOOR SAFETY COMMITTEE

The meeting is chaired by respective SICs and conducted on monthly basis. 50 % members belong to workers group and balance from management. The meeting is conducted on monthly basis, minutes

prepared and circulated to all employees. The minutes are revised in next management safety committee meeting.

इंडियन ऑयल कॉर्पोरेशन लिमिटेड
पादप्लावन डिपार्टमेंट
पश्चिमी क्षेत्र पादप्लावन, सिद्धपुर

ड्राफ्ट, आर.पी.एल./ सिद्धपुर/एच.एस.ई./2024-25/ दिनांक: 09.08.2024
विषय/Subject: Re-Constitution of Safety Committee pertaining to WRPL Sidhpur station for the year 2024-25.

संदर्भ/Reference: Gujarat Factory Rule 1963

1) A safety committee is required at WRPL Sidhpur as per the stipulations in the Gujarat Factory Rules.

2) In view of recent transfer postings and change of work assignments, Safety committee required to be re-constituted.

3) Clause no. 68-F of the Gujarat factory rules quote

3.1 A senior official, who by his position in the organization can contribute to the functioning of the committee, shall be chairman. In our station, Station-in-charge shall be the Chairman of the committee

3.2 A safety officer or a factory medical officer wherever available shall be the secretary of the committee. In our station, Fire & Safety Co-ordinator shall be the Secretary of the committee

3.3 A representative each from Operations, Maintenance and HSE.

3.4 Safety Committee shall meet as often as necessary but at least once in every quarter. The minutes of the meeting shall be recorded and produced to the Inspector on demand

4) In line with the above, a new safety committee has been proposed along with scope of discussion during committee meeting for the year 2024-25 for WRPL, Sidhpur station

Slr	Name (Slr)	Designation	
1	Amish Kumar Tripathi	COM	SIC & Chairman of Safety Committee
2	Chhobani Kiran	DM	Secretary
3	V. K. Sankar	SOM	Member
4	V. M. Channanant	MIME	Member
5	Michael Kumar Patel	AM(O&M)	Member
6	Animesh Kumar Singh	OM	Member
7	Prakashchandra Umacharya	AM(O&M)	Member
8	Anupam Mondal	AM(O&M)	Member
9	Prakash Vaghela	OSME	Member
10	Sandesh Kumar Patel	OSME	Member
11	Mohit Shukla	OSME	Member
12	Ajayna Vyas	AF (M)	Member
13	Anjali Kumar	EA(Y&I)	Member
14	R. B. Sankar	AF(M)	Member
15	Suresh Choudhary	EA(Y)	Member
16	J. V. Darg	JRO(Y)	Member
17	Mahesh Patel	JRO(Y)	Member
18	Bhola K. Thakur	JRO(Y)	Member

इंडियन ऑयल कॉर्पोरेशन लिमिटेड
पादप्लावन डिपार्टमेंट
पश्चिमी क्षेत्र पादप्लावन, सिद्धपुर

19	S. X. Patel	JRO(Y)	Member
20	Rameshwar S. Raj	JRO(Y)	Member

1) The points considered for discussion during Safety Committee meeting will be:

- Discussion of safety related issues of Station, ROPs and safety
- Discussion on compliance status of various External/ Internal Safety Audit recommendations
- Information sharing of Major & Minor incidents, Near miss incidents reported inside and outside of the station
- Any safety related queries as decided by Chairman.

Submitted for kind approval please

बिना संवत्तन प्रवेश, डब्ल्यू.आर.पी.एल. सिद्धपुर. *V. K. Sankar*

मुद्रा संवत्तन प्रवेश, डब्ल्यू.आर.पी.एल. सिद्धपुर. *Chait* (अमित कुमारी)

11/08/2024

विशेष करियर
प्रधान प्रवेश
डब्ल्यू.आर.पी.एल. सिद्धपुर

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11.12. WORK PERMIT SYSTEM

The pipeline follows a very elaborate Work Permit System as described below. This system is strictly as per OISD-105. Following work permits are existing at Sidhpur MPPL Pumping Station:

Table 14 Work Permits at Sidhpur MPPL Pumping Station

SN	Work Permit	Description
1	Hot permit	Any work, which can produce sufficient heat to ignite the combustible/ inflammable mixture in atmosphere
2	Excavation permit	For digging, cutting of the road
3	Electric Isolation and de-energization permit	To work on any electrical line / equipment or associated facilities
4	Confined space entry permit	Entry of a man into a confined space for any job
5	Cold Work permit	For all cold work jobs
6	“Working at Height” permit	To work at height more than 1.8 m

Sample Work Permit for IOCL WRPL Sidhpur

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The provision of Safety release valves connected to a well-designed flare system confirms to design codes / standards. For safety in operation, all process units of the pipeline have been provided with 100% automatic control system proven in the field of process industries. The facility exists for the plant safety, in case any operating parameters go out of control, in the event of system failure. Adequate ESDs, trips have been provided to bring down the unit operation safely to take care of emergency situations, Risk analysis study, Disaster Management Planning, Preparation of scheme, suggesting and taking measures for adoption of new technology in the field of safety.

In order to avoid breakdown of the equipment leading the potential risk situation, an effective maintenance schedule covering both static and rotary equipment have been adopted in the pipeline. A well-defined and elaborate maintenance manual exists. All the procedures and practices and safety precaution to be observed during any maintenance are clearly laid down in the manual. Instrumentation in all process units and offsite only pneumatic instruments have been used which are non-electric type. Advanced control system available at the time of project implementation for automatic operation of units had been adopted in the plant.



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11.15. EMERGENCY SHUT DOWN AND MANUAL CALL POINTS AT SIDHPUR



Figure 12 ESD and Manual Call Point Location

11.16. DO'S AND DON'TS FOR VISITORS

Dos and Don'ts are displayed at the entry gate for visitors.

- Enter only with Valid Gate Pass from Station In-Charge / Control Room Shift In charge.
- Prohibited Items: Mobile Phone, Match Box, Lighter, Camera, Fire arms, fire crackers, contraband medicines, liquor and other equipment driven by battery.
- Use Personnel Protective Equipments



- Please follow other safety guidelines if given during your visit.

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- Vehicle movement only with spark arrester fitted.



- Do not run in the battery area. Do not loiter around / operate any plant equipment without authorization. Walking over the pipelines is strictly prohibited.

IN CASE OF EMERGENCY

- Do not get panic. On hearing the fire siren visitors are to assemble at the assembly point near Control Building.
- As per the Instruction of the Station In-charge/Shift In-charge, visitors shall evacuate the area in a calm and orderly manner through Main Gate or Emergency Exit as instructed. Emergency exit route is as follows:

11.17. MIS REPORT

Monthly & quarterly MIS are prepared and submitted to management covering following reports.

1. Monthly Mock Fire Drill
2. Monthly Safety Committee Meeting
3. Monthly Inspection of Fire Extinguishers
4. Monthly Inspection of Fire Hydrants / Monitors
5. Monthly Inspection of Fire Fighting & Safety Equipment

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6. Inspection / Performance testing of Spray System of Storage Tanks / Control Room
7. Pressure testing of Fire Water Network
8. Hydro-testing of Fire Fighting Delivery Hoses
9. Hydro-testing of Fire Extinguishers
10. Performance Report of Fire Fighting Facilities (Weekly)
11. House Keeping Safety & Safe Practices
12. Incident Report & Monitoring Sheet
13. Register of Accidents and Dangerous Occurrences
14. ATR on HSE audits

Preventive Maintenance Schedule and Power Backup

Table 15 Details of Preventive maintenance schedule

SN	Equipment/Details	Schedule
1	Inspection & cleaning of Fire Extinguishers, PPEs. etc.	Monthly
2	Inspection of Hydrant / Monitors	Monthly
3	Inspection of Fire Fighting & Safety Equipment	Monthly
4	Inspection & testing of Foam Purer System of Storage all Tanks	Six Monthly
5	Maintenance of Foam Purer System of all Storage Tanks	Six Monthly
6	Inspection & Testing of Foam Spray System of Mainline Engine Shed	Quarterly
7	Maintenance of Foam Spray System of Mainline Engine Shed	Quarterly
8	Inspection & Testing of Spray System of Storage Tanks / Control Room water curtain	Six monthly/ Monthly



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9	Maintenance of Spray System of Storage Tanks / Control Room water curtain	Six monthly/ quarterly
10	Pressure Testing of Fire Water/Foam Network	Yearly
11	Hydro testing of Fire Hoses	Half Yearly
12	Hydro testing of Fire Extinguishers	3 yearly for DCP 5 Yearly for CO2
13	Housekeeping	Daily
14	Near miss Reporting	As and when occurred
15	Monitoring of Accidents	Daily
16	Mock Drill	Monthly
17	Disaster drill (offsite and onsite)	Offsite – Yearly, Onsite – Half yearly
18	Safety Committee Meeting	Monthly
19	Testing of electrical and hand operated fire siren	Weekly
20	Conduction of Management Safety committee meeting	NA
21	Inspection/checking/refilling of rim seal module	NA
22	Operation of Rim seal module	NA
23	Inspection of detection system	Quarterly
24	Inspection of CO2 system	Monthly
25	Maintenance of CO2 system	Quarterly
26	Inspection of fire tender	NA
27	Onsite Disaster Mock drill	Six Monthly
28	Daily Safety Checks	Daily
29	Training on HSE to employees and contract Labors	Monthly
30	Safety Round of the station	Daily
31	Updating of First Aid Box	As and when required
32	Calibration of Pressure Gauges in foam and hydrant line	Yearly
33	Annual Health checkup of employees & labors	Annually

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12. EMERGENCY PREPAREDNESS MEASURES

(REGULATION 12)

12.0 After detailing the prevention measures, preparedness measures to handle the emergency shall be explained in ERDMP document.

EMERGENCY PREPAREDNESS MEASURES

To evaluate the effectiveness of ERDMP Sidhpur Installation conducts mock drills. Following are the mock drills conducted at the installation.

SN	Activities	Reference	Frequency	Status
1	Fire Mock Drill	OISD-STD- 117	Monthly	followed
2	On-Site Disaster Drill	MSIHC Rules – 1989 Internal Audit	Half yearly	followed
3	Off-Site Disaster Drill	MSIHC rules – 1989	Yearly	followed

12.1. Emergency Drills and Mock Exercises

- To evaluate the thoroughness and effectiveness of an ERDMP, it is necessary to conduct periodic table top exercises full-scale or announced, and unannounced drills. Each site should hold drills on the night shifts, change shifts as well as during the day as mandated under regulation 12.1 (e).
- Drills should present a variety of Emergency scenarios and designed to challenge each segment of the organization. Limited scale functional drills are useful and may be used by Chief of each Support Service to train their own team. Plans should be made to have periodic mass casualty exercises. These exercises should attempt to simulate as closely as possible a fire, explosion, or toxic agent release and comparison of the prescribed time lines and the actual received.

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- (c) The warning system, first aid, evacuation procedures and the definitive treatment procedures should all be tested periodically.
- (d) Some of the drills should also include the participation of outside groups and agencies such as police, fire services,, ambulance service, civil defence organizations and mutual aid groups member or groups-.
- (e) Mock drill for On site (Level –I or II) and Off site (Level-III) emergency shall be carried once in three months and twelve months respectively in accordance with Typical Mock Drill Reporting format provided in Annexure -3. Entity shall conduct at least one On site emergency exercise of Level-II during a year.
- (f) It is the responsibility of the concerned District Authority to prepare and keep up-to-date an adequate off-site emergency plan detailing as to how emergencies relating to a possible major accident on the site will be dealt with, as per prevailing provisions of Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules,1989 and Disaster Management (DM) Act, 2005, accordingly, entity shall submit the details to the concerned District Authority to conduct the off-site mock drill.

For locations having more than one industry member, the Off-site emergency exercise may be carried out by one industry member by turn in coordination with the concerned District Authority, thus ensuring at least one off-site emergency (Level-III) exercise is conducted at the location every year.

- (g) These mock drills will enable the unit/location to assess the capability of the individual and performance as a group. The frequent discussions and drills will help in eliminating the confusion and shortcomings, if any.

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- (h) Each Mock Drill should be recorded with observations and deficiencies to be rectified within 24 hours. Accordingly, time bound action plan to be prepared for rectifications.
- (i) Check Points for mutual aid and mock drills are given at Check list - 3. Typical Mock Drill Reporting Format is given at Annexure-3.

12.2. TRAINING

- (1) An ERDMP shall be easier to use if training material and general philosophy on emergency prevention and control are kept separate from the working plan.
- (2) (i) Training on Emergency Preparedness and Response shall be imparted to all the personnel likely to be involved directly or indirectly to the emergencies including employees, contract workers, transport crew and security personnel.
 - (ii) Contract personnel and contract labourer shall be allowed to start work only after clearance of attending and passing safety training. valid safety training prior to the deployment at site and refresher trainings shall also be imparted to contract personnel and labourer periodically.
 - (iii) Refresher training shall be conducted at regular intervals.
 - (iv) The basic requirements Central Motor Vehicles Rules, 1989 pertaining to dangerous or hazardous goods transport must be complied by the transporters. For this the loading station must conduct training of tank truck crew as per the requirement under Central Motor Vehicles Rules, 1989.



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Training to Contract Workers

1. Training to all contractor workers is mandatory before entering inside the pumping station and to achieve the goal daily training is organized.
2. Training to contract supervisors is given as per OISD Standard - 154. The course content includes knowledge of petroleum product and their hazardous property, prevention of fire / accident and safety precaution etc.
3. In addition, firefighting safety training to contractor supervisor and workers is given at fire station and at work locations regularly.





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Training to Security Personnel

All security personnel are trained once in a year in fire & safety training regularly



Training to Employees

All employees are trained once in a year in F&S training.



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COMMUNICATION SYSTEM FOR OFF-SITE/ONSITE EMERGENCY

a) **Following means of communication are available in the Sidhpur Installation:**

Communication is the most critical and vital part of any emergency Plan.

The emergency communication can be divided in following two parts

- A. Inward communication from site to communicate the emergency
- B. Outward communication from control room / Disaster control room/fire control room to other internal / external agencies to communicate the emergency

Inward Communication from Site to Communicate the Emergency

Each station is having a well-established system to communicate the emergency to designated locations by OFC, fire siren etc., following systems are provided

Fire Alarm System

Break glass type fire alarm points have been located at strategic locations in the plant and as well as other storage locations. A control panel is installed in Station Control Room and repeated in fire control room for showing Fire call location.

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Hand Held Walkie-Talkies

The walkie-talkie sets are being used by various departments for communication purpose. We have provided a single channel no. 2 is used for communication. Walkie talkie sets are available at following locations at Sidhpur station.

- a. Control Room, Security gate, SIC Room , Station Incharge, HSE Coordinator.

12.3. MUTUAL AID

Since combating major emergencies might be beyond the capability of individual unit/ facility/ entity /site, it is essential to have mutual aid agreement with neighboring industries. Consideration shall be given to the following while preparing mutual aid agreements :-

- (a) Written mutual aid arrangements are to be worked out to facilitate additional help in the event of Level-II and Level-III emergencies by way of rendering manpower, medical aid or fire fighting equipments, etc.
- (b) The mutual aid arrangement shall be such that the incident controller of the affected installation shall be supported by neighbouring industries on call basis for the support services materials and equipments already agreed. Further, all such services deputed by member industry shall work under the command of the site incident controller of the affected installation.

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- (c) Mutual aid associations shall conduct regular meetings, develop written plans and test the effectiveness of their plans by holding drills. Drills are essential to establish a pattern for operation, detect weaknesses in communications, transportation and training. Periodic drills also develop experience in handling problems and build confidence in the organization.
- (d) To make the emergency plan a success, the following exchange of information amongst the member organizations of mutual aid association is considered essential: -
- (i) The types of hazards in each installation and fire fighting measures.
 - (ii) List of all the installations or entities falling along the routes of transport vehicles carrying petroleum or petroleum products.
 - (iii) The type of equipment, that would be deployed and procedure for making the replenishment.
 - (iv) Written procedures which spell out the communication system for help and response. This is also required to get acquainted with operation of different firefighting equipment available at mutual aid members and compatibility for connecting at users place.
 - (v) Familiarization of topography and drills for access and exit details carried out by mutual aid members.

Note: Incidents involving road transport vehicles carrying petroleum products shall be attended by the nearest installation on request of civic authorities even in absence of mutual aid agreement with the consignor. Failure on the part of such industry, installations shall attract penalty provisions under sub-regulation 8(4) of these regulations.

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Mutual Aid scheme exists between IOCL WRPL Sidhpur Station and the neighboring industry.

List of Mutual Aid Scheme Members:

Table 16 Mutual Aid Members contact details

MUTUAL AID MEMBERS OF WRPL SIDHPUR				
S. No.	ORGANIZATION	NAME	CONTACT DETAILS	EMAIL-ID
1	IOCL, PIPELINES DIVISION, SIDHPUR	Amit Kumar Tripathi	9687915538	TRIPATHIAK@INDIANOIL.IN
		Chitransh Katiyar	9779249260	katiyarch@indianoil.in
		Control Room	7573029628	-
2	IOCL MARKETING DIVISION, SIDHPUR	C. B. PRASANNA KUMAR	9488069073	CPRASANNAKUMAR@INDIANOIL.IN
		Nirvit Sareen	7016577347	SareenNH@indianoil.in
		Control Room	02767-220825/220251	-
3	BPCL SIDHPUR MARKETING DIVISION,	Subhadip Chanda	9096069179	subhadipchanda@bharatpetroleum.in
		Atul Kumar Prajapati	9586587027	atulkumarnpraja@bharatpetroleum.in
		Control Room	7359028555	-
4	HPCL PALANPUR MARKETING DIVISION	Manoj Kumar	9598932111	manojkumar1@hpcl.in
		Chetan Kumar	8374385897	chetan.kumar@hpcl.in
		Control Room	02742-283091	
5	HPCL PALANPUR,	Akhil Luhadia	9602672222	akhiluhadiya@hpcl.in
		Ajit Singh	8607696464	ajit.singh2@hpcl.in

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	PIPELINES DIVISION	Control Room	02742-283733	-
6	HMEL - PIPELINES DIVISION JUNA RAVIYANA	Ramesh Rojasara	9727785306	Ramesh.Rojasara@hmel.in
		Sandipkumar Patel	9649901287	Sandipkumar.patel@hmel.in
		Control Room	7069041005/7069041572	-
7	GSPL Kalol	Kishore Kumar Singh	9879599464	KISHOREKUMAR@GSPC.IN
		Rishi Kumar Singh	7574848617	rishi.s@gspc.in
		Control Room	079-23268849/50/46/88	-
8	IRM ENERGY LTD. PALANPUR	Budhram Siyag	9512490065	budhram.siyag@irmenergy.com
		Sudhir Bisee	9313924612	sudhir.bisee@irmenergy.com
		Control Room	9328913942	-

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13. EMERGENCY RESPONSE PROCEDURES AND MEASURES (REGULATION 13)

13.0 Response Procedures and Measures

Containing the consequences of an emergency requires well planned and documented procedures to ensure prompt response and coordination among various task groups. The following response procedures as prevalent in the location shall be carried out:

(a) Zoning and Maps.

(i) The zones and maps shall be prepared highlighting the Incident prone areas of the unit so that in case of an emergency it serves as a basis for taking the action. This indicates the size of the area within which human life is seriously endangered by the consequences of incident. This should also indicate the location of assembly points and emergency control rooms. The map should also have marked 24 wind directions to facilitate easy access in case of emergencies.

(ii) The entities shall help District Disaster Management Authority (DDMA) in finalizing the full drawn map of installations and nearby areas under their operations having presence of habitats which are vulnerable and sensitive like old age homes, schools, prison, etc.

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(b) Layout/flow diagram –

Detailed layout and flow diagram for different activities such as Product Lines, filling system, emergency shutdown system isolation valves etc. should be detailed. The important control valves should be highlighted.

(c) Manpower data

The details of manpower deputed on shift basis should be given in order to assess the requirement in case of emergency.

Note: Check points on ERDMP response measures are given at Check list- 4.

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13.1. MANPOWER AT IOCL WRPL SIDHPUR

In any emergency, manpower available with IOCL WRPL Sidhpur will be in action to control the hazard. Following are details of manpower of IOCL –

Regular employees – General Shift	8
Other Shifts	6 Person in A/B/C Shift
Security staff	4
Personnel Trained in first aid	22
Others (Technicians / Helpers)	3

13.2. Response Procedures and Measures

Containing the consequences of an emergency requires well planned and documented procedures to ensure prompt response and coordination among various task groups.

Following are the actions taken for different scenarios,

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Table 17 Emergency Actions for Different Scenarios

Scenario	Causes	Consequences	Emergency Response & Management	Mobilization required	Equipments
Leak in the pump station	Corrosion Mechanical Failure Operational Failure Third Party Activity – Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.)	Oil Spillage Fire Hazard	Prevent Ignition Stop Oil Spillage Clean the area	MANPOWER - Co-ordinators	Fire Fighting Equipment - Extinguishers, Foam compound Cars, Jeep, etc. Communication Equipment Mainline Emergency Equipment
Fire in the pump station	Ignition – Short Circuit, Static Electricity Generation, Spark from Engine Exhaust External Source of Ignition Lightening	Damage to Equipment and / or Structure Injuries	Extinguish Fire Cooling of neighboring equipment	MANPOWER – Coordinators, Fire Fighting Crew, Police	Fire Fighting Equipment – Extinguishers, Foam Compound, Fire Tender Cars, Jeep, etc. Communication Equipment Mainline Emergency Equipment Ambulance



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Leak and fire in the pump station	Corrosion Mechanical Failure Operational Failure Third Party Activity - Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.) External Source of Ignition - Short Circuit, Static Electricity Generation, Spark from engine exhaust Lightning	Oil Spillage Fire Damage to Equipment and/or Structure Injuries	Stop Oil Spillage Extinguish Fire Clean the area Cooling of the Neighboring Equipment	MANPOWER - Co-Ordinator's, Fire Fighting Crew Police Home Guards / District / P.W.D. Authorities	Fire Fighting Equipment: Fire Tender, Fire Extinguishers, Foam Compounds Water Sources Cars, Jeeps Communication Equipment - Portable Radio Set, Antenna, Bamboo etc. Tint, Chairs Portable Generators, Cables, Bulbs Bamboo etc. Mainline Emergency Equipment
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Burst, fire & explosion in the pump station	Corrosion Mechanical Failure Operational Failure Third Party Activity - Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.) External Source of Ignition – Short Circuit, Static Electricity Generation, Spark from engine exhaust Lightning	Oil Spillage Fire Explosion (Confined or Unconfined) Damage to Equipment and/or Structure Injuries	Stop Oil Spillage Extinguish Fire Clean the area/Contain spread of oil Evacuate People Cooling of the Neighboring Equipment	MANPOWER - Co-ordinators, Fire Fighting Crew Police Home Guards / District / P.W.D. Authorities Supervisory / Non-supervisory Personnel from Base & other stations. Supervisory / Non-supervisory Personnel from Mutual Aid Partners and Neighboring Industries	Fire Fighting Equipment: Fire Tender, Fire Extinguishers, Foam Compounds Water Sources Equipments for constructing the bunds to contain spread of oil – Pick Axe, shovel, buckets Equipments for recovery of oil – Mugs, Buckets, Barrels, Pneumatic Pumps, Hoses etc. Tank trucks for transportation of recovered oil. Cars, Jeeps Communication Equipment - Portable Radio Set, Antenna, Bamboo etc. Tint, Chairs Portable Generators, Cables, Bulbs Bamboo etc. Mainline Emergency Equipment Ambulance
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 IndianOil	EMERGENCY RESPONSE AND DISASTER MANAGEMENT PLAN - 2025
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Leak of pipeline in open field	Corrosion Mechanical Failure Operational Failure Third Party Activity - Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.), Damage to the pipeline due to the construction activity in the vicinity of the pipeline Damage due to Natural Calamities – Breaches due to floods, Earthquake, Cyclone	Oil Spillage Fire Explosion (Confined or Unconfined) Damage to Equipment and/or Structure Injuries	Stop Oil Spillage Prevent Ignition Clean the area/Contain spread of oil Evacuate People	MANPOWER - Co-ordinators, Fire Fighting Crew Home Guards Labors	Fire Fighting Equipment: Fire Tender, Fire Extinguishers, Foam Compounds Water Sources Cars, Jeeps Communication Equipment - Portable Radio Set, Antenna, Bamboo etc. Mainline Emergency Equipment Ambulance
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Leak of pipeline in populated area	Corrosion Mechanical Failure Operational Failure Third Party Activity - Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.), Damage to the pipeline due to the construction activity in the vicinity of the pipeline Damage due to Natural Calamities – Breaches due to floods, Earthquake, Cyclone.	Oil Spillage Water Pollution Damage to Equipment and/or Structure Injuries	Stop Oil Spillage Spray Oil Dispersant Clean the area/Contain spread of oil Evacuate People, if necessary	MANPOWER - Co-ordinators, Fire Fighting Crew (Fire Brigade) Home Guards District Authorities Labors	Fire Fighting Equipment: Fire Tender, Fire Extinguishers, Foam Compounds Water Sources Cars, Jeeps Communication Equipment - Portable Radio Set, Antenna, Bamboo, Mobile Public Address System etc. Mainline Emergency Equipment Ambulance
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Scenario	Causes	Consequences	Emergency Response & Management	Mobilization required	Equipments
Leak of pipeline in canal/river crossings, arial crossing and rail/road bridges	Corrosion Mechanical Failure Operational Failure Third Party Activity - Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.), Damage to the pipeline due to the construction activity in the vicinity of the pipeline Damage due to Natural Calamities – Breaches due to floods, Earthquake, Cyclone, Washouts	Oil Spillage Water Pollution Damage to Equipment and/or Structure Injuries	Take Shut down of the affected pipeline Stop Oil Spillage Prevent Ignition Inform senior management Immediately inform to police, local fire brigade, Irrigation /PWD/Railway/District Environment and Pollution Control Board Authorities Rush to site with required tools and tackles Cordon off spill site Contact vendors that specializes in oil spillage Use appropriate Personal Protection Equipment Spray Oil Dispersant Clean the area/Contain	MANPOWER - Co-ordinators, Fire Fighting Crew (Fire Brigade) Home Guards Police District/PWD/Irrigation Authorities Labors Under water services professionals, other vendors	Fire Fighting Equipment: Fire Tender, Fire Extinguishers, Foam Compounds, Fire Tender Water Sources Oil Tankers, Cars, Jeeps Communication Equipment - Portable Radio Set, Antenna, Bamboo, Mobile Public Address System etc. Coffer dam material Drums, boats, lifting equipment etc. Mainline Emergency Equipment Ambulance Copy of EMP, DMP, Emergency Phone Numbers etc.



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Scenario	Causes	Consequences	Emergency Response & Management	Mobilization required	Equipments
Leak, fire & burst of pipeline in canal/river crossings, Arial crossing and rail/road bridges	Corrosion Mechanical Failure Operational Failure Third Party Activity - Damage to the installation with malicious intentions of the third party (Attempt of pilferage, riots etc.), Damage to the pipeline due to the construction activity in the vicinity of the pipeline Damage due to Natural Calamities – Breaches due to floods, Earthquake, Cyclone, Washouts External Source of Ignition – Short Circuit, Static Electricity Generation, Spark from engine exhaust Lightening	Oil Spillage Fire Water Pollution Damage to Equipment and/or Structure Injuries	Take Shut down of the affected pipeline Stop Oil Spillage Extinguish fire Inform senior management Immediately inform to police, local fire brigade, irrigation/PWD/Railway /District/Environment and Pollution Control Board Authorities Rush to site with required tools and tackles Cordon off spill site Contact vendors that specializes in oil spillage.	MANPOWER - Co-Ordinator's, Fire Fighting Crew (Fire Brigade) Home Guards Police District/PWD/Irrigation Authorities Labors Under water services professionals, other vendors	Fire Fighting Equipment: Fire Tender, Fire Extinguishers, Foam Compounds, Fire Tender Water Sources Oil Tankers, Cars, Jeeps Communication Equipment - Portable Radio Set, Antenna, Bamboo, Mobile Public Address System etc. Coffer dam material Sandbags Drums, boats, lifting equipment etc. Mainline Emergency Equipment Ambulance Copy of EMP, DMP, Emergency Phone Numbers etc.



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13.3. ZONING AND MAPS

An overall plot plan of facility is given in annexure -02.

Wind speed and directions are recorded with the help of anemometer and declarations of off-site emergencies are immediately communicated to DDMA

Table 18 Wind data of Sidhpur

Direction/ Wind speed	0	>0.3	>1.4	>3.33	>5.27	>7.77	>10.8	>13.9	>17
N	0.06	1.39	3.77	0.15	0.00	0.00	0.00	0.00	0.00
NNE	0.03	1.19	5.54	0.75	0.03	0.00	0.00	0.00	0.00
NE	0.01	0.95	4.79	2.60	0.37	0.00	0.00	0.00	0.00
ENE	0.06	0.99	2.04	1.64	0.41	0.01	0.00	0.00	0.00
E	0.00	0.40	0.62	0.32	0.05	0.00	0.00	0.00	0.00
ESE	0.03	0.40	0.33	0.10	0.01	0.00	0.00	0.00	0.00
SE	0.01	0.29	0.30	0.08	0.02	0.00	0.00	0.00	0.00
SSE	0.00	0.29	0.55	0.27	0.07	0.01	0.00	0.00	0.00
S	0.10	0.65	2.12	2.74	1.29	0.06	0.00	0.00	0.00
SSW	0.01	0.55	3.21	5.63	2.47	0.13	0.00	0.00	0.00
SW	0.03	0.79	4.46	5.86	2.74	0.13	0.00	0.00	0.00
WSW	0.00	0.65	3.58	4.62	1.96	0.09	0.00	0.00	0.00
W	0.05	1.14	4.24	3.20	1.27	0.03	0.00	0.00	0.00
WNW	0.01	0.78	3.39	1.72	0.45	0.00	0.00	0.00	0.00
NW	0.05	1.05	3.28	0.73	0.15	0.00	0.00	0.00	0.00
NNW	0.00	0.87	2.72	0.21	0.01	0.00	0.00	0.00	0.00

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13.4. LAYOUT/FLOW DIAGRAM -

Detailed layout and flow diagram for different activities such as Product Lines, filling system, isolation valves etc. should be detailed. The important control valves should be highlighted.

The layout facility details are enclosed in Annexure no. 02. Emergency Control Systems are given in section Resource mobilization (Regulation 11.2) Hazardous area classification drawing is displayed at the installation.

These layouts are submitted to District Disaster Management Authority (DDMA) in order to help them in finalizing map of sensitive and vulnerable habitats.

13.5. MANPOWER DATA

The details of manpower deputed on shift basis are given in order to assess the requirement in case of emergency. These are given in Schedule – IV.

Note: Check points on ERDMP response measures are given at Check list- 4.



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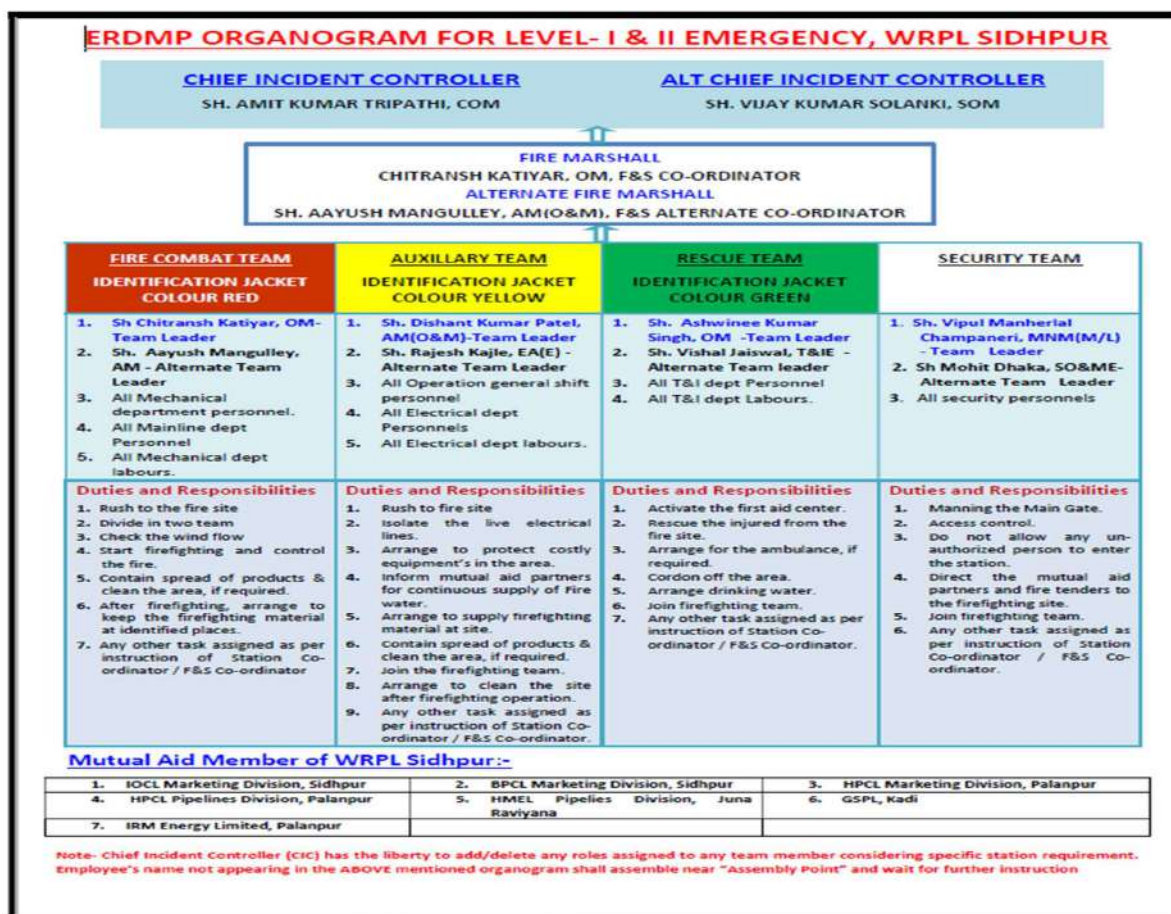
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14. EMERGENCY ORGANIZATION AND RESPONSIBILITIES (REGULATION 14)

Emergency organization chart, Roles and Responsibilities are attached below.

ERDMP Organogram for Level 1, Level 2 & Level 3 Emergency as per PNGRB is given below –



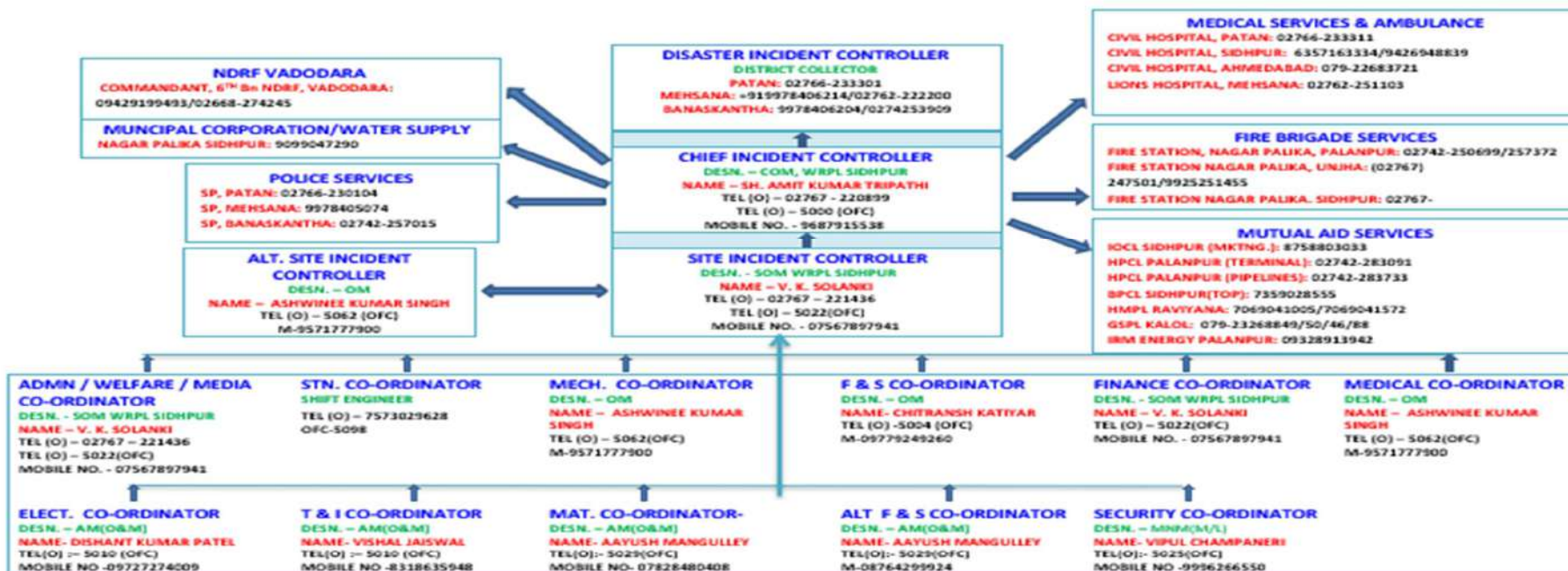


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ERDMP ORGANOGRAM FOR LEVEL-III TYPE EMERGENCY (DISASTER) AT WRPL SIDHPUR INVOLVING DISTRICT AUTHORITIES





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14.1 RESPONSIBILITIES ASSIGNED

Chief Incident Controller (Regulation 14.2.1)

The Chief Incident Controller (CIC) shall have overall responsibility to protect personnel, site facilities, and the public before, during, and after an emergency or disaster. The CIC shall be present at the main emergency control center for counsel and overall guidance.

Responsibilities of the Chief Incident Controller shall include but not limited to the following: -

- a) Preparation, review and updating of the ERDMP as per Check List-5;
- b) Assessment of situation and declaration of emergency;
- c) Mobilisation of main coordinators and key personnel;
- d) Activation Emergency Control Centre;
- e) Taking decision on seeking assistance from mutual aid members and external agencies like Police, Fire Brigade, Hospitals etc.in Consultation with SIC.
- f) Continuous review of situation and decide on appropriate response strategy;
- g) Taking stock of casualties and ensure timely medical attention;
- h) Ensuring correct accounting and position of personnel after the emergency;
- i) Ordering evacuation of personnel as and when necessary;

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- j) Taking decision in consultation with District Authorities when an Off-site emergency to be declared.

SITE INCIDENT CONTROLLER (SIC) (REGULATION 14.2.2)

The Site Incident Controller shall be identified by the Site Incident Controller and will report directly to him. SIC should be nominated by in each shift 24 hrs.

Responsibilities of the Site Incident Controller shall include but not limited to the following:-

- The SIC shall maintain a workable emergency control plan, establish emergency control centers, organize and equip the organization with ERDMP and train the personnel;
- The SIC shall be empowering of taking quick decisions and take full charge;
- The SIC shall communicate to the Emergency Control Centre where it can coordinate activities among groups;
- The CIC or SIC shall be responsible for ensuring that appropriate local and national government authorities for notification, preparation of media statements, obtaining approval from the CIC if applicable and releasing such statements once approval received;

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- e) The SIC shall also ensure the response to the incidents or the emergencies, as the case may be, is in line with entity procedures, coordinating business continuity or recovery plan from the incident. SIC must ensure next of kin are notified in a timely manner;
- f) The SIC shall also co-ordinate if any specialist support is required for the above purpose; and
- g) The SIC shall decide on seeking assistance of mutual aid members and external agencies like police, fire brigade, hospital etc.
- h) The SIC shall ensure that all personnel of emergency response team are trained for assigned roles during emergency,

ADMINISTRATION AND COMMUNICATION COORDINATOR (REGULATION 14.2.3)

Responsibilities of the administration and communication coordinator shall include the following,

- a) To coordinate with mutual aid members and other external agencies;
- b) To direct them on arrival of external agencies to respective coordinators at desired locations;
- c) To activate the medical centre and render first aid to the injured. arrange ambulance and coordination with hospitals for prompt medical attention to casualties;
- d) To ensure head counts at assembly points;

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- e) To arrange procurement of spares for firefighting and additional medicines and drugs;
- f) To mobilize transport to various teams for facilitating the response measures;
- g) To monitor entry and exit of personnel into and out of premises;
- h) To ensure only authorized personnel enter into the premises;
- i) To regulate the flow of traffic into and out of premises and control the mob outside, if any, with the assistance of the police.
- j) To provide administrative and logistics assistance to various teams; and
- k) To arrange evacuation as directed by the chief incident controller, and in coordination with the civil authorities like police, panchayat/municipal authorities etc.

FIRE SAFETY COORDINATOR AND FIRE TEAM (REGULATION 14.2.4)

Responsibilities of the Fire and Safety Coordinator shall include the following: -

- a) To activate emergency sirens as per the practiced codes;
- b) To take charge of all firefighting and rescue operations and safety matters;
- c) To ensure that key personnel are called in and to release crew of firefighting operations as per emergency procedure;
- d) Assess functioning of his team and communicate with the CIC

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- and or administrative controller for any replenishment or, replacement of manpower or firefighting equipment;
- e) Guide the fire brigade personnel and mutual aid members to their desired roles as also proper positioning of the manpower and equipment;
 - f) To decide the requirement of mutual aid and instruct fire station, who, in turn will contact mutual aid members;
 - g) To coordinate with external fire brigades for properly coordinated firefighting operation;
 - h) To ensure that casualties are promptly sent to first aid center / hospital;
 - i) To ensure empty and loaded vehicles are removed to safer area to the extent possible so as not to affect emergency handling operations;
 - j) Continually liaise with the SIC and or CIC and implement the emergency combat strategies as communicated by him; and
 - k) Ensure adequate fire water pressure in the mains and monitor water level in the reservoir.
 - l) to advise CIC on mobilization of mutual aid and to arrange requirement of additional firefighting resources including help from mutual aid members



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OPERATIONS AND TECHNICAL COORDINATOR (REGULATION 14.2.5.4)

1. On hearing the shout/siren, report to the site of fire and provide hoses, nozzles, branch pipes and portable foam trolleys to the firefighting team.
2. Ensure the start of Fire Water Pumps one by one as per the requirement and as advised by fire chief.
3. Coordinate smooth removal of loaded T/Ls .
4. In case filled/ half-filled tank lorries are to be removed outside the depot premises, on instruction of fire chief, he will get into the first tank lorry and ask one of the security staff to get into the last tank lorry and take the caravan to safe place and stay with it till further instructions from fire chief.
5. Others will carry hose pipes/foam / nozzles to fire combat team.
6. Arrange for food and refreshments.

SECURITY COORDINATOR (REGULATION 14.2.5.6)

The Security Coordinator reports to the Chief / Site Incident Controller and is responsible for security of the installation during any incident or emergency situation and for implementing the actions below:

- (a) Obtaining an approved visitor list from the security department or reception for ensuring that personnel on the list are escorted to

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reception by security staff;

(b) Maintaining security of the office in the event of an office evacuation;

(c) Providing office security and assisting authorities in the event of civil unrest or when required organising additional security at the emergency scene;

(d) Obtaining initial briefing from Chief / Site Incident Controller and providing security information and or status reports to Site Incident Controller during the emergency;

(e) Assuming responsibility for any task delegated by Chief Incident Controller

(f) Assessing the emergency, identify security specific problems and recommend solutions to Chief Incident Controller.

MAINTENANCE OF ERDMP RECORDS (REGULATION 14.2.5.7 (A))

There shall be maintenance of ERDMP records for all kind of emergencies covering near Miss, Level-I, Level-II and Level-III. Organisation shall maintain an Incident Record Register for the above purpose and post-disaster documentation like resources deployed, relief, rehabilitation measures and lesson learned to avoid re-occurrence of any such emergency. Head of HSE or any other designated personnel by the CIC/SIC shall be responsible for maintenance of such records.



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1. A good public relations program is extremely important in an emergency situation. Inquiries will normally be received from the media, government agencies, local organizations and the general public.
2. This section of the Response Plan shall include a public relations or media plan. It should identify an Information Officer that is well-equipped and trained in media relations.

Initial releases shall be restricted to statements of facts such as the name of the installation involved, type and quantity of spill, time of spill, and countermeasure actions being taken. All facts must be stated clearly and consistently to everyone.

RECORDER (REGULATION 14.2.5.7 (B))

The Recorder responsibility is to maintain an accurate time record of key information received from the incident or emergency location and to record the actions initiated by the site incident controller and for implementing the emergency response actions below:

- a) To record key incident events/actions on incident status board/display manually or electronically;
- b) To maintain essential equipment checklist status;
- c) To ensure all status and information is up to date and correctly displayed;
- d) To take all necessary recorded material to the alternate ECC room in the event of emergency in main ECC room; and
- e) To maintain a log book.



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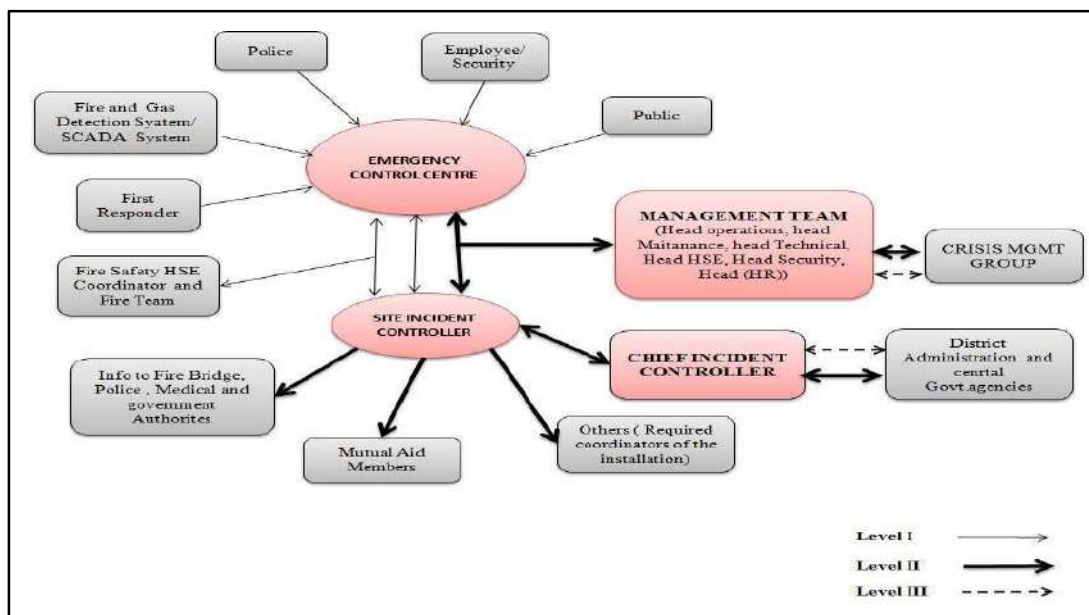


Figure 14 - Typical communication flow chart for notification of emergency

COMMUNICATIONS SERVICES (REGULATION 14.2.5.8)

- (1) The communications Coordinator shall ensure the following actions below:
 - (a) Ensuring the ECC equipment and systems are maintained to a high standard and remain functional throughout the emergency.
 - (b) Ensuring a back-up communication system is available in the event of the ECC Room is not available.
 - (c) Providing quality and diverse communication systems for use in routine and emergency situations.

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2) Wherever communication exists for any level of emergency, it automatically implies that the communication exists for all higher levels of emergencies.

FLOW OF INFORMATION

- (a) Control Centre shall receive the information from field either in person or from the various systems available in the installation.
- (b) On receipt of information, the control room shift In-charge will actuate the ERDMP and notify the emergency to site incident controller.
- (c) Control room shift in-charge will act as site incident controller till arrival of designated person.
- (d) SIC or CIC depending upon the level of emergency will actuate the ERDMP and inform the concerned authorities as depicted above in the chart.

14.2 SIREN CODES (REGULATION NO 14.2.5.9)

The Emergency siren/s is located suitably to cover the whole area with the operational control within the installation. These are tested once in a week to keep them in working condition.

Siren codes at Sidhpur Installation are given here below –

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Table 19 Siren Codes for Sidhpur Installation

Type Of Emergency	Siren Code
All clear siren	Straight run siren for two minutes.
Emergency Level 1 & 2	Wailing type siren for two minutes
Emergency Level 3.	Same siren as in the case of Level 2 except that it will be sounded three times with an interval of 60 seconds in between.
Siren testing	Straight run siren for two minutes being tested weekly.

There are one hand operated sirens and two electric sirens in the Sidhpur Pumping Station and both are installed near Control Room.

Schematic for Siren Code at IOCL WRPL SIDHPUR

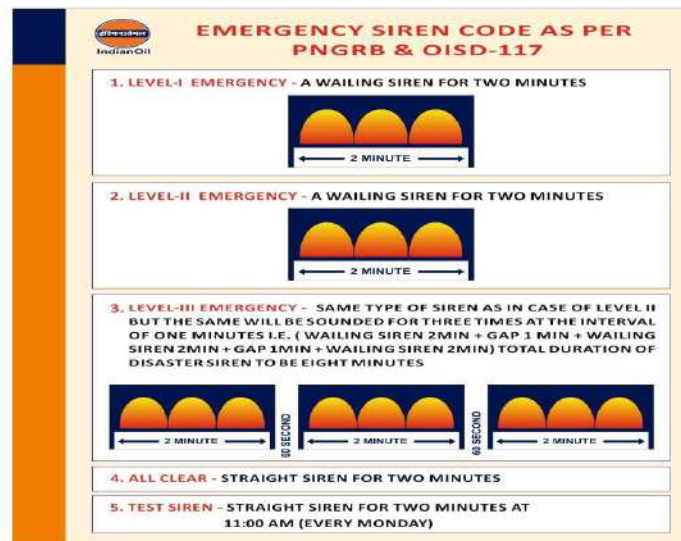


Figure 15 Siren Code Schematic IOCL WRPL SIDHPUR



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15. INFRASTRUCTURE REQUIREMENTS (REGULATION 15)

15.1 EMERGENCY CONTROL CENTER (ECC) (REGULATION 15.1)

(1) IOCL WRPL Sidhpur Installation has defined ECC as the Control Room- MPPL- KSPL.

Alternate ECC is established near entrance gate.

The ECC is away from potential hazards and provide maximum safety to personnel and equipment. It is located near the security gate and in admin building. All the operations are directed and coordinated from the Emergency Control Centre.

(2) Following certain basic supplies and dedicated equipment are made available at the ECC,

- a) A copy of the ERDMP.
- b) Maps and diagrams showing buildings, roads, underground fire mains, important hazardous material and process lines, drainage trenches, and utilities such as steam, water, natural gas and electricity are required.
- c) Aerial photographs, if possible, and maps showing the site, adjacent industries, the surrounding community, high-ways, rivers, etc.,



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help determine how the disaster may affect the community so that the proper people can be notified, adequate roadblocks established, and the civil authorities advised.

- d) Names, addresses, and telephone numbers of employees.
- e) Names, addresses, and telephone numbers of off-site groups and organizations that might have to be contacted should be available. All telephone lists should be reviewed for accuracy on a scheduled basis and updated, as necessary.
- f) Dedicated and reliable communication equipment should be provided at the ECC. Enough telephones and one fax line to serve the organization for calls both on-and off-the-site. Two-way radio equipment shall be provided to maintain continuity of communications when other means fail and also provides an excellent way of keeping in contact with field activities.
- g) All ECC should have emergency light with power back up and emergency light with DC source so that operations can continue in the event of power failure.
- h) Facilities for recording the sequence of events are provided to assist in investigating causes, evaluating performance, and preparing reports. This can range from a pan board, logbook to a tape recorder with a person assigned to record pertinent information.

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- i) ECC also have dedicated computer with LAN/ internet facility to access the installation data and also it should have the latest and updated soft copies of all standard operating practices (SOP) etc.

15.2 ASSEMBLY POINTS (REGULATION 15.2)

(1) There are pre-designated areas in safe zone, as per consequence of major scenarios where the personnel like workers, staff, contractor workers etc. not involved in emergency operations (as per ERDMP) will assemble in case of an emergency.

(2) Depending on the location of the emergency, the assembly point can vary. For each potential hazardous zone, a specific assembly point are identified and clearly marked on the zones or maps.



(3) The assembly point is clearly marked with directional display board along the route. Route is well lighted with florescent marking.

(4) During an emergency, pre-designated persons will take charge of this point and take the roll call of the people reporting. Provisions are made for assembly points, communication and headcount facilities at assembly points, and personnel to control the movement of assembled employees.



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Assembly point at Sidhpur Installation is Nearby Control room

Also, the site adjacent sign clearly mentions about the assembly point.





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16. DECLARATION OF ONSITE AND OFFSITE EMERGENCY (REGULATION 16)

1. An emergency starts as a small incident which may become a major incident with passage of time. At the initial stages, the emergency organization chart will be put into action. If the incident goes beyond control the on-site emergency plan will be actuated by the chief incident controller at the appropriate stage as considered necessary.
2. During idle shift or holidays, when no operating personnel are present, the security or other trained personnel will combat the incident as per the ERDMP organization chart and at the same time inform various emergency controllers or coordinators for guidance and control the situation.
3. When situation becomes catastrophic and evacuation beyond an installation or site is considered necessary by the chief incident controller, the situation will be handed over to district authority for implementing the offsite emergency plan.
4. The management of emergency henceforth has to be controlled by the district crisis management group under the supervision of the District Collector/DDMA.
5. In addition to preparation of on-site emergency plan, furnishing

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relevant information to the district authorities for the preparation of off-site emergency plan is a statutory responsibility of the occupier of every industry handling hazardous substance

16.1 DECLARATION OF EMERGENCY

Level 1 & 2 Emergency - The Emergency is to be declared by the Chief Incident Controller (CIC).

Level 3 Emergency - The Emergency/disaster is to be declared by District Authority.



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17. RESOURCES FOR CONTROLLING EMERGENCY (REGULATION 17)

(1) To meet all possible emergencies, IOCL has provided a number of systems and resources based on the risk level as identified above in addition to requirements under the Factories Act, 1948 and OISD regulations applicable to the installation.

(2) The available emergency control systems and facilities with Sidhpur Installation are as under -

- a. Fire and gas detection system
- b. Fire protection and Firefighting system (Active and Passive)
- c. Firefighting system as per OISD -117
- d. Sufficient no of PPEs and special equipment
- e. Means of communication like walkie-talkie, phone, VHF
- f. Mutual aid system with nearby industries.
- g. There are other safety management systems as suggested in OISD
- h. Separate emergency exit provided for evacuation
- i. Emergency Shutdown System is available
- j. Ambulance facility available on call basis with Sidhpur civil Hospital

(3) Required resources are suitably incorporated into the plan. Numbers and types are as per the relevant codes, standards and best practices in the industry. This section has also identified sources of local assistance including telephone numbers and names of contacts for,

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- (a) Fire departments
- (b) Police
- (c) Municipal and provincial agencies
- (d) Hospitals
- (e) Doctors
- (f) Other relevant company facilities
- (g) Mutual aid organizations
- (h) Co-operatives
- (i) Surface Transport Services
- (j) All above details are given in annexure 03.
- (k) Safety and monitoring equipment suppliers list given in Vendor list in the report.
- (l) Spill response and/or cleanup services.

(4) IOCL has also determined types of resources such as equipment, personnel, technology, expertise, etc. provided by the respective governments under different conditions.

(5) Check Points for availability of resources - internal/ external are given in Check list-6.



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17.1 FIRE PROTECTION SYSTEM IN THE STATION

The basic philosophy of Fire Protection System design is centred on water as the main fire extinguishing medium. Our system is designed to give the adequate quantity of water at a specified minimum pressure and for an estimated minimum time required for firefighting. Sufficient quantity of water is always available and is pumped at pressure into a fire water piping network throughout the plant. Provision for other fire extinguishing medium such as foam, CO₂, Dry chemical powder etc. have been made at various locations in the station to control / fight the fire at the very initial stage. Siren at different places is also provided to alert the personnel about fire / disaster etc. Various Fire Fighting facilities provided in the plant are based on the accepted requirements stipulated in: OISD-STD-117.

Firefighting equipment details are provided in 11.3

17.1 First Aid Measures

SN	Contents	Requirement	Available	Use
1	Small Size Sterilized Dressing	12	12	Nil
2	Medium Size Sterilized Dressing	06	06	Nil
3	Large Size Sterilized Dressing	06	06	Nil
4	Large size sterilized burn dressing	06	06	Nil
5	15 gm packets of sterilized cotton wool	06	06	Nil
6	120 ml bottle of centrimide solution (1 percent) or a suitable antiseptic solution	01	01	Nil
7	120 ml bottle of mercurochrome solution (2percent) in water	01	01	Nil
8	60 ml bottle containing Sal-volatile having the dose and mode of administration indicated on the label	01	01	Nil



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9	Scissors	02	02	Nil
10	Adhesive Plaster (2cmx 1 Mtr)	02	02	Nil
11	Sterilized Eye Pads in Separate Sealed Packets One dozen safety pins	08	08	Nil
12	Bottle containing 100 tablets (each of 5 grains) of aspirin or any other analgesic	01	02	Nil
13	Polythene wash bottle (1/2 litre i.e 500 c.c) for washing eyes	01	02	Nil
14	Snake Bite Lancet	01	01	Nil
15	(30 ml) bottle containing potassium permanganate crystals	01	01	Nil
16	Wooden Stick for Immobilization	02	03	Nil



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18.DEMOGRAPHIC INFORMATION (REGULATION 18)

ERDMP has been prepared based on the following information: -

(a) Total population (within 5 Km)

Sr. No.	Population Category	Population (within 5 km)
1	Residential	50000
2	Industrial (Nearby Industries)	05
3	Industrial (Construction Workers)	>1500
4	Industrial (Control Rooms)	05

(b) Housing colonies of industries.

(c) Sensitive institutions such as schools, hospitals, religious establishments and old aged homes, etc.; Hospitals and schools nearby are shown in the maps below.

(d) Cattle and livestock

(e) Flora and fauna; It is mainly an industrial belt

NEIGHBORING DETAILS

Sidhpur MPPL Pumping Station is spread over an area of 64000 sq metre in village Sujanpur at about 4 Km from Sidhpur city in Patan District and was commissioned in October 1997.



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North: BPCL Sidhpur TOP
East: IOCL Sidhpur Marketing TOP
West: Road /Gokul Engineering College
South: IOCL Sidhpur Marketing TOP

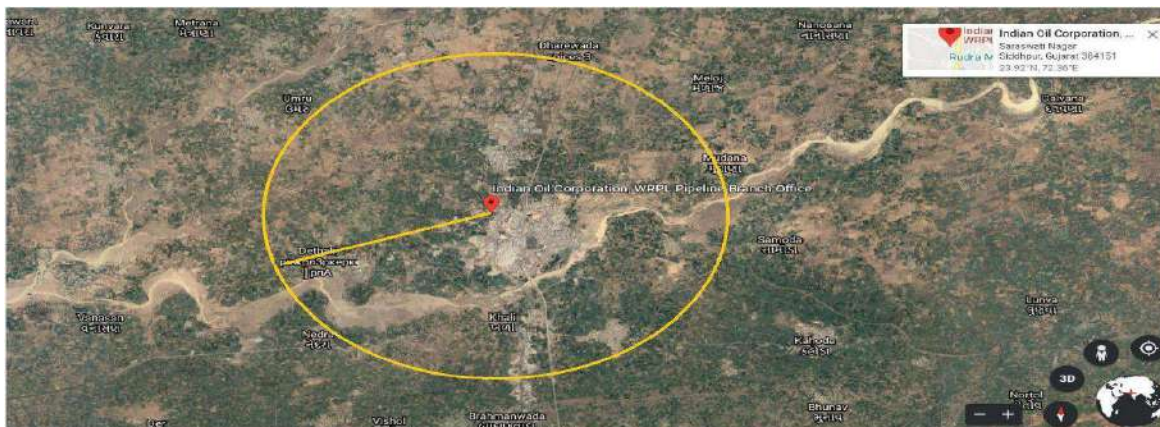


Figure 16 IOCL WRPL Sidhpur Installation 5 Km Area

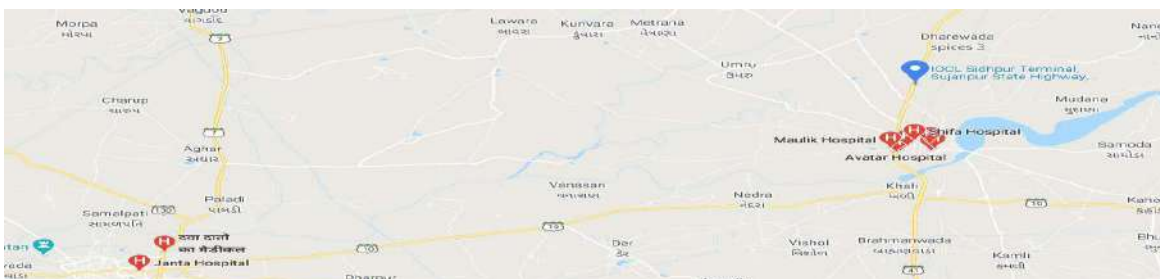


Figure 17 Hospitals near IOCL WRPL Sidhpur Installation



Figure 18 Schools and Colleges near IOCL WRPL Sidhpur Installation



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19.MEDICAL FACILITIES (REGULATION 19)

Following medical facilities are available at Sidhpur MPPL Pumping Station:

(a) Details of trained persons in first aid in the plant, Name of trained personnel given below – Twenty-Two employees/contract Workers are trained in First-Aid.

ST. JOHN AMBULANCE (INDIA)

Details of first aider at WRPL Sidhpur					
Sr. No	Name of Person	Sex (M/F)	Age	Mobile Number	E-mail
1	VIJAYKUMAR KANTILAL SOLANKI	M	57	7567897941	SOLNKI@INDIANOIL.IN
2	AMIT KUMAR TRIPATHI	M	44	9687915538	TRIPATHIAK@INDIANOIL.IN
3	ASHWINEE KUMAR SINGH	M	35	9571777900	ASHWINEES@INDIANOIL.IN
4	VIPUL MANHERLAL CHAMPANERI	M	50	9996266550	VIPULC@INDIANOIL.IN
5	DISHANTKUMAR PATEL	M	30	9727274009	PATELDK2@INDIANOIL.IN
6	AAYUSH MANGULLEY	M	28	7828480408	MANGULLEYA@INDIANOIL.IN
7	CHITRANSH KATIYAR	M	30	9779249260	KATIYARCH@INDIANOIL.IN
8	MOHIT DHAKA	M	26	8764299924	dhakam@indianoil.in
9	KANAIYALAL BABUBHAISOLANKI	M	48	9428043776	SOLANKI2@INDIANOIL.IN
10	RAJESH KAJLE	M	25	7999570232	
11	SIKANDARKHAN PIROJKHAN BHATI	M	54	9727333752	
12	DINESHBHAI GANESHBHAI MAKVANA	M	45	7990065094	
13	JAYANTIBHAI BABUBHAI SENMA	M	49	8758181774	
14	SURESHJI GAMAJI THAKOR	M	33	7984056980	
15	MAHESH VIHABHAI RABARI	M	24	6352653390	
16	RAHULKUMAR CHIMANLAL PARMAR	M	34	9265122577	
17	HARSHADBHAI DAHYABHAI SOLANKI	M	40	9904846792	
18	SANJAYKUMAR PRAHLADBHAI MAKVANA	M	23	9725554442	
19	ANIL KUMAR PRAJAPATI	M	47	8498829129	
20	HIMANSHUKUMAR HARGOVANBHAI SOLANKI	M	37	9904846792	
21	MALIBHAI REVABHAI RABARI	M	35	9067316751	
22	AJAYKUMAR REVABHAI MAKVANA	M	25	8980028946	

(b) Tie –up is made with local hospitals



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SN	Hospital Name	Contact number	Total number of beds	Emergency ward beds	Bur n ward	Ambulance
1	Sonam Hospital, Sidhpur	223332	18	2	1	-
2	Bhanu Orthopaedic Hospital, Sidhpur	225999	15	2	-	1 (Contact no.- 9879540397)
3	Civil Hospital, Sidhpur	6357163334/9426948839	150	20	1	3
4	Lions Hospital, Mehsana	02762-251103	300	5	1	4
5	Civil Hospital, Ahmedabad	079-22683721	2100	150	2	8

(c) First Aid boxes is placed in Control room and at every SV/RC Station as per factory act.

(d) Details of specialist doctors in the town –

SN	Doctor's Name	Hospital's Name	Contact Number(s)
1	Regional Medical officer (RMO)	Civil Hospital	6357163334/9426948839
2	Dr. Nishith B Ajani	Ajani Hospital	220530/9228148470
3	Dr. M. U. Sengar	Shifa Hospital	H - 8141621010 Dr.9925990109
4	Dr. Ramesh H Patel	Maulik Hospital	220035/9409996435/9825329935
5	Dr. Chirag Gohil	Navkar Eye hospital	9104104371



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20. EVACUATION (REGULATION 20)

20.0 Evacuation

- (1) Planning and training on evacuation techniques are important in preventing injuries. Evacuation of local communities or people near the site may be prudent depending on the situation and down-wind dispersion information etc. Although this action will normally be initiated and handled by district authorities, the affected installation shall help to implement such evacuation.
- (2) This evacuation plan shall also consider:
 - (a) basis for recommending on-site or off-site actions
 - (b) authorize person for area or site evacuation
 - (c) mode of communication
 - (d) training in locating exits from buildings, areas and the site
 - (e) location of escape equipment
 - (f) provisions for flashlights or other supplemental lighting
 - (g) which areas can function as safe area
 - (h) moving crosswind from gas or fume releases, etc.
 - (i) provision of food and drinking water at assembly point and transfer point.
- (3) Vehicle with Public Address System or Portable PA system or Mega Phone as per requirement of the installation should be available for announcement in case of emergency.



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If a major industrial accident does occur, the general public in surrounding areas will have very little time to react and save themselves. The local population will have to be warned in a very short period. Time available to population for a safe escape and threatened by the accident will depend on the nature of accident. A fire will give more time to escape and generally area affected will be small. Effects of a fire on population will be injuries due to thermal radiation. An explosion will give little time to warn population and area affected may be much larger than that in case of a fire. Effects of an explosion on the population will be injuries caused by shock wave, flying debris collapsing structures as well as exposure to thermal radiation.

For Inside Battery Area

The entry of contract personnel working inside the battery area is through Main Gate only. In case of emergency / major accident / disaster, assembly points have been identified and marked in the station area for assembling of people for head counting / transportation to a safe place.

For Outside Battery Area

Evacuation of the population effected villages / other places outside the battery area depending on the emergency and provision of temporary shelter and supplies (in the relief camp) will be under the overall control of the District Administration.



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Periodic Assessment

Incident Controller (Chief Co - Ordinator), will carry out periodic assessment of the actual disaster zone and resources deployment and status report of the same will be given to Sidhpur administration.

Actions by General Population

On being warned of a major industrial accident general public should take the following actions:

1. Immediately go outdoors
2. Extinguish all flames
3. Keep torches handy. Store water for emergency use
4. Do not jam emergency phone lines by calling emergency services
5. Wait for further instructions from emergency services before moving out

Evacuation

In major disaster, it may become necessary to evacuate people from and around the area likely to be affected by accident. Sometimes, the evacuation may have to be made to safe places within the complex area itself. At other times, however, especially in cases of catastrophic disaster, it will be necessary to shift the entire population outside the complex area to certain pre-designated places fixed in advance. The task may be difficult as there will

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be no notice or very short notice of a calamity, there may be failure of electricity, there may be shortage of manpower resources etc.

Requisitioning of Buses / Trucks

Local Police station in-charge under the respective station will be the Commander-in-Charge of evacuation under the direction of respective Superintendent of police. He will determine the extent of evacuation necessary in view of the likely hazards of disaster. Once this is decided upon, the next job would be to effect necessary evacuation as quickly as possible. Whether evacuation is internal in the complex area itself or external, transport facilities would be a major requirement.

For ordering evacuation, it will be necessary to fix up pick-up points in different areas in advance so that residents would know where exactly to board the buses. The buses / trucks will be lined up at these points for shifting people to safe places.

The entire area to be evacuated should be divided into convenient sectors and each sector should be placed in charge of a senior officer, whose duty it would be to ensure that all persons from this sector are compulsorily shifted. Help of security / police staff should also be taken in achieving this task, if considered necessary.

Repeated announcements should be made over mobile-vans, fitted with mikes, directing people to evacuate immediately and board buses / trucks at

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pick up points. Staff who would be employed for supervising arrangements at pick up points should be earmarked in advance. The routes by which evacuation will be made from different areas will be fixed in advance. The drivers of buses / trucks will be informed about their routes and also about their destinations where the residents are to be off-loaded. In the case of shifting to city, the Chairman of Municipality should be informed for keeping the places of accommodation ready to receive evacuated persons and also to make other arrangements.

Sheltering of shifted people will be taken care of by DC.

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21.PUBLIC RELATIONS AND INFORMATION TO PUBLIC (REGULATION 21)

21.0 INFORMATION TO PUBLIC

- (1) The safety measures to be taken in the event of an emergency shall be made known to the general public who are likely to be affected.

- (2) Display boards containing do's and don'ts should be located outside the gate as well as in the neighbouring colonies and other habitat areas in the immediate vicinity.



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The safety measures to be taken in the event of an emergency are made known to the general public who are likely to be affected. Also emergency gate is provided to safely evacuate during any type of emergency. Signages for marking/public awareness are displayed.



For internal public which is security guards/ employees or visitors, Do and don't to be followed which are given in section "Do's & Don'ts for Sidhpur Installation". In case of offsite emergency following authority will be called

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with the help of District Disaster Management Centre and they will render the help. The role and responsibility of this agency is written below.

The safety measures to be taken in the event of an emergency are made known to the general public who are likely to be affected. The installation is located outside Sidhpur city.

Whosoever will notice any situation as per the scenarios discussed in Chapter-6, he will immediately inform to Station Control Room / nearest Control Room / supervisor by means of telephone or nearest alarm point or personally. Officer of Station Control room, after seeing the magnitude of the situation, will blow Major Fire Siren. Accordingly, a Wailing Siren for Two minutes will be blown by Station Control Room and emergency will be controlled by the teams as per organogram.

If the Fire Fighting crew is not capable of controlling the situation, after assessing the situation, the Incident Controller of the station will declare the disaster i.e. level 3 disaster.

- a. Station Control Room operator will blow three wailing sirens of 2 minutes each with a time lag of 60 seconds between each siren to make the disaster known to the key personnel and employees of the pipeline as well.
- b. The information about the disaster to key personnel will also be

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given on telephone by Station Control Room

Public Awareness System

For disclosure of information to the public pipeline division has developed pamphlets. The same is being given to villager in the form of a brief write up for further propagation in their villages. Many programs are conducted in villages through corporate social responsibility programs and various developments schemes are implemented. To avoid any panic, it is been considered that the necessary announcement will be made in nearby villages releasing the information to the tune of requirement only. The Welfare & Media Co-ordinator of the pipeline is the only authorized person for giving the information to be public & to serve as the Liaison Officer.

The Use of Electronic Media

For bringing the awareness among the external public at large, the use of electronic media like TV, Air & Press coverage is used. The Welfare & Media co-ordinator of the pipeline prepares the Press release to be issued for the local press & other important dailies.

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22. ROLES AND RESPONSIBILITIES OF STAKEHOLDERS INCLUDING EXTERNAL AGENCIES (REGULATION 22)

- 1) Role and responsibilities of stakeholders including external agencies such as District Authority, police, fire service, revenue department, health department, pollution control board, National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF).
- 2) For roles and responsibilities of above stakeholders and responders, primarily Municipal Commissioner of Sidhpur Municipal Corporation as Head of emergency operation and other authorities under his charge including external agencies, has been defined in Schedule-V. These roles and responsibilities are generally in line with National Disaster Management Guidelines on Chemical Disasters, April, 2007, brought out by National Disaster Management Authority.

Important Roles and Responsibilities of Various Stakeholders

1. Oil and Gas Installations and Areas (Mentioned in Regulation 3).
2. The above-mentioned Installation in Regulation 3 provides necessary information to Mutual Aid Association, District Emergency Authority, Police and Fire Services.



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- a. List of Hazardous Chemical and Systems which have potential to cause danger to Human, Environment and Property.
- b. On-Site Emergency Plan and Periodic Mock Drill.
3. The above entities support authorities in mitigation, rescue and rehabilitation, with resources identified and agreed with the authorities in advance. Such areas are included in Off-Site Emergency Plans
4. **The district authority** is responsible for the Off-Site emergency plan and it is equipped with up-to-date Major Accident Hazard units, website, control room etc., with provisions for monitoring the level of preparedness at all times. Regular meetings of various stakeholders of Chemical Disaster Management will be conducted by district administration/District Disaster Management Authority to review the preparedness of Chemical Disaster Management.
5. **The police** will be an important component of all disaster management plans as they will be associated with investigation of incidents/ disasters. Police take overall charge of the Off-Site situation until the arrival of the district collector or its representative at the scene.
6. **The fire services** are one of the first responders and are adequately trained and equipped to handle chemical emergencies. Fire services are to acquire a thorough knowledge of likely hazards at the incident site and the emergency control measures required to contain it.
7. In a chemical emergency, the revenue department shall coordinate with other agencies for evacuation, establishment of shelters and provision of food, etc.
8. When required for evacuation purposes in a chemical emergency, the department of transport should make transport promptly available.
9. The role of **civil society and private sector** in the Off-Site plan shall be defined.
10. **The health department** needs to assure that all victims get immediate



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medical attention on the site as well as at the hospitals/health-care facility where they are shifted. In addition, the department needs to network all the health-care facilities available in the vicinity for effective management and also take effective measures to prevent the occurrence of any epidemic.

11. Pollution control boards need to ascertain the developing severity of the emergency in accordance with responsive measures by constant monitoring of the environment. If and when an area is fit for entry will depend upon the results of the monitoring. A decontamination operation would be required to be carried out with the help of other agencies and industries.

12. The NDRF and SDRF are the specialized forces to manage these disasters in a longer run according to the severity and nature of the disaster. Their specialized training is an effective measure that needs to be built up and maintained with time for achieving a higher standard of preparedness.

They need to coordinate with other local agencies such as the Central Industrial Security Force that may be responsible for security at the industrial site.

* Role of above External Agencies have been defined in Annexure – E of National Disaster Management Guidelines Chemical Disasters, April, 2007



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23.REPORTING OF THE INCIDENT (REGULATION 23)

- 1) All incidents covered under Minor Incident and Near Misses should be maintained by the entity for inspection in the format as specified in Schedule-VI. _Major' Incident shall be reported to the PNGRB in the format specified and placed at Schedule-VI. The above report should be submitted within 48 hours after occurrence of the incidents. However, First Information Report (FIR) on _Major' Incident shall be intimated to PNGRB through telephone, email or SMS immediately or but not later than 4 hours of occurrence.
- 2) IOCL is having the philosophy that all incidents should be reported timely and investigation should be done. The various incidents are reported through online system to regulatory authority in the time span given by them. IOCL is having following criteria for incident categorization. An incident shall be treated as Major if any of the following occurs;
 - (a) Fire for more than 15 minutes
 - (b) Explosion / blowout
 - (c) Fatal incident
 - (d) Loss above Rs. 20 lakhs
 - (e) Cumulative man hours lost more than 500 hrs
 - (f) Plant shutdown / outage due to the incident



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3) Detailed investigation report of all Major incidents shall be submitted to the Board within 30 days of occurrence along with time bound mitigation plan of recommendations, made during the investigation. In case, any incident subsequently leads to fatality, assessed loss of above Rs. 20 Lac and cumulative man hours lost more than 500 hours. Such incidents shall also be reported as major incidents immediately in prescribed format as placed in schedule-VI.

4) Quarterly report consisting Summary of Major (including detailed Investigation Report) and Minor incidents and Near Misses (only numbers.) shall be sent to the Board within 30 days of the end of every quarter.

SCHEDULE – VI

(Refer Regulation 23.0)

INCIDENT REPORTING FORMAT

1. Organisation		2. Sector	
3. Location		4. Incident Sr. No.	
5. Date of Incident		6. Time of Incident	
7. Major / Minor / Near miss		8. Report - Preliminary / Final	
9. Fire / Incident		10. Duration of fire - Hrs / Min	
11. Type of Incident with loss of life / injury, Fire, Explosion, Blowout, Electrocution, Fall from Height, Inhalation of Gas, Driving, Slip / Trip, Others, NA			
12. Location of Incident (Name of Plant / Unit / Area / Facility / Tank farm / Gantry / Road / Parking area etc)			
13. Whether plant shutdown / caused outage of the facility? Yes / No			
14. Fatalities nos.	a) Employees =	b) Contractor =	c) Others =
15. Injuries nos.	a) Employees =	b) Contractor =	c) Others =
16. Man - hours Lost	a) Employees =	b) Contractor =	c) Others =
17. Direct Loss due to the incident (Rs. In Lacs). Loss to equipment / Machinery as per Insurance claim etc.			
18. Indirect Losses : Through put / Production Loss, etc.			
19. Status of the Facility : Construction / Commissioning / Operation / Shutting down / Turn around, Maintenance / Start up / Any other.			
20. Brief Description of the Incident including post incident measures. (Attach details in separate sheet)			



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21. Whether similar Incident has occurred in past at the same location, If yes, give brief description of the incident and attach details in separate sheet.		
22. Whether Internal Investigation has been completed. If no, likely date by which it will be completed.		
23. Whether internal investigation report (Major Incident) has been submitted to PNGRB. If no, likely date by which it will be submitted.		
24. Cause of the Incident (Tick the most relevant cause preferably one, maximum two)		
A) Deviation from Procedure		I) Not using the PPE
B) Lack of Job Knowledge		J) Equipment failure
C) Lack of supervision		K) Poor design / Layout etc.
D) Improper Inspection		L) Inadequate facility
E) Improper Maintenance. (Mech. / Elec. / Inst)		M) Poor House Keeping
F) Improper material handling		N) Natural Calamity
G) Negligent Driving		O) Pilferage / Sabotage
H) Careless walking / climbing etc.		P) Any other (give details)
25. Cause of leakage - Oil, Gas or Chemical (Tick one only)		
A) Weld leak from equipment / lines		E) Leakage due to improper operation
B) Leak from flange, gland etc.		F) Leak due to improper maintenance
C) Leak from rotary equipment		G) Normal operation - Venting / draining
D) Metallurgical failure		H) Any other
26. Cause of Ignition leading to fire (Tick only one cause)		
A) Near to hot work		F) Static Electricity
B) Near to Furnace / Flare etc.		G) Hammering / Fall of object
C) Auto - ignition		H) Heat due to Friction
D) Loose electrical connection		I) Lightning
E) Near to hot surface		J) Any other (pyrophoric etc)
27. Was the incident Avoidable? (Yes / No)		
28. The incident could have been avoided by the use of / or by ; (Tick the most relevant point preferably one, maximum two)		
A) Better supervision		F) Personal Protective Equipment
B) Adhering to specified operating procedure		G) Better equipment
C) Imparting Training		H) Management Control
D) Giving adequate time to do the activity through proper planning.		I) Adhering to specified maintenance procedure
E) Adhering to the work permit system		J) Adhering to specified Inspection / Testing procedures.
K) Any other information;		



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Guidelines for filling the Incident Report:

1. All Major, Minor and Near miss incidents shall be reported in the quarterly report.
2. Incident Reporting form shall be filled up for all Major, Minor and Near miss Incidents.
3. Summary report shall be enclosed with every quarterly report.
4. Investigations shall be carried out for all Major, Minor and Near miss Incidents.
5. Investigation report of all Major incidents shall be submitted to PNGRB. An incident shall be treated as Major if any of the following occurs;
 - Fire for more than 15 minutes
 - Explosion / Blowout
 - Fatal Incident.
 - Loss above Rs. 20 Lac
 - Cumulative man hours lost more than 500 hrs.
 - Plant Shutdown / Outage due to the incident
6. Loss time Incident shall be monitored till the affected person joins duty. In case the affected person is yet to join the duty, then the status of report submitted will be preliminary. Final report against the same incident shall be sent once he joins duty and the man - hours lost are known.
7. All columns must be filled up.
8. For any additional information use separate sheets as required.
9. Quarterly report shall be sent to PNGRB within 15 to 30 days of end of quarter.
10. Immediate reporting of incident through fax/telephone shall continue as per the prevailing system.

Signature

Name

Designation of the Occupier/Manager



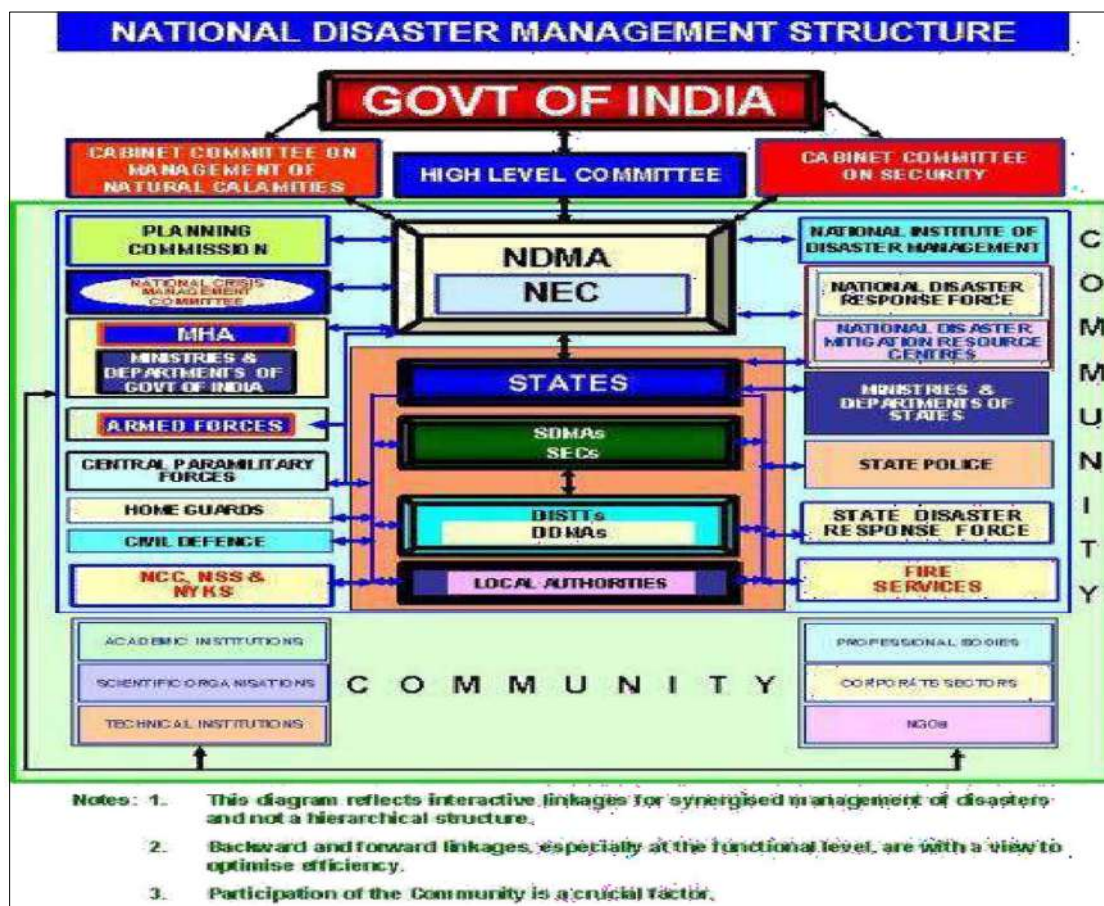
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24.ACTION AFTER REPORTING OF INCIDENT BY ENTITY (REGULATION 24)

1) After reporting of the incidents by IOCL to PNGRB Board, Nodal officer of the Board (DGM HSE RHQ) will have responsibility of informing all the Members of the Board and will coordinate with appropriate level in National Disaster Management Authority (NDMA) till normalization of the situation.





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2) All Major Incidents shall be investigated by the entity through an enquiry committee comprising experts not directly associated with the incident to identify the lapses, shortcomings, establish the causes which establishes the failure and suggest remedial measures to prevent the recurrence of such incident etc. and submit its report to the Board within 30 days of the incident.

3) Following incidents shall also be investigated by such an enquiry committee constituted by the Board, namely: -

- a. Explosion or blast;
- b. Fires involving fatality or major fires;
- c. Pipeline leakages in petroleum, petroleum product or natural gas pipelines as decided by the Board; and
- d. Any other incident as decided by the Board.

4) Terms of reference for the enquiry committee shall include the following namely:

- a. identify the lapses, shortcomings;
- b. establish the root cause of failure;
- c. suggest improvements or remedial measures to prevent the recurrence of such incidents

5) Such enquiry committee shall submit the preliminary report within a week and thereafter, the final report to the Board within 30 days of constitution.

6) The entity shall take necessary measures to prevent the recurrence of such incidents, and forward the action taken report to be the part of the report of such enquiry committee duly vetted by the board of Directors of the entity of the Board.



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25.TERMINATION OF EMERGENCY (REGULATION 25)

1) Termination activities should concentrate on giving accurate information to people who need it most especially employees, neighborhood, District Authorities engaged in offsite emergencies, and should begin as soon as the emergency phase of the operation is completed.

2) The termination of emergency will be declared through siren as per the Siren Code defined by industry in case of Level- I and II. For Level-III termination of emergency will be declared by District Authority through appropriate mode of information transfer so as to reach each and every one.



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26. EMERGENCY RECOVERY PROCEDURES (REGULATION 26)

1) After the emergency at IOCL facility, the following activities need to be carried out in detail.

- a. Information to statutory authorities.
- b. Incident investigation.
- c. Damage assessment.
- d. Salvage of products, de-contamination, clean-up and restoration
- e. A detailed report will be prepared based on the entire experience of the incident, including restorations, limitations and lessons learnt.
- f. Ambient air monitoring at the site as well as 5 km radius of the installation by State Pollution Control Board to determine the contamination level affecting health.

(2) Check points on ERDMP recovery measures as given at Check list-7.

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26.1 INTRODUCTION

Business restoration planning is as important as having an emergency response plan. All the management personnel need to be involved in bringing the operation to normalcy after an emergency situation has occurred. This involves an emergency response planning and follows up.

The station in-charge will be completely responsible for restoration of site.

Job Identified	Executives Responsible for Execution
Retrieval of Data for Enabling Objective Investigation	SIC
Information to Insurance Agencies and Lodging Claims	FM – with management’s approval
Information to District/State Authorities on Casualties Permanent Disabilities	SIC
Individual station Start-up Plan	SIC Station Incharge in consultation with BIC Base incharge & with the approval of the management



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27. EMERGENCY FOR PIPELINES CARRYING PETROLEUM PRODUCTS AND RETAIL OUTLETS (REGULATION 27)

SCHEDULE –VII (REGULATION 27.0)

ERDMP for pipelines carrying petroleum products

Pipelines are assuming importance as a means of transport of hazardous substances. Crude oil, its derivatives and natural gas are among the main substances transported by pipelines.

The Guidelines, therefore, comprise:

- i. Creation and maintaining an administrative framework to facilitate the development of a safe and environmentally sound transportation infrastructure, including pipelines for hazardous substances.
- ii. The pipeline operator has the primary responsibility for the safety of the systems and for taking measures to prevent incidents and to limit their consequences for human health and the environment.
- iii. Pipelines for the transport of hazardous substances will be designed and operated so as to prevent any uncontrolled release into the environment.

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- iv. Risk assessment methods should be used in evaluating pipeline integrity and impact on human health and the environment.
- v. Land-use planning considerations will be taken into account both in the routing of new pipelines (e.g. to limit proximity to populated areas and water catchment areas to the extent possible), and in decisions concerning proposals for new developments/building in the vicinity of existing pipelines.
- vi. Pipeline operators and the authorities responsible for pipelines shall review and, if necessary, develop and implement systems to reduce third- party interference, which is a cause of incident including their effects.
- vii. National legislation shall be clear, enforceable and consistent to facilitate safe transport and international cooperation.
- viii. Competent authorities should ensure that pipeline operators:
 - a. Draw up emergency plans.
 - b. Provide the authorities designated for that purpose with the necessary information to enable them to draw up Off-Site emergency plans.
 - c. Emergency plans shall be coordinated between pipeline operators and competent authorities, as well as with fire brigades and other disaster control units.

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- ix. Pipelines shall be designed, constructed and operated in accordance with recognized national and international codes, standards and guidelines, notified by the Board.
- x. Consideration will be given to the impact on the safety of a pipeline such as design and stress factors, quality of material, wall thickness, and depth of burial, external impact protection, markings, route selection and monitoring.
- xi. The safety of the pipelines shall be demonstrated through a suitable risk assessment procedure including the worst case scenario and including breakdowns and external additional loads.
- xii. The pipeline operator shall draw up a Pipeline Management System (PMS) to ensure that it is properly implemented. The PMS shall be designed to guarantee a high level of protection of human health and the environment. The following issues shall be addressed by the pipeline management system.
 - (a) The pipeline will be inspected and maintained regularly. Only reliable trained staff or qualified contractors may carry out maintenance work on a pipeline. Third party conformatory assessment bodies should inspect the pipeline at regular intervals as far as required by the Board. These inspections are to cover in particular the proper condition of the pipeline and the functioning of the equipment ensuring pipeline safety.
 - (b) Organization ability, roles and responsibilities, identification and evaluation of hazards, operational control, and management of change, planning for emergencies, monitoring performance, audit and review shall be duly addressed in the Pipeline Management System.

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28.ERDMP FOR ROAD TRANSPORTATION (REGULATION 28)

The road transport of Petroleum product has significant presence and needs special attention. However, none of the station transport petroleum product through road and hence ERDMP for this activity is not covered here.

However, certain essential points as per PNGRB guidelines are retained in this ERDMP for awareness purposes.

Resource mobilization for road transport emergency.

Schedule-VIII of road transportation is not applicable for IOCL WRPL Sidhpur.



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29. INTEGRATION OF THE ERDMP WITH THE NATIONAL DISASTER MANAGEMENT PLAN (NDMP) (REGULATION 29)

29.1 NATIONAL DISASTER MANAGEMENT PLAN (NDMP)

1) On 23 December 2005, the Government of India took a definite step towards NDMP by enacting the NDMP ACT, 2005. The NDMP Act, 2005 is a Paradigm Shift from a response and relief-centric approach to a proactive and comprehensive mindset towards NDMP covering all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery.

2) Similar to National Authority at the Centre, the State Government is to establish a State Disaster Management Authority for the State. The State Authority is to be headed by the Chief Minister of the State as the Chairperson. Every State Government, in turn, is to establish a District Disaster Management Authority for every district in the State with the District Collector as the Chairperson.

3) The Central Government is empowered to take further measures as it deems fit for the purpose of disaster management like deployment of naval, military and air forces, other armed forces of the Union or any other civilian personnel as may be required for the purposes of this NDMP Act. Government of India is empowered to establish institutions for research, training, and developmental programmes in the field of disaster management as per this Act.

4) The national vision is to build a safer and disaster resilient India by developing a holistic, proactive, multi-disaster and technology driven strategy for NDMP. This will be achieved through a culture of prevention, mitigation and preparedness to reduce the impact of disasters on people. The entire process



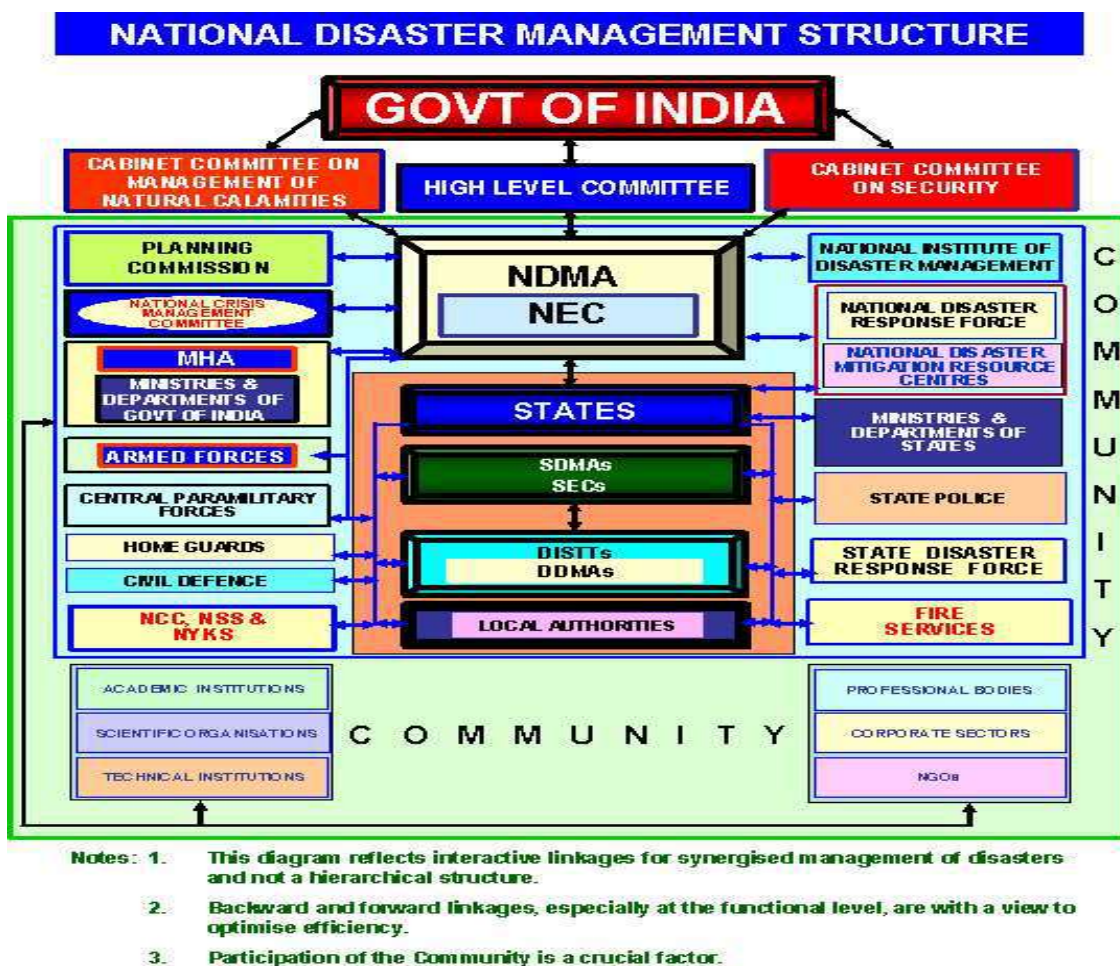
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will centre stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies supported by Non-Governmental Organisations (NGOs).

5) National Disaster management Structure showing the interactive linkage among various agencies for synergised management of disaster is given below;



Note: Since PNGRB has been constituted by PNGRB Act, 2006, it should be identified under Ministries / Departments of Govt. of India.



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Abbreviations for NDMA:

NDMA	:	National Disaster Management Authority
NEC	:	National Executive Committee
DM	:	Disaster Management
NCC	:	National Cadet Corps
NCDM	:	National Committee on Disaster Management
NDMRCs	:	National Disaster Mitigation Resource Centres
NDRF	:	National Disaster Response Force
NSS	:	National Service Scheme
NYK	:	Nehru Yuva Kendra
NGOs	:	Non-Governmental Organisations
SDMA	:	State Disaster Management Authority
SEC	:	State Executive Committee
DDMA	:	District Disaster Management Authority

In case of Level-III incident, DDMC will be also informed by IOCL WRPL Sidhpur Installation ECC. This ERDMP is made after considering the role of NDMA.

Message of level – III incident will be passing on by chief incident controller to District Authority who in turn can take help of local NGO/ Mutual aid members/ Gujarat State Disaster Management Authority or National Disaster Management Authority.

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29.2 INTEGRATION OF ERDMP WITH NDMP

This ERDMP document has been developed taking into account all possible inputs on the subjects from various stake holders. Efforts have also been made to synergize this with the document on National Disaster Management Guide (Chemical Disasters) Industrial brought out by National Disaster Management Authority.



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30.SECURITY THREAT PLAN (REGULATION 30)

A Detailed action plan on security breach or threat including bomb threat including bomb threat is prepared and mock drill is carried out against various scenarios at least once in a year.

Contingency Plan to Deal with Bomb Threat

1.Introduction:

Security is a continuous commitment for the safety of the Pipeline and its utilities and the people working therein, both from external and internal threats. Of late, militant activities have increased manifold. The vital oil sector is a tempting target for terrorist groups. With the addition of modern weapons and explosives to the terrorist arsenal, the threat has increased manifold. A contingency plan to deal with such threat to our company's assets is given below.

The overall security and protection of WRPL SIDHPUR STATION locations lies with security personal. It is the duty of security personnel to contribute towards maintenance a safe and secured environment and protection of our national assets through quality security services.

CISF is imparting training to force members in handling modern weapons, bomb detection and methods of bomb disposal, usage of electronic gadgets, and introduction of dog squad for security, protection and bomb detection, aviation security, disaster management, VIP Security, consultancy as well as other fields of combating the growing security threats especially combating terrorism and insurgent activities.

Consequent upon being made an armed force, CISF personnel are conferred with enhanced power of arrest, power of search and seizure without obtaining any warrant and also to disperse unlawful assembly.

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While performing internal security duties, CISF is conferred with certain other legal power to maintain law and order of the state.

2. Objective:

The objective of this plan is to prevent, detect and neutralize any attempt to blast installation by planting any explosive device in the Plant premises.

Preventive Measures:

For security of Pipeline, we security personnel (covering all the shifts round the clock) equipped with handheld metal detectors, door frame metal detectors and under carriage trolley mirror for preventive checking of explosive from entering the plant. We also have bomb suppression blanket for detection & neutralization of impact of explosives.

- i) All employees are required to wear and display their identity cards inside the installation premises.
- ii) Good housekeeping in and around Installation is ensured to reduce the opportunity for planting of any device.
- iii) Only authorized vehicles (cars, scooters/motor-cycles, etc.) are allowed to park at the designated parking place.
- iv) In-house intelligence cell keeps a watch over undesirable activities/behavior of employees and contractors' workers.
- v) Perimeter security receives special attention.
- vi) All gates are monitored all the time by security personnel.
- vii) Staff members will be advised to keep close watch on unusual activity or suspicious items. The staff will be encouraged to report matters of security concern.

Training will be provided at regular intervals to all concerned to execute the BTCP successfully. The same will be rehearsed through mock-drills. The above guidelines are general in nature. The management may issue additional guidelines to meet any eventuality.



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Bomb threats:

Bomb Threat Assessment Committee (BTAC):

Bomb threat assessment committee has been formed at all stations. For details action to be taken w.r.t

- Search Team
- Evacuation of Area
- Evaluation of the Bomb Threat
- Procedure after Identification of Suspected Object
- All Clear / Completion Certificate
- Type of Homemade Bombs
- Procedure for Dealing with a Bomb
- BOMB THREAT at respective station

A bomb threat can cause panic and disorder in any business establishment. Making a concerted effort to prepare for such a threat can help ease the tension that results from such an incident

What to look for:

1. Recently disturbed areas.
2. Saw dust, brick dust, wood chips.
3. Greasy paper wrapping.
4. Out of place object.
5. Disturbed carpeting.
6. Tin foils.
7. Partly open windows / doors / drawers.
8. Fresh plaster / cement.
9. Loose electric fittings.



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10. Dirty ropes, electric wires.
11. Cut vegetation.
12. Military containers of ammunition, explosives.
13. Dusty foot prints.
14. Scratched or new paint on timber.
15. New brick work/plaster.

Where to look:

1. Places of easy access to people e.g. waiting room, rest room, reception, canteen, lounges etc.
2. Bath/toilet
3. Stores.
4. Auditorium
5. Basement
6. False ceiling decoration light panels.
7. Elevator shafts.
8. Spaces under staircase.
9. Room below/surrounded by room of a VIP.
10. Water tanks.
11. Flower pots/beds, bushes, shrubs.
12. Air conditioning plant



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13. Dais, chair, platform.
14. Public Address system
15. Trash baskets and receptacles.
16. Open lockers.
17. Unoccupied offices and rooms.
18. Plumping fixtures.
19. Overhead water tanks.
20. Vehicles, cycles.
21. Inflammable storage area.
22. Main switch boards and valves.
23. Record, storage and mail rooms.
24. Drains, sewage and man-holes.
25. Chairs and rostrum platforms.

Evacuation instructions:

Following guidelines/DO & Don'ts may be followed when a decision has been taken to evacuate a building of function.

DO'S

1. Inform the Bomb disposal squad, Control room and concerned authorities.
2. Walk out of the building in a quite manner.
3. People should go to safe area and wait for instructions.
4. Follow instructions from guides.



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5. Open all windows/doors.
6. Help ladies, old people and children.
7. Disconnect gas.

DON'TS

1. Don't run.
2. Do not panic.
3. Do not obstruct passage of security/bomb search personnel.
4. Do not spread rumours in assembly or safe area to cause panic.
5. Do not use elevators/lifts/conveyors.
6. Do not leave safe area until told.
7. Do not disturb electric supply, unless you are an expert.
8. Do not touch suspicious object or bomb.
9. Do not open the package with hand or other material.
10. Do not puncture the package or object.
11. Do not submerge the object in water.
12. Do not cut the strings or wire.
13. Do not pass the metallic object over the object or package.
14. Do not accept the identification marks on the package on its face value.
15. Do not use radio or wireless equipments in the vicinity of a suspicious object or bomb.
16. Do not direct a flashlight on the suspicious object or bomb.

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17. Do not permit re-entry of people until object is removed.

Action to be taken if a bomb is found:

1. Ensure that the occupants of the building have been evacuated.
2. Escort outside emergency personnel to the location of the subject them to a safe zone.
3. Block off a clear zone of at least 500 feet. The area may be cordoned from a safe distance.
4. Check to ensure all surrounding doors and windows are open to reduce the effects of the blast which might cause secondary damages.
5. Do not permit re-entry into the building until all clear signals is given.

Sample mail bomb check list:

All employees handling mail should watch for the following signs of suspicious parcels.

1. Oil stains on the envelop (evidence of plastic explosives).
2. Evidence of parcel having been opened and re-taped.
3. Wire or strings sticking out or attached to the parcel.
4. Feeling of spring-ness in the sides, top, or bottom in the pocket/parcel.
5. Heavier than usual package for its size.

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6. More rigid container than normal.
7. Uneven thickness
8. Address:
 - a. No return address,
 - b. Addressed to an executive by name or title.
 - c. Title for executive is incorrect.
 - d. Poorly typed or handwritten address stamps and postmark.
 - e. More than enough postage for the piece.
 - f. Foreign postmarks/unusual post mark.

Action on receiving a bomb threat:

If you receive a telephone on bomb threat, start your telephone tape recorder and take the following action:

1. Keep the caller on the line as long as possible by asking question such as, why did you call? Where is the bomb located? How can you help?
2. Ascertain location of Bomb and other related facts.
3. If he does not state the location of the bomb, ask him where it is.
4. Inform him the building is occupied and the explosion will injure or kill innocent people.
5. Pay attention to strange back ground noises and such as music, machinery, engines, animals, people or radios.
6. Listen closely to the caller's voice.

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7. Complete the telephone bomb check list.
8. Immediately notify CISF, Police and other security agencies, if any.
9. Inform fire department, hospital for Doctor & ambulance.
10. Caution him on Hazard.
11. Advise him on Precaution to be taken till arrival of Police/Bomb squad.

Points to remember

1. Keep telephone numbers of; Police Control Room/Bomb Disposal Squad/Fire Station/Hospital and Dog Squad.
2. Do not be a dead Hero. Do not touch the object.
3. Evacuate all people from the area if suspicious object is detected and inform Police Control Room, Control Room of Security Force & B.D squad.
4. Report about the area and exact location where suspected object is found.
5. Do not assume only one bomb or IED is planted.
6. Trust nothing & assume nothing is safe.

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31. MISCELLANEOUS (REGULATION 31)

- 1) Whenever any deviation from this code of practices is required to be implemented, the entity shall thereafter take approval from Board of the entity for non-conformities and mitigation measures. The said approval along with the compliance report, mitigation measures and implementation schedule shall be submitted to the Board within Six months.

- 2) If any question arises with regards to the interpretation of these regulations, the same shall be decided by the Board.



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32. ERDMP CHECKLIST

Emergency Response and Disaster Management Plan (ERDMP)
Checklist: M/S Indian Oil Corporation Limited
Location: M/s Indian Oil Corporation Limited, Western Region Pipelines,
Sujanpur road, Taluka-Sidhpur, Distt.-Patan, Gujarat - 384151
Date: 14.06.2025

CHECKLIST - 1 HAZARD IDENTIFICATION

SN	Check-point	Yes/ No/ Remark	
	Hazard Analysis and Risk Assessment	Location Comments	Auditor's Comments
1	Which of the following procedures or techniques for hazard identification has been used in the terminal/ installation: 1) Process Hazard Analysis (PHA) Study. 2) Incident Consequences and Analysis. 3) Event Tree Analysis. 4) Fault Tree Analysis. 5) Failure Modes, Effects and Criticality Analysis. 6) Risk Assessment. 7) What if, analysis. 8) Other accredited practice- Safety Audits and Inspections	1. Yes, HAZOP done vide Document no. UPC-003-IOC-HAZ-R-006-Rev 1, dated: 22-05-2020 2. Yes included in QRA Document noJ-5088-S-RT-1814 - Rev C1 dated 15.07.2020 (Chapter 7.3) 3. No 4. No 5. Yes included in QRA Document noJ-5088-S-RT-1814 - Rev C1 dated 15.07.2020 6. Yes included in QRA Document noJ-5088-S-RT-1814 - Rev C1 dated 15.07.2020 7. No 8. No	Verified with the latest QRA Study and HAZOP
Hazard Identification:			
2	Is the installation covered under the definition of "Major Incident Hazard Installation" as per the Manufacture Storage and Import of Hazardous Chemicals Rules 1989 (Amended 1994 and 2004. If yes, please specify the site notification and safety reports	Yes	Covered under Rule -1989 (2)- Part 2 of MSIHC Rules as per IS: 14489:1988. Prohibited area notification No: GG/2002/SB1/POA/ 1097/3348 dated 01.11.2002 A prohibited area notification board was found displayed at the main gate entrance.
3	If yes, whether major Incident hazards identified, and steps were taken for their prevention	Ref HAZOP done vide Document no. UPC-003-IOC-HAZ-R-006-Rev 1, dated: 22-05-2020	Verified and found that HAZOP recommendations are given in chapter 5.
4	Whether design deficiencies, failures or errors can contribute to hazards and cause abnormalities leading to an Incident are identified	Enlisted vide HAZOP worksheets Present in HAZOP report which is available with the plant.	Deficiencies, failures, or errors in design that may contribute to hazards have been considered in the latest HAZOP study. Found considered in the HAZOP study report.
5	What are the measures undertaken to counter the above deficiencies or errors?	Recommendations are given in HAZOP Study.	Measures in terms of recommendations have been suggested for the above deficiencies in HAZOPS and

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			compiled as stated above.
6	Consequences of a Major Incident on the workers, people in the neighborhood and the environment are considered	Covered in QRA.	The consequences of a major incident on workers, people in the neighbourhood and the environment are covered in the QRA report.
7	Steps envisaged for mitigation of the consequences of such incidents.	Yes	Recommendations have been suggested in the QRA for mitigation of such consequences in Chapter 11.
8	Does the installation produce/ handle/ use/ import / store any hazardous chemicals as defined under MSIHC Rules 1989 (Amended 1994 and 2004)	Yes, HSD, MS, PCK, Naphtha & Crude Oil are being handled by WRPL Sidhpur.	Installation handle/ store petroleum products, i.e. Crude Oil, HSD, MS, PCK & Naphtha which are defined as a hazardous chemical under MSIHC Rules 1989 (Amended 1994 and 2004).
9	If yes, whether a list of these chemicals, preferably in alphabetical order with their maximum licensed storage quantities is displayed	Yes	Available in PESO License No. P/HQ/GJ/15/1552(P11925) valid till 31.12.2025 & P/HQ/GJ/15/347(P9950) valid till 31.12.2025 The license is displayed at the main gate entrance.
10	Are material safety data sheets (MSDS) of these chemicals prepared/obtained in the prescribed format as per MSIHC Rules and State Factory Rules	Yes	MSDS of CRUDE OIL, HSD, MS, PCK & Naphtha are available. And attached as Annexure- 1 in the ERDMP Document.
11	Whether a system for disseminating information about these MSDS to concerned workers existing.	Yes, displayed at site as well as disseminated while imparting training	Precautions in terms of Dos and Don'ts are displayed at strategic locations.
12	Is there a system of labelling containers/ storage tanks for the chemicals / hazardous substances	Yes. The sign painting is prominently visible. Tanks Labelled for Product names & quantity.	Systems of labelling of containers such as storage tanks and pipelines are available as per standard petroleum norms.
13	Whether estimation of the maximum possible quantity of each hazardous substance is considered including any vehicle (TT/TW) on-site or within 500 meters of the site.	Yes	Considered in the HAZOP under the heading of study Nodes.
14	Whether the location, configuration, and condition under which the hazardous substances are stored and handled are clearly declared.	Yes, hazardous substances are stored and handled as per PESO license/MSIHC rules.	Available in both QRA and HAZOP. It is declared and considered in both the QRA and HAZOP study.
Vulnerability Analysis			
15	Whether Zones of influence or vulnerable Zones are estimated by considering the maximum single storage of Hazardous substances & maximum loss scenario.	Yes, refer QRA report.	Available in QRA.
16	Whether effects of influence on the vulnerable zones are made after	Yes, refer QRA report.	Available in QRA.



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	considering the population, facilities and environment encompassed inside the Zone		
Risk Analysis:			
17	Whether a relative measure of the probability and consequences of various possible hazardous events including worst-case scenarios are taken into account	Yes, in QRA	Considered in the Latest QRA.
18	Whether risks are calculated by multiplying the probability of occurrence of each event by the consequences of that event and then summing up the results.	Yes, in QRA	The QRA has suggested measures and recommendations to reduce the identified high risks. Complied with all recommendations
19	Whether all types of events possible in petroleum installations are considered including i) storage tanks on fire, ii) pool fire (burning pool of liquid fuel), iii) Flange joint leakage in pipelines, iv) Fire in TT or TW gantry, and v) rupture of hoses.	Yes, in QRA	Available in QRA
Risk Reduction Measures:			
20	Whether measures for reduction of identified high risks are included by reducing the consequences through hazard mitigation measures	Yes, considered in QRA reports.	All types of risks & reduction in consequences through hazard mitigation measures have been considered in the QRA report.
21	5[****]		
HAZOP Study			
22	Whether the above method is applied if the location handles more than specified storage and/or critical operations	No such situation is envisaged, as the pump station doesn't handle products more than the specified storage capacity mentioned in the PESO License.	Interlocks are provided to ensure that storage capacity is limited to the specified storage. Also, HAZOP is conducted for accessing hazards.
23	Whether the study systematically identifies all possible deviations from normal operations	Yes, Covered refer nodes of the HAZOP study report.	The latest HAZOP study systematically identifies all possible deviations.
24	Whether risk levels are established for each deviation after considering the probability and consequences of each such events	Yes, Covered in HAZOP Report.	The latest HAZOP Study establishes risk levels for each deviation after considering the probability and consequences for each event in terms of the Node study.

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CHECKLIST - 2 INCIDENT PREVENTION MEASURES

(REFER REGULATION 11.3(XII)) INCIDENT PREVENTION MEASURES

Sr. No	CHECK-POINT	YES /NO / REMARKS	Auditors Comment
1	Whether the Safety, Health and Environment Policy of the location is displayed	Yes. displayed near main gate, assembly point & at control building.	The HSE policy of the corporation is displayed.
2	Whether the Safety Policy is documented and duly approved by the top management	Yes, reviewed every year and signed by the CMD of IOCL	The last HSE policy was approved and signed on 14.11.2022 by IOCL Company secretary.
3	Whether the Safety Policy is well structured to cover all elements of Safety, Health and Environment protection	Yes, refer HSE policy dated: 14.11.2022	Covers all elements of Safety, Health and environmental protection.
4	Whether the layout is convenient from operation & safety aspects and meets minimum distance norms as per OISD-118	Yes. Inter distance meeting the OISD 144/118 Actual Vs required distances matrix available.	The layout is convenient from operations and safety aspects. Layout Drawing Approved by PESO. Interfacility distance meeting the OISD Std. 118. Inter-facility Distance matrix: Actual Vs required distance is meeting the criteria.
5	Whether a duly constituted Safety Committee is functioning in the location with representation from workmen/Staff	Yes, refer safety committee approval dated: 09.08.2024	Last Safety Committee updated on 09.08.2024 and is functional with representation of more than 50% workmen. Checked and the Document was found available in the file.
6	Whether all unsafe developments & likely risks are deliberated in the meetings and appropriate steps are recommended for eliminating such risks	Yes. Unsafe developments are discussed & shortcomings are compiled and acted upon. Yes, refer safety committee meeting record dated: 01.05.2025 & 09.06.2025	The last safety committee meeting references HSE/ SF/ 09 was checked and found in order.
7	Whether compliance status of recommendations of earlier Safety Committee meetings is discussed before taking up new issues.	Yes. Discussed and recorded/ Resolved. Yes, refer safety committee meeting record dated: 01.05.2025 & 09.06.2025.	Safety committee minutes have a format where compliance with earlier safety committee meetings' pending issues is discussed before taking up new issues. The last safety committee meeting references HSE/ SF/ 09 was checked and found in order.
8	Whether performance & shortcomings observed during recent mock disaster drills form part of the discussions in safety committee meetings.	Yes. Being recorded in a report. Yes, refer safety committee meeting record dated: 01.05.2025 & 09.06.2025	Safety committee minutes have a format where performance and shortcomings observed during recent mock drills form a part of the discussion. The last safety committee

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			meeting references HSE/ SF/ 09 was checked and found in order
9	Is the safety committee minutes recorded & signed by all the attending members?	Yes. Refer safety committee meeting record dated: 01.05.2025 & 09.06.2025.	Safety committee minutes are recorded & signed by all the available attending members. The last safety committee meeting references HSE/ SF/ 09 was checked and found in order
10	Whether periodical safety audits & inspections by internal and external audit teams are conducted in defined intervals	Yes, refer T4S audit report dated: 22.09.2022, ERDMP report audit dated: 17.06.2020, IMS audit report dated: 04.07.2023, Internal audit report dated: 12.11.2024	Internal and external Safety audits and inspections are conducted as per schedule/ norms. An internal safety audit ISA is scheduled by the headquarters. External safety audits and inspections are scheduled locally based on expiring dates or requirements.
11	Whether a system of regular monitoring of such audit compliances by controlling offices / HO is in place.	Yes, being monitored through Safety Audit Compliance Monitoring Portal	The corporation has a system of monitoring such audit compliance online in the HSE portal by the HO HSE Department.
12	What is the composition of external audit teams to ensure the impartiality of audit findings	Yes	The external audit is conducted by a third-party agency authorized by the government or other statutory body.
13	Whether the Work Permit System in line with OISD-105 have been implemented	Yes, refer cold work permit dated: 28.05.2025 and hot work permit dated: 21.05.2025.	A work permit system is implemented as per OISD-105 . Last Hot Work Permit No. 9250H2500407 date 21.05.2025 is checked and found in order.
14	Whether work permits are issued for hot work, cold work, electrical work and vessel entry jobs	Yes, Issued as per OISD 105	Work permits are issued offline and hard copy maintained for for all hot, cold, and electrical work Checked and found that the work permit was issued accordingly.
15	Whether the location-in-charge or his authorized nominee remain the issuer for all hot work and vessel entry permits for enhanced safety and control.	Yes, shift officers are authorized to issue the permit. Permit Authorization record available.	The location in charge or his authorized nominee only remains the issuer for all hot work and vessel entry permits. Last Hot Work Permit No. 9250H2500407 date 21.05.2025 is checked and found in order.
16	Whether work permits are duly closed at completion of the stipulated jobs, duly certified by the supervising officer	Yes. A work permit is closed after inspection of the site. It is ensured that electrical connections are removed and the site is cleared. The work permit is closed by the Permit receiver and then by the Permit issuer	A work permit is closed after inspection of the site. It is ensured that the electrical connection is removed and the site is cleared. The work permit is closed by the Permit receiver and then by the Permit issuer. Last Hot Work Permit No. 9250H2500407 date 21.05.2025 is checked and found in order.

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17	Whether heat detectors in tank sprinkler systems, high level alarms of tank farm management system are provided and checked for regular functioning	Yes, tank sprinkler systems Operated manually, Foam Pouter system operated in auto and LT installed for level monitoring.	Maintenance & testing of all detectors, sprinkler system & Level transmitter is being carried out as per IMS schedule. IMS reports for Maintenance & testing of all detectors, sprinkler system & Level transmitter has been checked & are found in order.
18	Whether in-built safety interlocks provided in the design of the terminal are adequately specified and checked for regular functioning	Yes	The safety interlocks are provided in the plant. Functioning is regularly checked, and records are maintained in Various files kept in the Control room.

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CHECKLIST-3 MUTUAL AID / MOCK DRILLS [Refer Regulation 12.1(i)] MUTUAL AID / MOCK DRILLS

SR. No	CHECK-POINT	YES/ NO/ REMARKS	Auditors Comment
1	Whether mock fire/ emergency response drills are held	Yes, the Mock/ emergency drill was conducted as per schedule. Level 2 Mock Drill conducted on 21.03.2025. Last Level 1 Mock Drill conducted on 31.05.2025.	A mock drill was conducted as per schedule.
2	If yes, the periodicity of emergency response drills.	On site emergency drill – Frequency-Monthly (Level-1) Level-2 (Half yearly) Offsite emergency drill- Yearly in every district of jurisdiction (Level-3)	Fire drill/ Onsite- Monthly/ Half Yearly. Offsite- last conducted on 28.01.2025 Level 2 Mock Drill last conducted on 21.03.2025. Last Level 1 Mock Drill conducted on 31.05.2025.
3	Mock drills cover all types of probable emergencies	Yes	Different scenarios are chosen for each drill to cover all types of probable emergencies envisaged in the HAZOP study.
4	Does the location have a Mutual Aid Plan	Yes Agreement dated 11.08.2023.	A mutual aid plan is available in ERDMP as referred to annexure 4.
5	If yes, the details of other members including names and contact nos. of concerned officials	Yes Ref Annexure 1 of Mutual Aid agreement.	Available in the ERDMP Manual at Mutual Aid Agreement, refer to Annexure-4.
6	List of firefighting equipment available with each Mutual Aid member including District Fire Service	Yes Ref Mutual Aid agreement.	For details of firefighting equipment available with each member, refer to ERDMP Annexure 4.
7	Compatibility of safety equipment of all Mutual Aid members including District Fire Services with said location has been tested and documented in the DMP	Yes.	The compatibility of safety equipment of all Mutual aid members and District Fire service availability with firefighting equipment is tested during our fire drills.
8	Details of water storage available with Mutual Aid members including District Fire Service and mechanism to utilize the same in the said location well documented in the DMP	Yes Ref Mutual Aid contract agreement.	Details of water storage with mutual aid members are detailed in the agreement.

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9	Details of firefighting foams concentrate / Chemicals available with Mutual Aid members including the nearest Fire Service has been incorporated.	Yes Ref Mutual Aid agreement	Details of firefighting Foam concentrate available with Mutual aid members are available in the Mutual aid Agreement.
10	Details of lead time for the response of Mutual Aid members including District Fire Service have been documented in the DMP	Yes. All Mutual Aid Partners are in nearby areas. Fire Brigade Service will be available from Sidhpur Nagar palika.	Provided in the Mutual Aid agreement.
11	Periodicity of safety training for officers, staff, contractor workers, crew and security personnel mentioned in the ERDMP	Monthly Tool box Talk as per work	Safety training to officers/ staff/ Contract workmen/ crew/ security Guards imparted as per ERDMP.
Mutual Aid Plans:			
12	Does the location have established Mutual Aid Plans	Yes	A Mutual Aid plan is mentioned in Chapter 12.3 of ERDMP, and accordingly Mutual aid agreement is drawn.
13	Which are the Mutual Aid Team members and the assistance offered?	Sharing of equipment/ resources / manpower as per agreement mentioned.	Details of Mutual Aid members and Assistance offered are available in the Mutual Aid Agreement.
14	Does the plan clearly indicate the types of possible hazards and firefighting measures required?	Yes	The plan indicates the types of possible hazards in the Mutual Aid Agreement.
15	Does the plan include expected assistance from each member	Included.	The plan includes expected assistance expected from each other. Refer to Mutual Aid Agreement
16	Does the Plan spell out the communication protocol and the channels in times of emergency?	Contact details are displayed.	The mutual aid plan spells out clear channels in case of emergency and details of contact numbers are shared in the mutual aid agreement.
17	Periodic joint exercises and meetings for practice, familiarization and identifying and resolving compatibility issues.	Yes Last meeting held on 17.03.2025	To practice, familiarise and identify and resolve compatibility issues. Mutual Aid Meetings are scheduled quarterly. Mutual aid members regularly participate in Mock Drills.

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CHECKLIST -4 ERDMP RESPONSE MEASURES/ INFRASTRUCTURE

Sl.	CHECKPOINT	Yes/No/REMARKS	Auditors Comment
Zones, maps & layouts			
1	Does the Location have Emergency Zones clearly identified for accident-prone areas?	Yes	Emergency zones have been identified in the latest HAZOPS study
2	Do the Maps indicate the location of Emergency Assembly Points and Emergency Control Rooms?	Yes. Layout Map displayed with location of assembly point	The location of Emergency Assembly points and ECC has been indicated in the Layout plan of the plant. Refer to Annexure- 2 of ERDMP.
3	Is the process Lay-out prominently displayed	Yes.	Displayed in control room.
4	Does the P&I Diagram include emergency control valves, shutdown system, isolation valves, important control valves etc.?	Yes	Yes. PI & D attached as Annexure 2 in ERDMP
5	Does the Fire Hydrant Layout conspicuously display?	Yes. Ref fire water layout	The fire Hydrant layout is attached as Annexure 2 in ERDMP and is also displayed at assembly point & at main gate.
Manpower			
1	Is the ERDMP Organogram clearly displayed?	Yes.	The ERDMP organogram is displayed in emergency control Centre (Control room) & at alt. emergency control Centre (near main gate) & at SIC room.
2	Does the Organogram include all duties to be attended to in connection with an emergency?	Yes	Level 1 & 2 organogram also include duties of each team in connection with emergency.
3	Does the organogram include key personnel by their names or work position?	Yes Ref ERDMP Organogram	Details of duties mentioned in ERDMP organogram.
4	Does it have alternate coverage to take care of the absence of a particular person in cases?	Yes. Alternate coordinators are included in the Organogram for key personnel.	The ERDMP organogram shows key personnel by their work position as well as their name. Refer to Chapter 14.1 of ERDMP.
5	Does it include the assignment of all key coordinators viz. the Incident Controller, Administration & communication Controller & Safety Coordinator.	Yes Ref Chapter 14 of ERDMP	Available It includes assignments of all key co-coordinators.
Emergency Control Centre (ECC)			
1	Is the ECC well-defined & clearly marked on the displayed layout	Yes.	ECC is well-defined and is marked on the layout. Our control room is our ECC.
2	Is it strategically positioned to be outside the periphery of the immediate affected area?	Yes	ECC is strategically located outside the periphery of the immediate affected area.

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3	Does the Centre have adequate communication channels including internal & external telephone connections, PA, paging & VHF systems	Yes, it is equipped with walkie-talkie, telephone connection, PA set & VHF/OFC phone	ECC is equipped with VHF, Intercom, and PA to communicate internally as well as outside.
4	Does a list of key personnel & essential telephone numbers prominently display?	Yes	A list of Key personnel and essential telephone nos. is promptly displayed in ECC.
5	Does the layout of the firefighting system, different hazardous zones and Assembly Points prominently displayed?	Yes	Hazardous zones classification and Firefighting layout are displayed.
Emergency Assembly Points			
1	Does the EAPs well-defined & clearly marked on the displayed layout	Yes. EAP is nearby control room & is displayed in the fire water Layout	EAP is well-defined and marked on the layout displayed near the Main Gate.
2	Do the EAPs have pre-defined in-charges during emergencies who keep in touch with the Emergency Control Centre and Administrative Controllers and updates on the roll call on people reporting?	Yes Ref chapter 14 of ERDMP manual	The security personnel are positioned in EAP for updating and roll calls. Verified during the mock drill

P-91

name

date



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CHECKLIST-5 REVIEW AND UPDATION OF ERDMP [Refer Regulation 14.2.1(a)]

Sl.No	CHECKPOINT	YES/NO/REMARKS	Auditors Comment
1	Frequency of mock drills for practice, refinement & updating.	Level I : Monthly Level II: Quarterly Level III: Yearly per district	Mock drill/ Onsite- Monthly/Six monthly Offsite-Yearly in every district of our jurisdiction
2	Do the records for periodic Mock drills maintained in a well-defined format?	Format No. HSE/SF/05 is maintained.	Periodic mock drill reports are prepared in PNGRB format as per schedule VI.
3	After each drill, assembly meetings involving all staff and contract personnel are conducted to share the experience of the event and also to identify the shortcomings and scopes for further improvement in procedures. Whether the issues are discussed & the plan was modified suitably.	Yes, refer mock drill report Level 2 Mock Drills conducted on 21.03.2025. Last Level 1 Mock Drill conducted on 31.05.2025..	Checked and found in order After each mock drill assembly meetings were conducted involving all staff and contract workmen to share experiences of the event and also to identify shortcomings and scope for improvement in procedures. Issues are discussed and steps for improvement are included in subsequent mock drills. Noticed in the latest mock drill conducted
4	Does the review ensure the efficiency of the plan, particularly w.r.t. response, communication & coordination aspects?	Yes, refer mock drill report Level 2 Mock Drills conducted on 21.03.2025. Last Level 1 Mock Drill conducted on 31.05.2025.	The review ensures the efficiency of the plan, particularly in response, communication and coordination. Noticed in the latest mock drill conducted
5	Do the Mutual Aid members participate in the drills and based on the actual response & difficulties experienced corrective actions initiated for refinement of the plan?	Yes, refer mock drill report Level 2 Mock Drills conducted on 21.03.2025.	All Mutual aid members participate in the drill. Based on the actual response and difficulties experienced corrective actions were initiated for refinement of the plan and taken care of in the next mock drill.
6	Does a procedure exist for incorporating the findings/ learning of the actual disaster management handling, if any so that the plan can be revised accordingly?	Yes Ref chapter 14 of ERDMP manual	The procedure is available in ERDMP to incorporate the findings/ learning of actual disaster management, if any and to revise the plan accordingly.

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CHECKLIST - 6 AVAILABILITY OF RESOURCES [Refer Regulation 17.0 (5)]

Sr. No.	CHECK-POINT	YES/ NO/ REMARKS	AUDITORS COMMENT
1	Details of the firefighting equipment of the location are incorporated in the ERDMP	Yes Ref ERDMP manual chapter 17	Available in ERDMP at chapter 17.
2	Information on critical resources like no. of fire hydrants, water monitors, firefighting pumps, static water storage, portable firefighting equipment and foam systems are included	Yes Ref ERDMP manual chapter 17	Available in ERDMP at chapter 17.
3	Available resources as per schedule - IV	Yes Ref ERDMP manual chapter 17	Available in ERDMP at chapter 17.
4	The location has storage of water for 4 hours firefighting. In case water availability is less, a plan for replacement from nearby sources	Yes Ref ERDMP manual chapter 17	In line with OISD 117 location has water available for 4 hrs of firefighting.
5	Details of the drainage system including the Oil Water Separator are available in DMP, wherever applicable.	Yes	Details of the drainage system are available. The location has OWS.
6	Requirement & availability of Personal Protective Equipment	Yes	All necessary PPE are available, including respiratory and non-respiratory PPE.
7	Whether manpower available during regular as well as idle shift hours including security personnel clearly indicated in the plan	Yes Ref ERDMP manual Schedule-IV	Available
External & Internal Resources for Combating Emergency			
8	Does the plan enumerate the following resources available internally with the location as also from external agencies including Mutual Aid Members and govt. agencies like fire brigade, police, municipal authorities etc.: a. Water- from the static reservoir as well as also mobile water tankers b. Fire Hoses c. Specialized nozzles e.g. fog, jet, triple purpose etc. d. Mobile water monitors e. Fire Extinguishers - type & capacity f. Water Gel Blankets g. Foam Compounds h. First Aid materials, Medicines, Stretchers i. Mobile / fixed ladders j. Vehicles available k. Trained manpower for combating emergency	Yes Ref ERDMP manual Schedule-IV	Available
9.	Any other resources considered necessary		



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CHECKLIST - 7 ERDMP RECOVERY MEASURES [Refer Regulation 26.0 (2)]

Sl. No.	CHECK-POINT	YES/ NO/ REMARKS	AUDITORS COMMENT
<u>Post Emergency Recovery</u>			
<u>Salvage of product</u>			
1	Check that spilled/accumulated product contents are transferred to the OWS or collected in drums.	Yes, in case of spillage, it shall be collected in OWS	Checked and verified
2	Check whether the quality & quantity estimation of the product extracted from OWS has been done for further disposal in line with standing QC guidelines by either transferring to service tanks or to the nearest refinery for blending/reprocessing or not.	No such incident has occurred so far; however, procedure exists for this (Ref chapter 26 of ERDMP Manual)	Checked and verified
3	Check that correct stock accounting of spilled products as the loss has been completed in the accounting system.	No such incident has occurred so far; however, procedure available for accounting of product (Ref chapter 26 of ERDMP Manual).	Checked and verified
4	Check that the affected area has been completely cleaned and dried after the evacuation of spilled product.	No such incident has occurred so far; however, procedure exists for this (Ref chapter 26 of ERDMP Manual).	Checked and verified
5	Declare that the affected area after salvage operations is fully clean & safe for the movement of the working personnel.	No such incident has occurred so far; however, procedure exists for this (Ref chapter 26 of ERDMP Manual).	Checked and verified
6	Check that all drains do not have any residual oil and are thoroughly cleaned & dried.	No such incident has occurred so far; however, procedure exists for this (Ref chapter 26 of ERDMP Manual).	Checked and verified
7	Check that all control valves on product lines & OWS lines outside dyke area and drains are completely closed after the removal of the spilled product.	No such incident has occurred so far; however, procedure exists for this (Ref chapter 26 of ERDMP Manual).	Checked and verified

[Signatures]



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8	Check that the interlocking system of tanks/ gantry has been reactivated for normal operations.	NA	NA
9	Check whether the soil testing of the affected area, if required, has been done to assess the soil contamination level to meet the Environmental- SPCB norms/ requirements.	No such incident has occurred so far; however, procedure exists for this (Ref chapter 26 of ERDMP Manual).	Checked and verified
Taking care of affected manpower			
10	Whether physical accounting of all personnel on duty during & after the incident is ascertained by the Main Incident Controller and reconciled immediately.	Yes, it is normal practice after every incident. This can be verified during the audit mock drill.	It is a practice after every incident. Verified during Mock drill conducted on 14.06.2025
11	Whether the first-aid treatment & post-incident health check of the affected personnel has been undertaken in time	Yes, it is normal practice if affected in an incident. This can be verified during the audit mock drill.	It is a practice after every incident. Verified during Mock drill
12	Whether these personnel are declared fully physically fit before allowing them to resume their normal duties	Yes, it is normal practice if affected in an incident. This can be verified during the audit mock drill.	Being done It is a practice in which person physically affected are taken back on duties after he is declared physically fit by a competent doctor.
13	Whether the records for such first aid & treatment of the affected personnel are maintained in a well-defined format	Yes, it is normal practice.	Being Maintained Entity have a system to keep the record in a well-defined format as per the Factory Act form No. - 29.
Addressing media & outsidebodies			
17	Whether the DMP event was appropriately informed the local media in line with the respective company's Press & Media Policy	No such incident has occurred so far; however, procedure mentioned in ERDMP manual chapter 14	Checked and verified

[Signatures]

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18	Whether the role of the neighboring population during the drill/ disaster is suitably informed to the population during subsequent meetings with local administration/ Panchayat etc. for necessary improvements	Yes. Done through Village awareness programs & CSR programs.	Checked and verified
19	Whether the awareness & preparedness for disaster is regularly assimilated/shared with nearby public /societies and stakeholders.	Yes, Village Awareness Programs are conducted regularly	Checked and verified
Reporting			
20	Check whether that disaster incident report was communicated to the respective controlling office / HQ on time in a standard format.	No such incident has occurred so far; however, procedure exists for this, Ref ERDMP manual chapter 23	Checked and verified
21	Whether the incident reports are also sent to the concerned State Level Industry Coordinator on time.	No such incident has occurred so far; however, procedure exists for this, Ref ERDMP manual chapter 23	Checked and verified
22	Check that a detailed report on the disaster in proper format was communicated to PNGRB/ Factory inspector / Labour inspector / SPCB / District Magistrate / PESO.	No such incident has occurred so far; however, procedure exists for this, Ref ERDMP manual chapter 23, schedule-VI	Checked and verified
Investigation			
23	Whether Investigation teams are constituted as per the respective company policies	No such incident has occurred so far; however, procedure exists for this, Ref ERDMP manual chapter 23	Checked and verified

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24	Whether RCA (Root Cause Analysis) of the disaster is conducted by the investigating team.	No such incident occurred.	Checked and verified
25	Whether detailed analysis including effective functioning of interlocks, detection devices, automation controls & applicable norms are carried out to find out possible improvements in design/ construction/ operations/ maintenance & training aspects	No such incident occurred	Checked and verified
26	Whether a system of initiating appropriate corrective measures including suitable revisions to the Disaster Management Plan is adopted based on the findings of the investigation	No such incident has occurred so far; however, procedure exists for this, refer ERDMP manual chapter 23	Checked and verified
Damage Assessment – Monetary & Physical			
27	Check the valuation/ cost of product loss/ down-gradation on account of contamination, if any/ Property/ Structures/ damaged assets –equipment.	Being carried out as and when required	Checked and verified
28	Whether repairs & maintenance costs of property, assets & equipment are assessed.	Being carried out as and when required	Checked and verified
29	Whether any penalty by statutory authorities like SPCB/ Factory. The inspector and Labour Commissioner are assessed.	Till date, no penalty has been imposed	Checked and verified
30	Whether the possible impact on environment is also assessed & appropriate measures are taken	Yes, Environmental monitoring studies from authorized agencies and comparisons with area indices.	Checked and verified
31	Whether damage assessment also includes potential erosion of reputation – from company, industry & national perspective.	Yes, carried out.	Checked and verified
Clean-up and Restoration			
32	Whether the affected area has been fully cleaned and cleared after due clearance from the investigation team	Yes, By visual inspection by the Investigation team. If ok barricading will be removed and area will be permitted for normal operation	Checked and verified

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		activities otherwise by doing compliance against the NC by team it will be offer for re inspection.	
33	Check whether heat detectors, high-level alarms, in built safety systems (NRV, TSV etc.) are fully functional after the disaster incident.	Yes, it is standard practice to check all affected equipment/instruments along with the simulation. After clearance from concerned authorities, it will be considered for start of operation activities.	Checked and verified
34	Check whether all firefighting equipment like - Hoses/ Nozzles/ Fire Extinguishers etc. have been put back at designated places and are fully ready for reuse.	Yes, it is the safety department's standard protocol to check the healthiness of firefighting equipment and allotment location-wise as per OISD 117.	Checked and verified
35	Whether clearly defined steps are in place to allow the resumption of normal operations.	Yes	Checked and verified

Signature of Audit team

Lead Auditor
P. H. SINGH
14/06/2025

Associate Auditor
P. H. SINGH
14/06/2025

Signature of Auditee

Signature of Auditee
Amit Kumar Singh
14/06/2025

Installation Manager



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33. LIST OF ANNEXURES

SN	LIST OF ANNEXURES
1	Material Safety Data Sheet
2	Plant Layout, P & ID and Interdistances
3	List of Emergency Contact Details
4	Mutual Aid Agreement
5	Emergency Response Plan during Projects or Construction
6	ERDMP Audit Documents, Recommendations and Mock Drill Report

ANNEXURE – 1

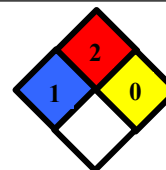
MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

HIGH SPEED DIESEL

Section 1 – Chemical Product and Company Identification

Chemical Name:	High Speed Diesel
Chemical Formula:	Complex mixture of hydrocarbons
CAS Number:	
Synonyms:	Diesel, Gas oil, High Flash HSD (HF HSD)
General Use:	Motor Fuel and in Defence aircrafts
Manufacture's Name:	Bharat Petroleum Corporation Limited
Address:	Refinery, Mahul, Chembur, Mumbai 400074
Telephone Number for Info:	25533888 / 25533999 / 25524888 / 25524999
MSDS No. :	
Date Prepared:	June 2020
Revision:	2



NFPA 704 (Sec 16)

Section 2 – Composition / Information on Ingredients

Composition:	Complex mixture of hydrocarbons
Hazardous Components:	
ACIGH TLV TWA:	Not listed
There are two basic types of HSD depending on the flash points - the Normal HSD and the High Flash HSD	

Section 3 – Hazards Identification

Primary Entry Routes:	Ingestion, inhalation, skin and eyes
Acute Effects:	Inhalation can cause dizziness, headache and nausea, depresses central nervous system and has an anesthetic effect. Breathing of liquid droplets may lead to chemical pneumonia. Ingestion can lead to nausea, diarrhea and affect central nervous system. Skin irritant. Prolonged contact can result in skin drying and dermatitis. Eye irritant.
Carcinogenicity :	Not listed as carcinogenic
Chronic Effects :	No data available

Section 4 – First Aid Measures

Eyes:	Flush with water for 15 min. Get medical attention.
Skin:	Wash with warm water & soap.
Inhalation:	Remove to fresh air. Consult a physician if irritation persists.
Ingestion:	Do not induce vomiting. Do not give liquids. Get medical help at once.

Section 5 – Fire Fighting Measures

Flash Point:	> 35 °C and > 66°C for HF HSD
Flash Point Method:	Abel / Pensky Marten
Auto ignition Temperature:	230 °C to 250 °C (highly variable)
LEL:	0.5 %
UEL:	5.0 %
Flammability Classification:	Flammable
Extinguishing Media:	Foam, Dry Chemical Powder, CO2
Unusual Fire or Explosion:	Heat produces vapours and can cause violent rupture of containers.
Hazards:	Carbon di oxide, carbon mono oxide, benzene
Hazardous Combustion Products:	
Fire-Fighting Instructions:	Small fires can be extinguished by hand held extinguishers. Major fires may require withdrawal and allowing the tank to burn. Fire fighters should wear self breathing apparatus while fighting fire

Section 6 – Accidental Release Measures

Small Spills:	Shut off leaks without risk. Absorb on sand or earth.
Containment:	Prevent spillage from entering drains or water sources
Cleanup:	After spills wash area with soap and water preventing runoff from entering drains.

Section 7 – Handling and Storage

Handling Precautions:	Do not use/store near heat/open flame. Use gumboots, gloves while handling the product. Do not inhale. Stay upwind while handling the product. Product should never be used to remove oil or grease from skin. It should not be siphoned by mouth. It should be stored in closed containers away from heat & source of ignition. Avoid contact with skin and eyes. Wash thoroughly after handling
Storage Requirements:	Do not use/store near heat/open flame/water/acids

Section 8 – Exposure Controls / Personal Protection

Engineering Controls:	Provide proper ventilation for environment to be below TWA
Respiratory Protection:	Use respiratory protection if ventilation is improper
Protective Clothing / Equipment:	Use face shield, PVC gloves, safety boots while handling. Contaminated clothing to be immediately removed

Section 9 – Protection Physical and Chemical Properties

Physical State:	Liquid
Appearance and Odour:	Straw yellow or dark yellow liquid. Characteristic hydrocarbon like odour
Vapor Pressure:	0.5 mm of Hg at 38 °C (RVP)
Specific Gravity:	0.82 to 0.86 gm / cc
Water Solubility:	Insoluble
Boiling Point:	110 °C to 375 °C

Freezing Point:	< 15 °C
Vapour Density:	3 to 5 (Air = 1)
Sulphur content :	10 ppm max.

Section 10 – Stability and Reactivity

Stability:	Chemically stable.
Chemical Incompatibilities:	Incompatible with oxidizing agents & chlorine. Reacts vigorously with oxidising materials.
Conditions to Avoid:	
Hazardous Decomposition Products:	Carbon di oxide, carbon mono oxide

Section 11 – Toxicological Information

ACIGH TLV TWA:	Data not available
Toxicity Data:	Data not available
Acute Inhalation Effects:	

Section 12 – Ecological Information

Prevent spillage from entering drains or water sources. After spills wash area with soap and water preventing runoff from entering drains. Can burn with lot of heat producing CO₂ and CO.

Section 13 – Disposal Considerations

Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations

Section 14 – Transport Information

Shipping Name:	High Speed Diesel, High Flash Diesel
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Section 15 – Regulatory Information

Non - Toxic/Flammable Substance

Section 16 – Other Information

Prepared by:	Process Safety Section,
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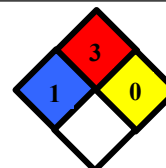
Disclaimer: This M.S.D.S and the information it contains is offered to you in good faith as accurate. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.

MATERIAL SAFETY DATA SHEET

MOTOR SPIRIT

Section 1 – Chemical Product and Company Identification

Chemical Name :	Motor Spirit
Chemical Formula :	Complex mixture of hydrocarbons
CAS Number :	
Synonyms :	Gasoline, Petrol, Gas
General Use :	Motor Fuel
Manufacture's Name :	Bharat Petroleum Corporation Limited
Address :	Refinery, Mahul, Chembur, Mumbai 400074
Telephone Number for Info :	25533888 / 25533999 / 25524888 / 25524999
MSDS No. :	
Date Prepared :	June 2020
Revision :	2



NFPA 704 (Sec 16)

Section 2 – Composition / Information on Ingredients

Composition :	Gasoline	> 97% v
	Benzene	< 1 % v
	MTBE	< 15 % v
	Ethanol	< 5 % v
Hazardous Components :	Benzene, MTBE	
ACIGH TLV TWA :	Gasoline – 300 ppm , Benzene – 0.5 ppm, MTBE – 50 ppm	

Section 3 – Hazards Identification

Primary Entry Routes :	Ingestion, inhalation, skin and eyes
Acute Effects :	Inhalation can cause dizziness, headache and nausea, depresses central nervous system and has an anesthetic effect. Breathing of liquid droplets may lead to chemical pneumonia. Ingestion can lead to nausea, diarrhea and affect central nervous system. Skin irritant. Prolonged contact can result in skin drying and dermatitis. Eye irritant.
Carcinogenicity :	Benzene component is listed as carcinogenic
Chronic Effects :	No data available

Section 4 – First Aid Measures

Eyes :	Flush with water for 15 min. Get medical attention.
Skin :	Wash with warm water & soap.
Inhalation :	Remove to fresh air. Consult a physician if irritation persists.
Ingestion :	Do not induce vomiting. Do not give liquids. Get medical help at once.

Section 5 – Fire Fighting Measures

Flash Point :	< - 10 °C
Flash Point Method :	Abel
Auto ignition Temperature :	250 °C to 280 °C (highly variable)

LEL :	1.4 %
UEL :	7.6 %
Flammability Classification :	Flammable
Extinguishing Media :	Foam, Dry Chemical Powder, CO2
Unusual Fire or Explosion :	Heat produces vapours and can cause violent rupture of containers. Vapours may travel long distance and can flash back.
Hazards :	Carbon di oxide, carbon mono oxide, benzene
Hazardous Combustion Products :	
Fire-Fighting Instructions :	Small fires can be extinguished by hand held extinguishers. Major fires may require withdrawal and allowing the tank to burn. Fire fighters should wear self breathing apparatus while fighting fire

Section 6 – Accidental Release Measures

Small Spills :	Shut off leaks without risk. Absorb on sand or earth.
Containment :	Prevent spillage from entering drains or water sources
Cleanup :	After spills wash area with soap and water preventing runoff from entering drains.

Section 7 – Handling and Storage

Handling Precautions :	Do not use/store near heat/open flame. Avoid contact with liquid or vapours. Use gumboots, gloves while handling the product. Do not inhale. Stay upwind while handling the product. Product should never be used to remove oil or grease from skin. It should not be siphoned by mouth. Tanks and dispensing equipments should be grounded to reduce static charge fires. It should be stored in closed containers away from heat & source of ignition. Avoid contact with skin and eyes. Wash thoroughly after handling
Storage Requirements :	Do not use/store near heat/open flame/water/acids

Section 8 – Exposure Controls / Personal Protection

Engineering Controls :	Provide proper ventilation for environment to be below TWA
Respiratory Protection :	Use respiratory protection if ventilation is improper
Protective Clothing / Equipment :	Use face shield, PVC gloves, safety boots while handling. Contaminated clothing to be immediately removed

Section 9 – Protection Physical and Chemical Properties

Physical State :	Liquid
Appearance and Odour :	Water white liquid, dyed orange or red for detection. Characteristic hydrocarbon like odour
Vapor Pressure :	5.0 to 8.7 psi at 38 °C (RVP)
Specific Gravity :	0.71 to 0.77 gm / cc
Water Solubility :	Insoluble
Boiling Point :	35 °C to 215 °C
Freezing Point :	Data not available
Vapour Density :	3 to 4 (Air = 1)

Section 10 – Stability and Reactivity

Stability :	Chemically stable.
Chemical Incompatibilities :	Incompatible with oxidizing agents & chlorine. Reacts vigorously with oxidising materials.
Conditions to Avoid :	Can undergo auto-oxidation in air & generate heat which can build up in a confined space to cause spontaneous combustion
Hazardous Decomposition Products :	Carbon di oxide, carbon mono oxide

Section 11 – Toxicological Information

ACIGH TLV TWA :	Gasoline – 300 ppm , Benzene – 0.5 ppm, MTBE – 50 ppm
Toxicity Data :	LD50 (Oral-Rat) 18.75 ml / kg
Acute Inhalation Effects :	Benzene component is carcinogenic.

Section 12 – Ecological Information

Prevent spillage from entering drains or water sources. After spills wash area with soap and water preventing runoff from entering drains. Can burn with lot of heat producing CO₂ and CO.

Section 13 – Disposal Considerations

Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations

Section 14 – Transport Information

Shipping Name : Motor Spirit, Gasoline

Section 15 – Regulatory Information

Non - Toxic/Flammable Substance

Section 16 – Other Information

Motor spirit is highly inflammable and should be used only as fuel. The product is dyed orange or red colour depending on its grade.

Prepared by : Process Safety Section

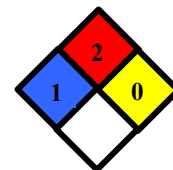
Disclaimer: This M.S.D.S and the information it contains is offered to you in good faith as accurate. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.

MATERIAL SAFETY DATA SHEET

KEROSENE

Section 1 – Chemical Product and Company Identification

Chemical Name :	Superior Kerosene
Chemical Formula :	Complex mixture of hydrocarbons
CAS Number :	
Synonyms :	Superior Kerosene, Kerosine,
General Use :	Fuel, LAB feed stock, solvent
Manufacture's Name :	Bharat Petroleum Corporation Limited
Address :	Refinery, Mahul, Chembur, Mumbai 400074
Telephone Number for Info :	25533888 / 25533999 / 25524888 / 25524999
MSDS No. :	
Date Prepared :	June 2020
Revision :	2



NFPA 704 (Sec 16)

Section 2 – Composition / Information on Ingredients

Composition :	Mixture of hydrocarbons
Hazardous Components :	Kerosene
ACIGH TLV TWA :	100 mg / m3

Section 3 – Hazards Identification

Primary Entry Routes :	Ingestion, inhalation, skin and eyes
Acute Effects :	Inhalation can cause dizziness, headache and nausea, depresses central nervous system and has an anesthetic effect. Continued inhalation can produce visual and auditory hallucinations. Human systemic effects by ingestion, somnolence, hallucinations & distortion perceptions, coughing, nausea or vomiting & fever. Aspiration of vomiting can cause serious pneumonitis particularly in young children. Skin irritant. Prolonged contact can result in skin drying and dermatitis. Eye irritant.
Carcinogenicity :	Not listed as carcinogenic
Chronic Effects :	No data available

Section 4 – First Aid Measures

Eyes :	Flush with water for 15 min. Get medical attention.
Skin :	Wash with warm water & soap.
Inhalation :	Remove to fresh air. Consult a physician if irritation persists.
Ingestion :	Paraffin olive oil or some other vegetable oil may be given orally to retard absorption of kerosene. Gastric dosage and induction of vomiting not advisable because of the possibility of the development of chemical pneumonia from aspiration of kerosene. Get medical help at once.

Section 5 – Fire Fighting Measures

Flash Point :	> 35 °C
Flash Point Method :	Abel
Auto ignition Temperature :	210 °C
LEL :	0.8 %
UEL :	5 %
Flammability Classification :	Flammable
Extinguishing Media :	Foam, Dry Chemical Powder, CO2
Unusual Fire or Explosion :	Heat produces vapours and can cause violent rupture of containers
Hazards :	Carbon di oxide, carbon mono oxide
Hazardous Combustion Products :	
Fire-Fighting Instructions :	Small fires can be extinguished by hand held extinguishers. Major fires may require withdrawal and allowing the tank to burn. Fire fighters should wear self breathing apparatus while fighting fire

Section 6 – Accidental Release Measures

Small Spills :	Shut off leaks without risk. Absorb on sand or earth.
Containment :	Prevent spillage from entering drains or water sources
Cleanup :	After spills wash area with soap and water preventing runoff from entering drains.

Section 7 – Handling and Storage

Handling Precautions :	Do not use/store near heat/open flame. Avoid contact with liquid or vapours. Use gumboots, gloves while handling the product. Do not inhale. Stay upwind while handling the product. Kerosene should never be used to remove oil or grease from skin. It should not be siphoned by mouth It should be stored in closed containers away from heat & source of ignition. Avoid contact with skin and eyes. Wash thoroughly after handling
Storage Requirements :	Do not use/store near heat/open flame/water/acids

Section 8 – Exposure Controls / Personal Protection

Engineering Controls :	Provide proper ventilation for environment to be below TWA
Respiratory Protection :	Use respiratory protection if ventilation is improper
Protective Clothing / Equipment :	Use face shield, PVC gloves, safety boots while handling. Contaminated clothing to be immediately removed

Section 9 – Protection Physical and Chemical Properties

Physical State :	Liquid
Appearance and Odor :	Water white liquid may be dyed blue for detection. Characteristic Hydrocarbon like odour
Vapor Pressure :	< 1 psi at 38 °C
Specific Gravity :	> 0.75
Water Solubility :	Insoluble
Boiling Point :	135 °C to 300 °C

Freezing Point :	< - 30 °C
Vapour Density :	4.5 (Air = 1)

Section 10 – Stability and Reactivity

Stability :	Chemically stable.
Chemical Incompatibilities :	Incompatible with oxidizing agents & chlorine. Reacts vigorously with oxidising materials.
Conditions to Avoid :	Can undergo auto-oxidation in air & generate heat which can build up in a confined space to cause spontaneous combustion
Hazardous Decomposition Products :	Carbon di oxide, carbon mono oxide

Section 11 – Toxicological Information

ACIGH TLV TWA :	100 mg / m3	LD50 (Oral-Rat) 28 gm / kg
Acute Inhalation Effects :	No data available	

Section 12 – Ecological Information

Prevent spillage from entering drains or water sources. After spills wash area with soap and water preventing runoff from entering drains. Can burn with lot of heat producing CO₂ and CO.

Section 13 – Disposal Considerations

Waste must be disposed of in accordance with federal, state and local environmental control regulations

Section 14 – Transport Information

Shipping Name :	Superior Kerosene Oil, Kerosene
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Section 15 – Regulatory Information

Non - Toxic/Flammable Substance

Section 16 – Other Information

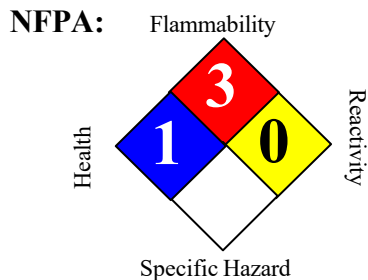
Kerosene is dyed blue for distribution to Public distribution System and to prevent adulteration with other hydrocarbons

Prepared by: Process Safety Section

Disclaimer: This M.S.D.S and the information it contains is offered to you in good faith as accurate. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.

Material Safety Data Sheet

Naphtha



HMIS III:

HEALTH	1
FLAMMABILITY	3
PHYSICAL	0

0 = Insignificant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Naphtha			
Synonyms	:	Light Naphtha, Japan Open Spec Bonded Naphtha, SNG Naphtha, Light Cat Naphtha, Sweet Virgin Naphtha (SVN), Debutanized Naphtha, Atmospheric Naphtha (DAN), HCU Light Naphtha, Light CR Gasoline, Full Range Cracked Naphtha, Full Range Hydrocracked Naphtha, Full Range Reformulated Naphtha, Light Chemical Treated Naphtha, Light Cracked Naphtha, Light Hydrocracked Naphtha, Light Hydrotreated Naphtha, Aviation Alkylate Naphtha, 888100004450			
MSDS Number	:	888100004450	Version	:	2.12
Product Use Description	:	Fuel Component, Refinery Intermediate Stream			
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
Tesoro Call Center	:	(877) 783-7676	Chemtrec (Emergency Contact)	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Regulatory status	: This material is considered hazardous by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).
Signal Word	: DANGER
Hazard Summary	: Extremely flammable. Irritating to eyes and respiratory system. Affects central nervous system. Harmful or fatal if swallowed. Aspiration Hazard.

Potential Health Effects

Eyes	: High vapor concentration or contact may cause irritation and discomfort.
Skin	: Brief contact may cause slight irritation. Skin irritation leading to dermatitis may occur upon prolonged or repeated contact. Can be absorbed through skin.
Ingestion	: Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death.
Inhalation	: Vapors or mists from this material can irritate the nose, throat, and lungs, and can cause signs and symptoms of central nervous system depression, depending on the concentration and duration of exposure. Inhalation of high concentrations may cause central nervous system depression such as dizziness,

drowsiness, headache, and similar narcotic symptoms, but no long-term effects.

Chronic Exposure

: Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

Target Organs

: Skin, Central nervous system, Liver, Kidney, Blood

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Naphtha; Low boiling point naphtha	8030-30-6	100%
N-hexane	110-54-3	25 - 35%
Xylene	1330-20-7	25 - 35%
Toluene	108-88-3	15 - 20%
Cyclohexane	110-82-7	15 - 20%
Pentane	109-66-0	15 - 20%
Heptane [and isomers]	142-82-5	12.5 - 15%
Ethylbenzene	100-41-4	5 - 7%
Benzene	71-43-2	3 - 5%
1,2,4-Trimethylbenzene	95-63-6	2 - 3%
Sulfur	7704-34-9	0 - 1.5%

SECTION 4. FIRST AID MEASURES
General advice

: Remove from exposure, lie down. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). When symptoms persist or in all cases of doubt, seek medical advice. Never give anything by mouth to an unconscious person. Take off all contaminated clothing immediately and thoroughly wash material from skin.

Inhalation

: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.

Skin contact

: In case of contact, immediately flush skin with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Contaminated leather, particularly footwear, must be discarded. Note that contaminated clothing may be a fire hazard. Seek medical advice if symptoms persist or develop.

Eye contact

: Remove contact lenses. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Ingestion

: If swallowed Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Notes to physician : Symptoms: Dizziness, Discomfort, Headache, Nausea, Kidney disorders, Liver disorders.

SECTION 5. FIRE-FIGHTING MEASURES

Form	: Liquid
Flash point -typical	: -21.7 °C (-7.1 °F)
Auto Ignition temperature	: 225 °C (437 °F)
Lower explosive limit	: 1.2 %(V)
Upper explosive limit	: 6.9 % (V)
Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Do not use a solid water stream as it may scatter and spread fire.
Specific hazards during fire fighting	: SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or Halon. LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.
Special protective equipment for fire-fighters	: Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Firefighters' protective clothing will provide limited protection.
Further information	: Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam. Exposure to decomposition products may be a hazard to health. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Evacuate personnel to safe areas. Ventilate the area. Remove all sources of ignition. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).
Environmental precautions	: Should not be released into the environment. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains, inform respective authorities.
Methods for cleaning up	: Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

SECTION 7. HANDLING AND STORAGE

Handling	: Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in
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areas with intrinsically safe electrical classification.

Advice on protection against fire and explosion

: Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initiated fire or explosion during transfer, storage or handling, include but are not limited to these examples:

- (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators.
- (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such as gasoline or naphtha).
- (3) Storage tank level floats must be effectively bonded.

For more information on precautions to prevent static-initiated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).

Dust explosion class

: Not applicable

Requirements for storage areas and containers

: Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Advice on common storage

: Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

Other data

: No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA	Benzene - 29 CFR 1910.1028	71-43-2	TWA	1 ppm
		71-43-2	STEL	5 ppm
		71-43-2	OSHA_AL	0.5 ppm
OSHA Z1	Naphtha; Low boiling point naphtha	8030-30-6	PEL	100 ppm 400 mg/m3
	Xylene	1330-20-7	PEL	100 ppm 435 mg/m3
	N-hexane	110-54-3	PEL	500 ppm 1,800 mg/m3
	Cyclohexane	110-82-7	PEL	300 ppm 1,050 mg/m3
	Heptane [and isomers]	142-82-5	PEL	500 ppm 2,000 mg/m3
	Ethylbenzene	100-41-4	PEL	100 ppm 435 mg/m3
ACGIH	Naphtha; Low boiling point naphtha	8030-30-6	TWA	400 ppm

	Xylene	1330-20-7	TWA	100 ppm
		1330-20-7	STEL	150 ppm
	N-hexane	110-54-3	TWA	50 ppm
	Toluene	108-88-3	TWA	50 ppm
	Cyclohexane	110-82-7	TWA	100 ppm
	Pentane	109-66-0	TWA	600 ppm
	Heptane [and isomers]	142-82-5	TWA	400 ppm
		142-82-5	STEL	500 ppm
	Ethylbenzene	100-41-4	TWA	100 ppm
		100-41-4	STEL	125 ppm
	Benzene	71-43-2	TWA	0.5 ppm
		71-43-2	STEL	2.5 ppm

Engineering measures	: Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use only intrinsically safe electrical equipment approved for use in classified areas.
Eye protection	: Safety glasses or goggles are recommended where there is a possibility of splashing or spraying. Ensure that eyewash stations and safety showers are close to the workstation location.
Hand protection	: Gloves constructed of nitrile or neoprene are recommended. Consult manufacturer specifications for further information.
Skin and body protection	: If needed to prevent skin contact, chemical protective clothing such as of DuPont TyChem®, Saranex or equivalent recommended based on degree of exposure. The resistance of specific material may vary from product to product as well as with degree of exposure.
Respiratory protection	: A NIOSH/ MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
Work / Hygiene practices	: Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: Liquid
Appearance	: Colorless to light yellow
Odor	: Characteristic hydrocarbon-like
Flash point - typical	: -21.7 °C (-7.1 °F)
Auto Ignition temperature	: 225 °C (437 °F)
Thermal decomposition	: Heating can release hazardous gases, No decomposition if stored and applied as directed.
Lower explosive limit	: 1.2 % (V)
Upper explosive limit	: 6.9 % (V)
pH	: Not applicable
Specific gravity	: 0.77 (H2O=1)
Boiling point	: 26.7 - 148.9 °C(80.1 - 300.0 °F)
Vapor Pressure	: 758 - 896 hPa at 20 °C (68 °F)
Vapor Density (Air = 1)	: 3.5
Water solubility	: Negligible
Viscosity, kinematic	: Not determined
Percent Volatiles	: 100 %
Work / Hygiene practices	Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.
Materials to avoid	: Strong acids and strong bases. Oxidizing agents.
Hazardous decomposition products	: Carbon monoxide, carbon dioxide and noncombusted hydrocarbons (smoke).
Thermal decomposition	: Heating can release hazardous gases. No decomposition if stored and applied as directed.
Hazardous reactions	: Vapors may form explosive mixture with air. Hazardous polymerization does not occur. Note: Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION**Carcinogenicity**

- NTP** : Benzene (CAS-No.: 71-43-2)
- IARC** : Ethylbenzene (CAS-No.: 100-41-4)
Benzene (CAS-No.: 71-43-2)
- OSHA** : Benzene (CAS-No.: 71-43-2)
- CA Prop 65** : WARNING! This product contains a chemical known to the State of California to cause cancer.
Ethylbenzene (CAS-No.: 100-41-4)
Benzene (CAS-No.: 71-43-2)
- : WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
Toluene (CAS-No.: 108-88-3)
Benzene (CAS-No.: 71-43-2)
- Skin irritation** : Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in desiccation of the skin.
The product may be absorbed through the skin.
- Eye irritation** : The liquid splashed in the eyes may cause irritation and reversible damage.
Strong lachrymation can make it difficult to escape
- Further information** : This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH. Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death may occur.

Component:

N-hexane	110-54-3	<u>Acute oral toxicity</u> : LD50 rat Dose: 25,000 mg/kg <u>Acute dermal toxicity</u> : LD50 rabbit Dose: 2,001 mg/kg <u>Acute inhalation toxicity</u> : LC50 rat Dose: 171.6 mg/l Exposure time: 4 h <u>Skin irritation</u> : Classification: Irritating to skin. Result: Skin irritation <u>Eye irritation</u> : Classification: Irritating to eyes. Result: Mild eye irritation <u>Teratogenicity</u> : N11.00418960
Xylene	1330-20-7	<u>Acute oral toxicity</u> : LD50 rat Dose: 2,840 mg/kg <u>Acute dermal toxicity</u> : LD50 rabbit Dose: ca. 4,500 mg/kg <u>Acute inhalation toxicity</u> : LC50 rat Dose: 6,350 mg/l Exposure time: 4 h <u>Skin irritation</u> : Classification: Irritating to skin. Result: Mild skin irritation Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. <u>Eye irritation</u> : Classification: Irritating to eyes. Result: Mild eye irritation
Toluene	108-88-3	<u>Acute oral toxicity</u> : LD50 rat Dose: 636 mg/kg <u>Acute dermal toxicity</u> : LD50 rabbit Dose: 12,124 mg/kg <u>Acute inhalation toxicity</u> : LC50 rat Dose: 49 mg/l Exposure time: 4 h <u>Skin irritation</u> : Classification: Irritating to skin. Result: Mild skin irritation Prolonged skin contact may defat the skin and produce dermatitis. <u>Eye irritation</u> : Classification: Irritating to eyes. Result: Mild eye irritation
Cyclohexane	110-82-7	<u>Acute dermal toxicity</u> : LD50 rabbit Dose: 2,001 mg/kg <u>Acute inhalation toxicity</u> : LC50 rat Dose: 14 mg/l Exposure time: 4 h <u>Skin irritation</u> : Classification: Irritating to skin. Result: Skin irritation <u>Eye irritation</u> : Classification: Irritating to eyes. Result: Mild eye irritation
Pentane	109-66-0	<u>Acute oral toxicity</u> : LD50 rat Dose: 2,001 mg/kg <u>Acute inhalation toxicity</u> : LC50 rat

Dose: 364 mg/l
Exposure time: 4 h

Skin irritation: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Heptane [and isomers]

142-82-5

Acute oral toxicity: LD50 rat
Dose: 15,001 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 103 g/m3
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Skin irritation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Ethylbenzene

100-41-4

Acute oral toxicity: LD50 rat
Dose: 3,500 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: 15,500 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 18 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Risk of serious damage to eyes.

Benzene

71-43-2

Acute oral toxicity: LD50 rat
Dose: 930 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 44 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.
Result: Risk of serious damage to eyes.

1,2,4-Trimethylbenzene

95-63-6

Acute inhalation toxicity: LC50 rat
Dose: 18 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Eye irritation

Sulfur	7704-34-9	<u>Acute oral toxicity:</u> LD50 rat
		Dose: 5,001 mg/kg
		<u>Acute dermal toxicity:</u> LD50 rabbit
		Dose: 2,001 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat
		Dose: 9.24 mg/l
		Exposure time: 4 h
		<u>Eye irritation:</u> Classification: Irritating to eyes.
		Result: Mild eye irritation

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

N-hexane	110-54-3	<u>Toxicity to fish:</u>
		LC50
		Species: Pimephales promelas (fathead minnow)
		Dose: 2.5 mg/l
		Exposure time: 96 h
		<u>Acute and prolonged toxicity for aquatic invertebrates:</u>
		EC50
		Species: Daphnia magna (Water flea)
		Dose: 2.1 mg/l
		Exposure time: 48 h
Toluene	108-88-3	<u>Toxicity to fish:</u>
		LC50
		Species: Carassius auratus (goldfish)
		Dose: 13 mg/l
		Exposure time: 96 h
		<u>Acute and prolonged toxicity for aquatic invertebrates:</u>
		EC50
		Species: Daphnia magna (Water flea)
		Dose: 11.5 mg/l
		Exposure time: 48 h
		<u>Toxicity to algae:</u>
		IC50
		Species: Selenastrum capricornutum (green algae)
		Dose: 12 mg/l
		Exposure time: 72 h
Cyclohexane	110-82-7	<u>Acute and prolonged toxicity for aquatic invertebrates:</u>
		EC50
		Species: Daphnia magna (Water flea)
		Dose: 3.78 mg/l
		Exposure time: 48 h
Pentane	109-66-0	<u>Acute and prolonged toxicity for aquatic invertebrates:</u>
		EC50
		Species: Daphnia magna (Water flea)
		Dose: 9.74 mg/l
		Exposure time: 48 h
Heptane [and isomers]	142-82-5	<u>Toxicity to fish:</u>
		LC50
		Species: Carassius auratus (goldfish)
		Dose: 4 mg/l
		Exposure time: 24 h

Acute and prolonged toxicity for aquatic invertebrates:

EC50

Species: Daphnia magna (Water flea)

Dose: 1.5 mg/l

Exposure time: 48 h

1,2,4-Trimethylbenzene

95-63-6

Toxicity to fish:

LC50

Species: Pimephales promelas (fathead minnow)

Dose: 7.72 mg/l

Exposure time: 96 h

Acute and prolonged toxicity for aquatic invertebrates:

EC50

Species: Daphnia

Dose: 3.6 mg/l

Exposure time: 48 h

Sulfur

7704-34-9

Acute and prolonged toxicity for aquatic invertebrates:

EC0

Species: Daphnia magna (Water flea)

Dose: > 10,000 mg/l

Exposure time: 24 h

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14. TRANSPORT INFORMATION**CFR**

Proper shipping name : PETROLEUM DISTILLATES, N.O.S.
UN-No. : 1268
Class : 3
Packing group : II
Hazard inducer : (Naphtha; Low boiling point naphtha)

TDG

Proper shipping name : PETROLEUM DISTILLATES, N.O.S.
UN-No. : UN1268
Class : 3
Packing group : II
Hazard inducer : (Naphtha; Low boiling point naphtha)

IATA Cargo Transport

UN UN-No. : UN1268
Description of the goods : PETROLEUM DISTILLATES, N.O.S.
(Naphtha; Low boiling point naphtha)
Class : 3
Packaging group : II
ICAO-Labels : 3
Packing instruction (cargo aircraft) : 364
Packing instruction (cargo aircraft) : Y341

IATA Passenger Transport

UN UN-No.	: UN1268
Description of the goods	: PETROLEUM DISTILLATES, N.O.S. (Naphtha; Low boiling point naphtha)
Class	: 3
Packaging group	: II
ICAO-Labels	: 3
Packing instruction (passenger aircraft)	: 353
Packing instruction (passenger aircraft)	: Y341

IMDG-Code

UN-No.	: UN 1268
Description of the goods	: PETROLEUM DISTILLATES, N.O.S. (Naphtha; Low boiling point naphtha)
Class	: 3
Packaging group	: II
IMDG-Labels	: 3
EmS Number	: F-E S-E
Marine pollutant	: No

SECTION 15. REGULATORY INFORMATION

OSHA Hazards	: Flammable liquid Moderate skin irritant Severe eye irritant Carcinogen Teratogen
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TSCA Status	: On TSCA Inventory
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DSL Status	: All components of this product are on the Canadian DSL list.
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SARA 311/312 Hazards	: Fire Hazard Acute Health Hazard Chronic Health Hazard
----------------------	---

SARA III	US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required
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Components
CAS-No.
1,2,4-Trimethylbenzene

95-63-6

Benzene

71-43-2

Ethylbenzene

100-41-4

Cyclohexane

110-82-7

Toluene

108-88-3

N-hexane

110-54-3

Xylene

1330-20-7

PENN RTK

US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

<u>Components</u>	<u>CAS-No.</u>
Heptane [and isomers]	142-82-5
Ethylbenzene	100-41-4
Benzene	71-43-2
1,2,4-Trimethylbenzene	95-63-6
Sulfur	7704-34-9
Pentane	109-66-0
Naphtha; Low boiling point naphtha	8030-30-6
Xylene	1330-20-7
N-hexane	110-54-3
Toluene	108-88-3
Cyclohexane	110-82-7

MASS RTK

US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

<u>Components</u>	<u>CAS-No.</u>
Heptane [and isomers]	142-82-5
Ethylbenzene	100-41-4
Benzene	71-43-2
1,2,4-Trimethylbenzene	95-63-6
Sulfur	7704-34-9
Naphtha; Low boiling point naphtha	8030-30-6
Xylene	1330-20-7
N-hexane	110-54-3
Toluene	108-88-3
Cyclohexane	110-82-7

NJ RTK

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

<u>Components</u>	<u>CAS-No.</u>
Heptane [and isomers]	142-82-5
Ethylbenzene	100-41-4
Benzene	71-43-2
1,2,4-Trimethylbenzene	95-63-6
Sulfur	7704-34-9
Naphtha; Low boiling point naphtha	8030-30-6
Xylene	1330-20-7
N-hexane	110-54-3

Toluene 108-88-3

Cyclohexane 110-82-7

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer.

Ethylbenzene 100-41-4

Benzene 71-43-2

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Toluene 108-88-3

Benzene 71-43-2

SECTION 16. OTHER INFORMATIONFurther information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Template : IOCL
Prepared by

Revision Date : 01/27/2011

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SECTION 1. IDENTIFICATION

Product name : ATF 134

Product code : 001C6060

Manufacturer or supplier's details

Manufacturer/Supplier : **Shell Oil Products US**
PO Box 4427
Houston TX 77210-4427
USA

SDS Request : (+1) 877-276-7285
Customer Service :

Emergency telephone number

Spill Information : 877-504-9351
Health Information : 877-242-7400

Recommended use of the chemical and restrictions on use

Recommended use : Transmission oil.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Based on available data this substance / mixture does not meet the classification criteria.

GHS label elements

Hazard pictograms : No Hazard Symbol required

Signal word : No signal word

Hazard statements : **PHYSICAL HAZARDS:**
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:
Not classified as a health hazard under GHS criteria.
ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

Precautionary statements : **Prevention:**
No precautionary phrases.
Response:
No precautionary phrases.
Storage:
No precautionary phrases.
Disposal:
No precautionary phrases.

Other hazards which do not result in classification

Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

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Used oil may contain harmful impurities.
Not classified as flammable but will burn.

The classification of this material is based on OSHA HCS 2012 criteria.

Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Synthetic base oil and additives.
Highly refined mineral oil.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.
The highly refined mineral oil is only present as additive diluent.

* contains one or more of the following CAS-numbers: 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-65-0, 68037-01-4, 72623-86-0, 72623-87-1, 8042-47-5, 848301-69-9.

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (%)
Alkyl amine	dimantine	124-28-7	0.1 - 0.5
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *		Not Assigned	0 - 90

SECTION 4. FIRST-AID MEASURES

General advice : Not expected to be a health hazard when used under normal conditions.

If inhaled : No treatment necessary under normal conditions of use.
If symptoms persist, obtain medical advice.

In case of skin contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.

In case of eye contact : Flush eye with copious quantities of water.
Remove contact lenses, if present and easy to do. Continue rinsing.
If persistent irritation occurs, obtain medical attention.

If swallowed : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Most important symptoms and effects, both acute and : Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.

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delayed	Ingestion may result in nausea, vomiting and/or diarrhoea.
Protection of first-aiders	: When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
Immediate medical attention, special treatment	: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	: Do not use water in a jet.
Specific hazards during fire-fighting	: Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.
Specific extinguishing methods	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	: Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Avoid contact with skin and eyes.
Environmental precautions	: Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	: Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.

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Additional advice : For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.
For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

Technical measures : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Precautions for safe handling : Avoid prolonged or repeated contact with skin.
Avoid inhaling vapour and/or mists.
When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Avoidance of contact : Strong oxidising agents.

Product Transfer : This material has the potential to be a static accumulator.
Proper grounding and bonding procedures should be used during all bulk transfer operations.

Storage

Other data : Keep container tightly closed and in a cool, well-ventilated place.
Use properly labeled and closable containers.

Store at ambient temperature.

Packaging material : Suitable material: For containers or container linings, use mild steel or high density polyethylene.
Unsuitable material: PVC.

Container Advice : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Oil mist, mineral	Not Assigned	TWA ((inhal-	5 mg/m3	US. ACGIH

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		able frac- tion))		Threshold Limit Values
		(Mist)	5 mg/m3	OSHA_TRANS
		TWA (Mist)	5 mg/m3	OSHA Z-1
		TWA (Inhal- able fraction)	5 mg/m3	ACGIH

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods
<http://www.cdc.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods
<http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances
<http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany
<http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France <http://www.inrs.fr/accueil>

Engineering measures

: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

General Information:

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or subsequent recycle.

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and

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protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Personal protective equipment

Respiratory protection

: No respiratory protection is ordinarily required under normal conditions of use.
In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.
If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.
Check with respiratory protective equipment suppliers.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
Select a filter suitable for the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)].

Hand protection
Remarks

: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

Eye protection

: If material is handled such that it could be splashed into eyes, protective eyewear is recommended.

Skin and body protection

: Skin protection is not ordinarily required beyond standard work clothes.
It is good practice to wear chemical resistant gloves.

Thermal hazards

: Not applicable

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Protective measures : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Environmental exposure controls

General advice : Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.
Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid at room temperature.

Colour : red

Odour : Slight hydrocarbon

Odour Threshold : Data not available

pH : Not applicable

pour point : -51 °C / -60 °F Method: ISO 3016

Initial boiling point and boiling range : > 280 °C / 536 °F estimated value(s)

Flash point : 202 °C / 396 °F
Method: ISO 2592

Evaporation rate : Data not available

Flammability (solid, gas) : Data not available

Upper explosion limit : Typical 10 %(V)

Lower explosion limit : Typical 1 %(V)

Vapour pressure : < 0.5 Pa (20 °C / 68 °F)
estimated value(s)

Relative vapour density : > 1 estimated value(s)

Relative density : 0.847 (15 °C / 59 °F)

Density : 847 kg/m³ (15.0 °C / 59.0 °F)
Method: ISO 12185

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900 kg/m³ (-40 °C / -40 °F)
Method: DIN 51398

Solubility(ies)

Water solubility : negligible

Solubility in other solvents : Data not available

Partition coefficient: n-octanol/water : Pow: > 6(based on information on similar products)

Auto-ignition temperature : >
320 °C / 608 °F

Viscosity

Viscosity, dynamic : Data not available

Viscosity, kinematic : 29 mm²/s (40.0 °C / 104.0 °F)
Method: ISO 3104

6.2 mm²/s (100 °C / 212 °F)
Method: ISO 3104

Explosive properties : Not classified

Oxidizing properties : Data not available

Conductivity : This material is not expected to be a static accumulator.

Decomposition temperature : Data not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

Chemical stability : Stable.

Possibility of hazardous reactions : Reacts with strong oxidising agents.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : Strong oxidising agents.

Hazardous decomposition products : Hazardous decomposition products are not expected to form during normal storage.

SECTION 11. TOXICOLOGICAL INFORMATION

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Basis for assessment : Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Information on likely routes of exposure

Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity : LD50 (rat): > 5,000 mg/kg
Remarks: Expected to be of low toxicity:

Acute inhalation toxicity : Remarks: Not considered to be an inhalation hazard under normal conditions of use.

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Remarks: Expected to be of low toxicity:

Skin corrosion/irritation

Product:

Remarks: Expected to be slightly irritating., Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

Serious eye damage/eye irritation

Product:

Remarks: Expected to be slightly irritating.

Respiratory or skin sensitisation

Product:

Remarks: Not expected to be a skin sensitiser.

Germ cell mutagenicity

Product:

: Remarks: Not considered a mutagenic hazard.

Carcinogenicity

Product:

Remarks: Not expected to be carcinogenic.

Remarks: Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies., Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

IARC

No component of this product present at levels greater than or

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equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

:

Remarks: Not expected to impair fertility., Not expected to be a developmental toxicant.

STOT - single exposure

Product:

Remarks: Not expected to be a hazard.

STOT - repeated exposure

Product:

Remarks: Not expected to be a hazard.

Aspiration toxicity

Product:

Not considered an aspiration hazard.

Further information

Product:

Remarks: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal., ALL used oil should be handled with caution and skin contact avoided as far as possible.

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment

: Ecotoxicological data have not been determined specifically for this product.
Information given is based on a knowledge of the components

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and the ecotoxicology of similar products.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s). (LL/EL/IL50 expressed as the nominal amount of product required to prepare aqueous test extract).

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) : Remarks: Expected to be practically non toxic:
LL/EL/IL50 > 100 mg/l

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) : Remarks: Expected to be practically non toxic:
LL/EL/IL50 > 100 mg/l

Toxicity to algae (Acute toxicity) : Remarks: Expected to be practically non toxic:
LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: Data not available

Toxicity to bacteria (Acute toxicity) : Remarks: Data not available

Persistence and degradability

Product:

Biodegradability : Remarks: Expected to be not readily biodegradable.
Major constituents are expected to be inherently biodegradable, but contains components that may persist in the environment.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Contains components with the potential to bioaccumulate.

Mobility in soil

Product:

Mobility : Remarks: Liquid under most environmental conditions.
If it enters soil, it will adsorb to soil particles and will not be mobile.

Remarks: Floats on water.

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Other adverse effects

no data available

Product:

Additional ecological information

: Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

Poorly soluble mixture.
May cause physical fouling of aquatic organisms.

Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues

: Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.
Waste, spills or used product is dangerous waste.

Contaminated packaging

: Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Local legislation
Remarks

: Disposal should be in accordance with applicable regional, national, and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

Not regulated as a dangerous good

International Regulations

IATA-DGR

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Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution category : Not applicable
Ship type : Not applicable
Product name : Not applicable
Special precautions : Not applicable

Special precautions for user

Remarks : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Additional Information : MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : No OSHA Hazards

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ., Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

Pennsylvania Right To Know

Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0

California Prop 65 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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The components of this product are reported in the following inventories:

EINECS : All components listed or polymer exempt.

TSCA : All components listed.

DSL : All components listed.

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reactivity) 0, 1, 0

A vertical bar (|) in the left margin indicates an amendment from the previous version.

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists

ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances

ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council

CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

DIN = Deutsches Institut für Normung

DMEL = Derived Minimal Effect Level

DNEL = Derived No Effect Level

DSL = Canada Domestic Substance List

EC = European Commission

EC50 = Effective Concentration fifty

ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals

ECHA = European Chemicals Agency

EINECS = The European Inventory of Existing Commercial Chemical Substances

EL50 = Effective Loading fifty

ENCS = Japanese Existing and New Chemical Substances Inventory

EWG = European Waste Code

GHS = Globally Harmonised System of Classification and Labelling of Chemicals

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IC50 = Inhibitory Concentration fifty

IL50 = Inhibitory Level fifty

IMDG = International Maritime Dangerous Goods

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INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the
determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of
Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Ob-
served Effect Level
OE_HP V = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical
Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of
Chemicals
RID = Regulations Relating to International Carriage of Dan-
gerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

Sources of key data used to : The quoted data are from, but not limited to, one or more
compile the Safety Data sources of information (e.g. toxicological data from Shell
Sheet Health Services, material suppliers' data, CONCAWE, EU
IUCLID data base, EC 1272 regulation, etc).

Revision Date : 09/21/2017

This information is based on our current knowledge and is intended to describe the product for
the purposes of health, safety and environmental requirements only. It should not therefore be
construed as guaranteeing any specific property of the product.

SAFETY DATA SHEET



Revision Date 14-Jun-2017

SDS Number 888100008800

Revision Number 1.01

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product Name Crude Oil

Synonyms Sour Crude Oil, Sweet Crude Oil, Light Crude Oil, Heavy Crude Oil, Generic Crude Oil

Recommended Use Refining feedstock
Uses advised against All others

Manufacturer
Tesoro Refining & Marketing Co.
19100 Ridgewood Parkway
San Antonio, TX 78259

Emergency Telephone Chemtrec: 1-800-424-9300
Tesoro Call Center: 1-877-783-7676

E-mail address ProductStewardship@TSOCORP.com

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Acute dermal toxicity	Category 4
Skin Corrosion/Irritation Category	Category 2
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1
Acute Aquatic Toxicity	Category 1
Chronic Aquatic Toxicity	Category 1

Label elements

Danger

Highly flammable liquid and vapor
Harmful in contact with skin
Causes skin irritation
May cause genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Causes damage to organs through prolonged or repeated exposure
Very toxic to aquatic life with long lasting effects



Appearance Liquid

Physical State @20°C Liquid

Odor Petroleum asphalt odor. Hydrogen sulfide (H₂S) has a characteristic rotten egg odor with an odor threshold as low as 10 parts per billion or even less. However, this odor should not be used as a warning property because H₂S can deaden the sense of smell. H₂S concentrations can be measured with an H₂S meter or colorimetric indicating tubes.

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Wear protective gloves/protective clothing/eye protection/face protection
 Wash face, hands and any exposed skin thoroughly after handling
 Do not breathe dust/fume/gas/mist/vapors/spray
 Do not eat, drink or smoke when using this product
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 Keep container tightly closed
 Ground/or bond container and receiving equipment
 Use explosion-proof electrical/ ventilating / lighting / equipment
 Use only non-sparking tools
 Take precautionary measures against static discharge

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
 Call a POISON CENTER or doctor if you feel unwell
 If skin irritation occurs: Get medical advice/attention
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
 Wash contaminated clothing before reuse
 In case of fire: Use CO₂, dry chemical, or foam to extinguish

Precautionary Statements - Storage

Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Percent
Petroleum; Crude oil	8002-05-9	0-100
Sulfur	7704-34-9	0-5
Benzene	71-43-2	0.1-3
N-hexane	110-54-3	0-1.5
Xylene	1330-20-7	0-<1

Toluene	108-88-3	0-<1
Polycyclic Aromatic Hydrocarbons	130498-29-2	0-<1
Naphthalene	91-20-3	0-<1
Ethylbenzene	100-41-4	0-<1
Cumene	98-82-8	0-<1
Hydrogen Sulfide	7783-06-4	0-0.5

4. FIRST AID MEASURES

Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance. Remove from exposure, lie down. In case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt, seek medical advice. Never give anything by mouth to an unconscious person. Take off all contaminated clothing immediately and thoroughly wash material from skin.
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.
Ingestion	Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.
Self-protection of the first aider	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Wear personal protective clothing (see section 8). Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Dry chemical. Carbon dioxide (CO ₂). Water spray. Alcohol resistant foam.
Small Fire	Any extinguisher suitable for Class B fires, dry chemical, CO ₂ , foam (AFFF/ATC), or water spray can be used.
Large Fire	Water spray, fog or alcohol-resistant foam. CAUTION: Use of water spray when fighting fire may be inefficient. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	CAUTION: Use of water spray when fighting fire may be inefficient.
Specific hazards arising from the chemical	Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazardous combustion products	Smoke, CO, and other products of incomplete combustion.
Explosion data	
Sensitivity to Mechanical Impact	None.

Sensitivity to Static Discharge	Yes.			
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn.			
Further information	ALWAYS stay away from tanks engulfed in fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Do not direct water at source of leak or safety devices; icing may occur. Cool containers with flooding quantities of water until well after fire is out. Do not allow run-off from fire-fighting to enter drains or water courses.			
NFPA	Health hazards 2	Flammability 3	Stability 0	Physical and chemical properties -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.
Other Information	Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions	Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.
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Methods and material for containment and cleaning up

Methods for containment	Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Methods for cleaning up	Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.
Prevention of secondary hazards	Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Use personal protection equipment. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes. Take off contaminated clothing and wash before reuse.
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Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL
Petroleum; Crude oil 8002-05-9	-	TWA: 500 ppm TWA: 2000 mg/m ³ (vacated) TWA: 400 ppm (vacated) TWA: 1600 mg/m ³
Benzene 71-43-2	STEL: 2.5 ppm TWA: 0.5 ppm S*	TWA: 10 ppm applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028 TWA: 1 ppm (vacated) TWA: 10 ppm unless specified in 1910.1028 (vacated) STEL: 50 ppm 10 min unless specified in 1910.1028 (vacated) Ceiling: 25 ppm unless specified in 1910.1028 Ceiling: 25 ppm STEL: 5 ppm see 29 CFR 1910.1028
N-hexane 110-54-3	TWA: 50 ppm S*	TWA: 500 ppm TWA: 1800 mg/m ³ (vacated) TWA: 50 ppm (vacated) TWA: 180 mg/m ³
Xylene 1330-20-7	STEL: 150 ppm TWA: 100 ppm	TWA: 100 ppm TWA: 435 mg/m ³ (vacated) TWA: 100 ppm (vacated) TWA: 435 mg/m ³ (vacated) STEL: 150 ppm (vacated) STEL: 655 mg/m ³
Toluene 108-88-3	TWA: 20 ppm	TWA: 200 ppm (vacated) TWA: 100 ppm (vacated) TWA: 375 mg/m ³ (vacated) STEL: 150 ppm (vacated) STEL: 560 mg/m ³ Ceiling: 300 ppm
Naphthalene 91-20-3	TWA: 10 ppm S*	TWA: 10 ppm TWA: 50 mg/m ³ (vacated) TWA: 10 ppm (vacated) TWA: 50 mg/m ³ (vacated) STEL: 15 ppm (vacated) STEL: 75 mg/m ³
Ethylbenzene 100-41-4	TWA: 20 ppm	TWA: 100 ppm TWA: 435 mg/m ³ (vacated) TWA: 100 ppm (vacated) TWA: 435 mg/m ³ (vacated) STEL: 125 ppm (vacated) STEL: 545 mg/m ³
Cumene 98-82-8	TWA: 50 ppm	TWA: 50 ppm TWA: 245 mg/m ³ (vacated) TWA: 50 ppm (vacated) TWA: 245 mg/m ³ (vacated) S* S*
Hydrogen Sulfide	STEL: 5 ppm	(vacated) TWA: 10 ppm

7783-06-4	TWA: 1 ppm	(vacated) TWA: 14 mg/m ³ (vacated) STEL: 15 ppm (vacated) STEL: 21 mg/m ³ Ceiling: 20 ppm
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S* - Potential exposure by cutaneous route

NOTE: Limits shown for guidance only. For additional information, OSHA's 1989 air contaminants standard exposure limits provided even though the limits were vacated in 1992. State, local or other agencies or advisory groups may have established more stringent limits. Follow applicable regulations.

Appropriate engineering controls

Engineering controls Showers
 Eyewash stations
 Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Tight sealing safety goggles.

Hand Protection Wear suitable gloves. Impervious gloves.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.
Antistatic boots.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a NIOSH approved respirator when there is a potential for airborne concentrations to exceed occupational exposure limits. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2, NIOSH Respirator Decision Logic, and the respirator manufacturer for additional guidance on respiratory protection selection. A Self-Contained Breathing Apparatus (SCBA) should be used for fire fighting. Use a NIOSH approved positive-pressure supplied air respirator if there is a potential for uncontrolled release, exposure levels are unknown, in oxygen deficient (less than 19.5% oxygen), or any other circumstance where an air-purifying respirator may not provide adequate protection.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State @20°C	Liquid
Appearance	Liquid
Odor	Petroleum asphalt odor. Hydrogen sulfide (H ₂ S) has a characteristic rotten egg odor with an odor threshold as low as 10 parts per billion or even less. However, this odor should not be used as a warning property because H ₂ S can deaden the sense of smell. H ₂ S concentrations can be measured with an H ₂ S meter or colorimetric indicating tubes.
Color	Dark yellow to brown or greenish black
Odor threshold	Odor threshold varies with the composition of the crude oil

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not applicable	
Melting point / freezing point	-30 °C / -22 °F	
Boiling range	300 °C	
Flash point	-7 °C / 19 °F	
Evaporation rate	No data available	
Flammability (solid, gas)	Flammable gas or vapor may be released by liquid	
Flammability Limit in Air %		

Upper flammability limit:	7
Lower flammability limit:	0.7
Vapor pressure	6 to 45
Vapor density	No data available
Relative density	0.8 to 1.0
Water solubility	1 to 2% by weight is maximum reported for soluble components of crude oil
Solubility in other solvents	No data available
Partition coefficient	2 to > 6
Autoignition temperature	No data available °C / °F
Decomposition temperature	No data available
Kinematic viscosity	5 to > 1300 mm ² /s
Dynamic viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Minimum Ignition Energy (mJ)	No data available
K _{st} (bar.m/s)	No data available
Softening point	No data available
VOC Content (%)	No data available
Density	No data available
Bulk density	Not applicable
Conductivity	No data available

10. STABILITY AND REACTIVITY

Reactivity	This product is non-reactive under normal conditions.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.
Hazardous decomposition products	None under normal use conditions.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.
Eye contact	Specific test data for the substance or mixture is not available. Irritating to eyes. (based on components).
Skin contact	Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Information on toxicological effects

Symptoms	Redness. May cause redness and tearing of the eyes.
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Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral)	3,093.00 mg/kg
ATEmix (dermal)	1,836.00 mg/kg
ATEmix (inhalation-dust/mist)	8.00 mg/l
ATEmix (inhalation-vapor)	1,809.77 mg/l

Chemical Name	Oral LD50	LD50/dermal/rat - NO UNITS (Wizards mg/kg)	Inhalation LC50
Petroleum; Crude oil 8002-05-9	> 4300 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	-
Sulfur 7704-34-9	> 3000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 9.23 mg/L (Rat) 4 h
Benzene 71-43-2	= 1800 mg/kg (Rat) = 810 mg/kg (Rat)	> 8200 mg/kg (Rabbit)	= 44.66 mg/L (Rat) 4 h
N-hexane 110-54-3	= 25 g/kg (Rat)	= 3000 mg/kg (Rabbit)	= 48000 ppm (Rat) 4 h
Xylene 1330-20-7	= 3500 mg/kg (Rat)	> 1700 mg/kg (Rabbit) > 4350 mg/kg (Rabbit)	= 29.08 mg/L (Rat) 4 h = 5000 ppm (Rat) 4 h
Toluene 108-88-3	= 2600 mg/kg (Rat)	= 12000 mg/kg (Rabbit)	= 12.5 mg/L (Rat) 4 h
Naphthalene 91-20-3	= 1110 mg/kg (Rat) = 490 mg/kg (Rat)	= 1120 mg/kg (Rabbit) > 20 g/kg (Rabbit)	> 340 mg/m ³ (Rat) 1 h
Ethylbenzene 100-41-4	= 3500 mg/kg (Rat)	= 15400 mg/kg (Rabbit)	= 17.4 mg/L (Rat) 4 h
Cumene 98-82-8	= 1400 mg/kg (Rat)	= 12300 µL/kg (Rabbit)	= 39000 mg/m ³ (Rat) 4 h > 3577 ppm (Rat) 6 h
Hydrogen Sulfide 7783-06-4	-	-	= 700 mg/m ³ (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chemical Name

Benzene

Benzene exposure may occur through inhalation, ingestion, skin absorption or eye contact. Benzene exposure can cause skin, eye and respiratory irritation. The most characteristic systemic effect resulting from high enough intermediate and chronic benzene exposure is arrested development of blood cells. Studies have linked overexposure to benzene to many hematological effects including aplastic anemia, pancytopenia, leukopenia, and myelodysplastic syndrome. In vivo and in vitro data from both humans and animals show that benzene and/or its metabolites are genotoxic. Studies in animals provide supporting evidence for the carcinogenicity of inhaled benzene. Epidemiological studies have reported a causal relationship between occupational benzene exposures and acute myelogenous leukemia. Some studies suggest associations between benzene exposure and non-Hodgkin's lymphoma, multiple myeloma, and other cancers. Benzene has been classified as carcinogenic to humans (Group 1) by IARC, and the ECHA C&L Inventory states it may cause cancer (Carc. 1B). IARC concluded that benzene causes acute myeloid leukemia and a positive association has been observed for acute lymphatic leukemia, chronic lymphatic leukemia, non-hodgkin lymphoma, and multiple myeloma. Human studies suggest that female fertility and menstrual cycles were effected by benzene exposure; however, due to uncertainties in exposure and limited data the studies were considered inconclusive. Developmental effects have been observed in animals including persistent hematopoietic anomalies. It has been suggested that the reported benzene fetotoxicity of decreased weight and skeletal variants is a function of maternal toxicity.

N-hexane

N-Hexane may be fatal if it is swallowed and enters the airways. Acute (short-term) dermal overexposure can cause skin and eye irritation in humans. Acute inhalation and oral exposures have caused systemic effects such as decreased body weight and respiratory effects, as well as reproductive and developmental effects in animals. Respiratory effects may include nose, throat, and lung irritation, coughing, wheezing, and shortness of breath. Acute overexposures may also cause headache, nausea, vomiting, dizziness, lightheadedness, loss of consciousness, coma, and death in human. Intermediate duration inhalation and oral exposures to relatively high concentrations (400-3,000 ppm) of n-hexane have led to nerve damage, paralysis, and/or deaths in rats. N-hexane may damage male

reproductive glands. Intermediate-duration inhalation and oral exposure to high levels (1,000-10,000 ppm; 4,000 mg/kg/day) of n-hexane damages sperm-forming cells and testicles in rats. Chronic (long-term) inhalation of large amounts of n-hexane causes nerve damage and paralysis of the arms and legs in humans. Dermal effects, such as a skin rash, dryness, or redness can also occur following chronic overexposure. Chronic duration inhalation exposures in animals are not available.

Xylene

Mixed xylenes can cause skin, eye, and respiratory irritation. Both short- and long-term repeated exposures to high enough levels in humans have resulted in a variety of adverse nervous system effects that include headache, mental confusion, narcosis, equilibrium, impaired short-term memory, dizziness and tremors. Studies in laboratory animals indicate that xylene can cause changes in the liver and harmful effects on the kidneys, lungs, heart, and nervous system as well as hearing loss. The relevance of these observations to humans is not clear at this time. In general, developmental studies in animals reported adverse fetal effects only at concentrations that caused maternal toxicity. The relevance of these observations to humans is unclear at this time. The available data from in vitro and in vivo studies suggest that xylenes are not mutagenic and do not produce chromosomal abnormalities. Furthermore, rats exposed up to 500 mg/kg bw and mice exposed up to 1000 mg/kg bw mixed xylenes for 103 weeks showed no treatment-related increases in any tumor type. IARC has determined that the carcinogenicity of xylenes is not classifiable (Group 3).

Naphthalene

Acute (short term) exposure to large amounts of naphthalene may damage or destroy red blood cells, a condition termed hemolytic anemia. Symptoms of hemolytic anemia include fatigue, lack of appetite, restlessness, and pale skin. Acute inhalation or oral exposure to large amounts of naphthalene may also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Ingestion may result in death. Chronic (long term) exposure in rats and mice can lead to irritation and inflammation of their nose and lungs; nasal hyperplasia and metaplasia in respiratory and olfactory epithelium has been reported in studies in mice. Exposure to high enough levels may have effects on the blood, resulting in chronic hemolytic anemia, and effects on the eyes, resulting in the development of cataracts. Cancer from naphthalene exposure has been observed in animals, but not humans. IARC has classified naphthalene as possibly carcinogenic to humans (Group 2B), and the ECHA C&L Inventory reports that naphthalene is suspected of causing cancer (Carc. 2).

Ethylbenzene

Ethylbenzene may be fatal if it is swallowed and enters the airways. Short term (acute) exposure to ethylbenzene can cause eye, skin, and throat irritation. It may have effects on the central nervous system including dizziness, and at very high exposure, lowering on consciousness. Long-term exposures orally and by inhalation have been shown to cause damage to the inner ear and hearing in animals. Long term or repeated exposure to high enough levels of ethylbenzene may have effects on the kidneys and liver, resulting in impaired functions, and repeated contact with skin may cause dryness and cracking. Animal studies indicate some evidence of adverse effects on the liver, kidney, thyroid, and pituitary gland. In a 2-year inhalation study in mice and rats, the animals were exposed to 0, 75, 250, and 750 ppm ethylbenzene 6 hours/day, 5 days/week. Renal effects were observed in male rats (renal tubule hyperplasia) and female rats (renal tubule adenoma and adenoma or carcinoma) exposed to 750 ppm. The incidence of adenoma in the testes of males was significantly greater than in the control group and exceeded the historical control range for inhalation studies. The incidences of alveolar/bronchiolar adenoma was increased in males and the incidence of hepatocellular adenoma was increased in females. IARC has classified ethylbenzene as possibly carcinogenic to humans (Group 2B). Studies do not provide conclusive evidence of reproductive effects. In one study, developmental effects were reported in animals but only at very high doses (≥ 1000 ppm) that are likely to be toxic to the mother. The relevance of these findings to humans is not clear at this time.

Cumene

Cumene may be fatal if it is swallowed and enters the airways. Cumene targets the eyes, skin, respiratory system, and central nervous system. Short term (acute) exposure may result in irritation of the eyes, skin and mucous membranes, headache, narcosis, and coma. At high enough levels, repeated or prolonged contact with skin may cause dermatitis. Acute exposures to cumene in animal studies has been shown to result in neurotoxicological effects at concentrations > 500 ppm. A cumene concentration of 2,058 ppm has been shown to result in a 50% reduction in the respiratory rate of mice. In animals, an increase in organ weights, primarily the kidneys, are the most prominent effects observed in rodents

repeatedly exposed to cumene by either the oral or inhalation route. No adverse effects were observed in rat or rabbit fetuses whose mothers had been exposed to cumene during fetal development. Cumene is classified as possibly carcinogenic to humans by IARC (Group 2B).

Hydrogen Sulfide

Hydrogen Sulfide may be fatal if inhaled. The nervous system and respiratory tract are the main targets of hydrogen sulfide toxicity. Short term (acute) overexposure may cause irritation to the eyes, nose or throat. At high enough levels, effects on the nervous system include headaches, poor concentration, poor memory, unconsciousness, and death. Hydrogen sulfide has a strong odor that is characteristic of rotten eggs; however, the odor is not a reliable warning property as olfactory fatigue occurs at high levels. Respiratory distress or arrest can occur at high concentrations. Direct contact of the liquid with skin can cause frostbite; contact with the eyes can cause redness or severe burns. Cardiovascular effects have also been observed. NIOSH has determined that 100 ppm is immediately dangerous to life and health.

Health hazard and classification information

Skin Corrosion/Irritation Category Classification based on data available for ingredients. Irritating to skin.

Serious eye damage/eye irritation No information available.

No information available.

Germ cell mutagenicity Classification based on data available for ingredients. Contains a known or suspected mutagen. The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

Carcinogenicity Classification based on data available for ingredients. Contains a known or suspected carcinogen.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Petroleum; Crude oil 8002-05-9	A2	Group 3	Known	X
Benzene 71-43-2	A1	Group 1	Known	X
Xylene 1330-20-7	-	Group 3	-	-
Toluene 108-88-3	-	Group 3	-	-
Naphthalene 91-20-3	A3	Group 2B	Reasonably Anticipated	X
Ethylbenzene 100-41-4	A3	Group 2B	-	X
Cumene 98-82-8	-	Group 2B	Reasonably Anticipated	X

Reproductive toxicity Classification based on data available for ingredients. Contains a known or suspected reproductive toxin. The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Target Organ Systemic Toxicant - Single Exposure No information available.

Target Organ Systemic Toxicant - Repeated Exposure Causes damage to organs through prolonged or repeated exposure.

Target organ effects liver, kidney, Respiratory system, Eyes, Skin, Central nervous system, blood, Peripheral Nervous System (PNS), bone marrow.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Additional Ecological Information Release of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems. U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number to the U.S. Coast Guard National Response Center is (800) 424-8802

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Petroleum; Crude oil 8002-05-9	-	258: 96 h Salmo gairdneri mg/L LC50 static	-	36: 24 h Daphnia magna mg/L EC50 0.26: 48 h Daphnia magna mg/L EC50 Static
Sulfur 7704-34-9	-	14: 96 h Lepomis macrochirus mg/L LC50 static 866: 96 h Brachydanio rerio mg/L LC50 static 180: 96 h Oncorhynchus mykiss mg/L LC50 static	-	-
Benzene 71-43-2	29: 72 h Pseudokirchneriella subcapitata mg/L EC50	10.7 - 14.7: 96 h Pimephales promelas mg/L LC50 flow-through 5.3: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 22.49: 96 h Lepomis macrochirus mg/L LC50 static 28.6: 96 h Poecilia reticulata mg/L LC50 static 22330 - 41160: 96 h Pimephales promelas µg/L LC50 static 70000 - 142000: 96 h Lepomis macrochirus µg/L LC50 static	-	10: 48 h Daphnia magna mg/L EC50 8.76 - 15.6: 48 h Daphnia magna mg/L EC50 Static
N-hexane 110-54-3	-	2.1 - 2.98: 96 h Pimephales promelas mg/L LC50 flow-through	-	1000: 24 h Daphnia magna mg/L EC50
Xylene 1330-20-7	-	13.4: 96 h Pimephales promelas mg/L LC50 flow-through 780: 96 h Cyprinus carpio mg/L LC50 semi-static 780: 96 h Cyprinus carpio mg/L LC50 13.5 - 17.3: 96 h Oncorhynchus mykiss mg/L LC50 19: 96 h Lepomis macrochirus mg/L LC50 13.1 - 16.5: 96 h Lepomis macrochirus mg/L LC50 flow-through 23.53 - 29.97: 96 h Pimephales promelas mg/L LC50 static 30.26 - 40.75: 96 h Poecilia reticulata mg/L LC50 static 2.661 - 4.093: 96 h Oncorhynchus mykiss mg/L LC50 static 7.711 -	-	0.6: 48 h Gammarus lacustris mg/L LC50 3.82: 48 h water flea mg/L EC50

		9.591: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static		
Toluene 108-88-3	12.5: 72 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50 static 433: 96 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50	12.6: 96 h <i>Pimephales promelas</i> mg/L LC50 static 5.89 - 7.81: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 flow-through 15.22 - 19.05: 96 h <i>Pimephales promelas</i> mg/L LC50 flow-through 5.8: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 semi-static 11.0 - 15.0: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static 50.87 - 70.34: 96 h <i>Poecilia reticulata</i> mg/L LC50 static 14.1 - 17.16: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 static 28.2: 96 h <i>Poecilia reticulata</i> mg/L LC50 semi-static 54: 96 h <i>Oryzias latipes</i> mg/L LC50 static	-	11.5: 48 h <i>Daphnia magna</i> mg/L EC50 5.46 - 9.83: 48 h <i>Daphnia magna</i> mg/L EC50 Static
Naphthalene 91-20-3	0.4: 72 h <i>Skeletonema costatum</i> mg/L EC50	5.74 - 6.44: 96 h <i>Pimephales promelas</i> mg/L LC50 flow-through 31.0265: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static 0.91 - 2.82: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 static 1.6: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 flow-through 1.99: 96 h <i>Pimephales promelas</i> mg/L LC50 static	-	1.96: 48 h <i>Daphnia magna</i> mg/L EC50 Flow through 1.09 - 3.4: 48 h <i>Daphnia magna</i> mg/L EC50 Static 2.16: 48 h <i>Daphnia magna</i> mg/L LC50
Ethylbenzene 100-41-4	438: 96 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50 4.6: 72 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50 1.7 - 7.6: 96 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50 static 2.6 - 11.3: 72 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50 static	4.2: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 semi-static 7.55 - 11: 96 h <i>Pimephales promelas</i> mg/L LC50 flow-through 9.6: 96 h <i>Poecilia reticulata</i> mg/L LC50 static 9.1 - 15.6: 96 h <i>Pimephales promelas</i> mg/L LC50 static 11.0 - 18.0: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 static 32: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static	-	1.8 - 2.4: 48 h <i>Daphnia magna</i> mg/L EC50
Cumene 98-82-8	2.6: 72 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50	6.04 - 6.61: 96 h <i>Pimephales promelas</i> mg/L LC50 flow-through 4.8: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 flow-through 5.1: 96 h <i>Poecilia reticulata</i> mg/L LC50 semi-static 2.7: 96 h <i>Oncorhynchus mykiss</i>	-	0.6: 48 h <i>Daphnia magna</i> mg/L EC50 7.9 - 14.1: 48 h <i>Daphnia magna</i> mg/L EC50 Static

		mg/L LC50 semi-static		
Hydrogen Sulfide 7783-06-4	-	0.016: 96 h Pimephales promelas mg/L LC50 flow-through 0.0448: 96 h Lepomis macrochirus mg/L LC50 flow-through	-	0.022: 96 h Gammarus pseudolimnaeus mg/L LC50

Persistence and degradability No information available.

Bioaccumulation There is no data for this product.

Component Information

Chemical Name	Partition coefficient
Benzene 71-43-2	2.1
Xylene 1330-20-7	2.77 - 3.15
Toluene 108-88-3	2.7
Naphthalene 91-20-3	3.6
Ethylbenzene 100-41-4	3.2
Cumene 98-82-8	3.7
Hydrogen Sulfide 7783-06-4	0.45

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

US EPA Waste Number U019 U055 U135 U165 U220 U239 D001.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Benzene 71-43-2	U019	Included in waste streams: F005, F024, F025, F037, F038, F039, K085, K104, K105, K141, K142, K143, K144, K145, K147, K151, K159, K169, K171, K172	0.5 mg/L regulatory level	U019
Xylene 1330-20-7	-	Included in waste stream: F039	-	U239
Toluene 108-88-3	U220	Included in waste streams: F005, F024, F025, F039, K015, K036, K037, K149, K151	-	U220
Polycyclic Aromatic Hydrocarbons 130498-29-2	-	Included in waste stream: K022	-	-
Naphthalene	U165	Included in waste	-	U165

91-20-3		streams: F024, F025, F034, F039, K001, K035, K060, K087, K145		
Ethylbenzene 100-41-4	-	Included in waste stream: F039	-	-
Cumene 98-82-8	-	-	-	U055
Hydrogen Sulfide 7783-06-4	U135	-	-	U135

Chemical Name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Toluene 108-88-3	-	-	Toxic waste waste number F025 Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	-
Naphthalene 91-20-3	-	-	Toxic waste waste number F025 Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	-

California Hazardous Waste Status This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Benzene 71-43-2	Toxic Ignitable
N-hexane 110-54-3	Toxic Ignitable
Xylene 1330-20-7	Toxic Ignitable

Toluene 108-88-3	Toxic Ignitable
Naphthalene 91-20-3	Toxic
Ethylbenzene 100-41-4	Toxic Ignitable
Cumene 98-82-8	Toxic Ignitable

14. TRANSPORT INFORMATION

DOT

UN/ID no UN1267
Proper Shipping Name PETROLEUM CRUDE OIL
Hazard Class 3
Packing group I
Reportable Quantity (RQ) Hydrogen sulfide H2S: RQ kg= 9080.00, Benzene: RQ kg= 151.33, Naphthalene: RQ kg= 4540.00, Xylenes mixed isomers: RQ kg= 4540.00
Special Provisions 357, T11, TP1, TP8, 144
Description UN1267, Petroleum crude oil, 3, I, RQ
Emergency Response Guide Number 128

TDG

UN/ID no UN1267
Proper Shipping Name PETROLEUM CRUDE OIL
Hazard Class 3
Packing group I
Description UN1267, Petroleum crude oil, 3, I

MEX

UN/ID no UN1267
Proper Shipping Name PETROLEUM CRUDE OIL
Hazard Class 3
Special Provisions 357
Packing group I
Description UN1267, Petroleum crude oil, 3, I

IATA

UN/ID no UN1267
Proper Shipping Name PETROLEUM CRUDE OIL
Hazard Class 3
Packing group I or II, depending on composition
Description UN1267, Petroleum crude oil, 3, I

IMDG

UN/ID no UN1267
Proper Shipping Name PETROLEUM CRUDE OIL
Hazard Class 3
Packing group I
EmS No. F-E, S-E
Special Provisions 357
Description UN1267, Petroleum crude oil, 3, I, (-7°C c.c.)

15. REGULATORY INFORMATION

International Inventories

TSCA Not Listed
DSL/NDL Not Listed
ENCS Not Listed
IECSC Not Listed

KECL	Not Listed
PICCS	Not Listed
AICS	Not Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Benzene 71-43-2	10 lb	X	X	X
Xylene 1330-20-7	100 lb	-	-	X
Toluene 108-88-3	1000 lb	X	X	X
Polycyclic Aromatic Hydrocarbons 130498-29-2	-	X	-	-
Naphthalene 91-20-3	100 lb	X	X	X
Ethylbenzene 100-41-4	1000 lb	X	X	X
Hydrogen Sulfide 7783-06-4	100 lb	-	-	X

CERCLA

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Benzene - 71-43-2	Carcinogen Developmental

	Male Reproductive
Naphthalene - 91-20-3	Carcinogen
Cumene - 98-82-8	Carcinogen
Ethylbenzene - 100-41-4	Carcinogen
Toluene - 108-88-3	Developmental

U.S. State Right-to-Know Regulations

US State Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Petroleum; Crude oil 8002-05-9	X	X	X
Sulfur 7704-34-9	X	X	X
Benzene 71-43-2	X	X	X
N-hexane 110-54-3	X	X	X
Polycyclic Aromatic Hydrocarbons 130498-29-2	X	-	X
Xylene 1330-20-7	X	X	X
Ethylbenzene 100-41-4	X	X	X
Toluene 108-88-3	X	X	X
Naphthalene 91-20-3	X	X	X
Cumene 98-82-8	X	X	X
Hydrogen Sulfide 7783-06-4	X	X	X

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Revision Date 14-Jun-2017

Revision Note No information available.

Disclaimer

The information on this Safety Data Sheet (SDS) in order to meet its obligations under 29 CFR 1910.1200, and does not hereby make any guarantee of product specifications or suitability for any particular purpose. Tesoro does not assume any liability arising out of the use of Tesoro's product or the use of information provided on this SDS. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all relevant information in the format of this document, since additional information may be necessary under exceptional conditions of use, and since Tesoro prepared this SDS based on information available on the date of its publication.

End of Safety Data Sheet

SECTION 1 – Identification of the substance/mixture and of the company/undertaking
1.1 Product Identifier

Product Form Mixture
 Product Name **HD AFFF 3% - C6**
 Type of Product Firefighting Foam Concentrate

1.2 Relevant identified uses of the substance of mixture and uses advised against

1.2.1 Relevant identified uses.

Industrial/Professional use spec Industrial, For professional use only
 Use of the substance/mixture Firefighting Foam Concentrate

1.2.2 Uses advised against.

Not applicable.

1.3 Details of the supplier of the safety data sheet

Company Name	Address	Contact Information
HD Fire Protect Pvt. Ltd.	D-6/2, Road Number 34, Wagle Estate, Thane 400604, India	Phone: +91 22 35287000, 22 21582600 Email: info@hdfire.com Website: www.hdfire.com

1.4 Emergency telephone number

Emergency number Mobile: +91-8169450885

SECTION 2 – Hazards identification
2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP) Acute toxicity, Oral Category 4, H302
 Skin corrosion/irritation, Category 2 H315
 Serious eye damage/eye irritation, Category 1, H318

Full text of H statements: see section 16

Adverse physiochemical, human health and No additional information available

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictograms (CLP)



Signal word (CLP)

: **Warning**

Hazard statements (CLP)

: H302 - Harmful if Swallowed
 H315 - Causes skin irritation.
 H318 - Causes serious eye damage.

Precautionary statements (CLP)

: P264 - Wash hands thoroughly after handling.
 : P280 - Wear eye protection, protective clothing, protective gloves
 : P302+P352 - If on skin: Wash with plenty of water.
 : P305+P351+P338 - If in Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 : P332+P313 - If skin irritation occurs: Get medical advice/attention.
 P362+P364 - Take off contaminated clothing and wash it before reuse.

2.3 Other hazards

PBT: not relevant – no registration required.

vPvB: not relevant – no registration required.

SECTION 3 – Composition/information on ingredients
3.1. Substances

Not applicable

3.2. Mixtures

Ingredient	Concentration	Product identifier	Classification as per Regulation (EC) No. 1272/2008 [CLP]
2-(2-butoxyethoxy) ethanol	6 to 12%	(CAS-No.) 112-34-5 (EC-No.) 203-961-6 (REACH-no) 01-2119475104-44	Eye Irritation 2, H319
D-Glucopyranose, oligomers, glycosides	1 to 5%	(CAS-No.) 68515-73-1 (EC-No.) 500-220-1	Eye Damage 1, H318
Ethane-1,2-diol	1 to 3%	(CAS-No.) 107-21-1	Acute Toxicity 4 (Oral), H302
Proprietary mixture of active ingredients - Fire Fighting Foam Fluorosurfactant and 3088-31-1 Sodium 2-(2-dodecyloxyethoxy) Ethyl Sulphate. The mixture is Fluoroadditive Alcoholic Aqueous surfactant solution.	5 to 20%	(CAS-No.) 64-17-5, 34455-29-3, 3088-31-1	Acute Toxicity 2 (oral, dermal and inhalation), Eye Damage 1
Water	QS	(CAS-No.) 7732-18-5	Not classified but serves as the main solvent in the product.

Full text of H-statements:

See section 16

SECTION 4 – First aid measures

4.1 Description of first aid measures

First-aid measures General	Remove the patient from hazard area, keep patient calm & warm. Provide fresh air. Refer this Material Safety Data Sheet while giving medical treatment.
First-aid measures Inhalation	If patient is conscious, it is anticipated to be a minor problem. If there is breathing difficulty or cough, keep patient at rest, seated in maximum comfortable position. Call for medical attention if symptoms do not go away quickly or patient is unconscious.
First-aid measures Skin contact	Remove contaminated clothing. Wash immediately with plenty of clean water. If irritation persists, call for medical treatment.
First-aid measures Eye contact	Wash immediately with clean flowing water for at least 10 minutes, contact doctor if irritation/pain persists.
First-aid measures Ingestion	May cause nausea. Do not induce vomiting. Seek medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/effects	Causes damage to organs (kidneys) (if swallowed).
Symptoms/effects after eye contact	Causes serious eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 – Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	No specific measures necessary. This product is a fire extinguishing agent.
Unsuitable extinguishing media	Not applicable

5.2. Special hazards arising from the substance or mixture

Fire hazard	No fire hazard.
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5.3. Advice for firefighters

Firefighting instructions	Not applicable.
Protection during firefighting	Use PPE, including gloves and protective clothing, to minimize the risk of skin contact with foam during firefighting operations

SECTION 6 – Accidental release measures

6.1. Personal precautions, protective equipment, and emergency procedures

6.1.1 For non-emergency personnel

Emergency procedures	Evacuate unnecessary personnel.
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6.1.2 For emergency responders

Protective equipment	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if the product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.
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6.4. Reference to other sections

Section:- 8. Exposure controls/personal protection. Section:-13. Disposal considerations.

SECTION 7 – Handling and storage

7.1 Precautions for safe handling

Precaution for safe handling

Hygiene measures

7.2 Conditions for safe storage, including any incompatibilities.

Storage conditions

Store the product in original container or tanks designed for foam storage, away from direct Sunlight and heat. Protect from freezing. Store at temperatures not exceeding 60°C (140°F) (intermittent). And generally, in temperatures not exceeding 49°C (120°F). Do not put into contact with material which reacts violently with water. Keep away from incompatible materials. Refer to foam storage guidelines online on our website www.hdfire.com.

7.3 Specific end use(s)

Firefighting foam concentrate.

SECTION 8 – Exposure controls/personal protection

8.1 Control Parameters

2-(2-butoxyethoxy) ethanol (112-34-5) (The Netherlands) Public occupational exposure limit value	Short time value	100 mg/m ³ . 15 ppm
	Time-weighted average exposure time 8h	50 mg/m ³ , 7.4 ppm
EU - Indicative occupational exposure limit value	Short time value	101.2 mg/m ³ . 15 ppm
	Time-weighted average exposure time 8h	67.5 mg/m ³ , 10 ppm
Belgium	Short time value	101.2 mg/m ³ . 15 ppm
	Time-weighted average exposure time 8h	67.5 mg/m ³ , 10 ppm
Germany-TRGS 900	Time-weighted average exposure time 8h	67 mg/m ³ , 10 ppm
France VRI: Valeur Reglementaire indicative	Short time value	101.2 mg/m ³ . 15 ppm
	Time-weighted average exposure time 8h	67.5 mg/m ³ , 10 ppm
UK-Workplace exposure limit (EH40/2005)	Short time value	101.2 mg/m ³ . 15 ppm
	Time-weighted average exposure time 8h	67.5 mg/m ³ , 10 ppm
D-Glucopyranose, oligomers, glycosides (68515-73-1)	Worker: Long term exposure, dermal: 595000 mg/kg, Inhalation: 420 mg/m ³ Consumer: Long term exposure, dermal: 357000 mg/kg, Inhalation: 124 mg/m ³ , Oral: 35.7 mg/kg	
Ethane-1,2-diol (107-21-1)	ACGIH Ceiling (mg/m ³)	100 mg/m ³ (aerosol only)
	Long term exposure (8 hours)	20 (vapour) ppm
	Long term exposure (8 hours)	10 (particulate)/52 (vapour) mg/m ³
	Short term exposure limit (15 minutes)	40 (vapour) ppm
	Short term exposure limit (15 minutes)	104 (vapour) mg/m ³

Appropriate engineering controls
Personal protective equipment
Eye protection
Hand protection
Skin and body protection
Respiratory protection
Thermal hazard protection
Environmental exposure

Other information

Ensure adequate ventilation. Follow the exposure limits given on this material safety data sheet. Body covering clothing recommended.

Wear sealed/tight fitting safety goggles of an approved type (eg: EN 166).

Wear impervious gloves of approved type (eg: Neoprene, Butyl Rubber, PVA)

Wear recommended personal protective equipment.

In case of insufficient ventilation, wear suitable respiratory equipment (recommended filter type A2/P2). Wear thermal protective clothing, when necessary.

Contain spills. Prevent releases. Observe national regulations on emissions. Ensure all national/local regulations are observed.

Do not eat, drink, or smoke when using this product. Avoid contact with skin and eyes. Wear recommended personal protective equipment. Read and follow manufacturer's recommendations. Handle in accordance with good industrial hygiene and safety procedures. Read and follow the Safety Data Sheet (SDS) before use. Wash hands thoroughly after handling. Store the product in original shipping container or tanks designed for product storage, away from direct Sunlight and heat. Protect from freezing. Store at temperatures not exceeding 60°C (140°F) (intermittent). Do not put into contact with material which reacts violently with water. Keep/Store away from incompatible materials.

SECTION 9 – Physical and chemical properties**9.1. Information on basic physical and chemical properties**

- Appearance/Physical state: Amber coloured liquid.
- Odour: Characteristic
- Odour threshold: No data available
- pH: 6.5 - 8.5
- Melting point / freezing point: Does not apply / -2°C
- Initial boiling point & boiling range: 100° C at 760 mm Hg
- Flash point > 100°C
- Flammability (solid, gas): Does not apply
- Upper/lower flammability/explosive limit: Does not apply
- Vapour pressure: Does not apply
- Vapour density: Does not apply
- Relative density: Does not apply
- Specific Gravity: 1.02 ± 0.02
- Solubility(ies): Soluble in Water
- Partition coefficient: n-octanol/water Does not apply
- Auto-ignition temperature: Does not apply
- Decomposition temperature: Does not apply
- Viscosity, kinematic: <10 cST

9.2. Other information

No additional information available

SECTION 10 – Stability and reactivity**10.1. Reactivity**

The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid.

Incompatible materials. Extremely high or low temperatures. Direct Sunlight.

10.5. Incompatible materials

Alkali metals. Oxidizing agent. Water reactive substances.

10.6. Hazardous decomposition products

Do not expose containers to heat or flame since the containers are made from high density polyethylene and will burn. Thermal decomposition of containers may generate acid smoke, fumes and traces of Na₂O, Cl⁻, SO_x, NO_x & HF.

SECTION 11: Toxicological information
11.1. Information on toxicological effects

Acute toxicity	Not classified.
Skin corrosion/irritation	Serious eye damage/irritation Not classified (pH 6.5 - 8.5) Causes eye irritation (pH 6.5 - 8.5)
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
Viscosity, kinematic	<100 cST

2-(2-butoxyethoxy) ethanol (112-34-5)	
LD50 oral Male rat	2410 mg/kg bw, Method: Equivalent to OECD guideline 401
LD50 dermal Male rabbit	2764 mg/kg bw, Method: Equivalent to OECD guideline 401
Inhalation (IRT) Rat	> 29 ppm, 2h., Method: BASF test
Irritation/corrosion	Skin:- Species: rabbit, Result: Slightly irritating, Method: OECD guideline 404 Eye:- Species: rabbit, Result: Highly irritating, Method: OECD guideline 405
Respiratory or Skin sensitization	Species: guinea pig, Result: Non-sensitizing, Method: OECD guideline 406
Genetic Toxicity (in vitro)	Experimental/calculated data: OECD guideline 471 Ames-test Salmonella typhimurium: negative
Genetic Toxicity (in vivo)	Experimental/calculated data: OECD guideline 471 Test Rat: negative
Aspiration Hazard	No aspiration hazard expected
D-Glucopyranose, oligomers, glycosides (68515-73-1)	
LD50 oral rat	> 5.000 mg/kg, OECD Guideline 401
LD50 dermal rabbit	> 2.000 mg/kg, OECD Guideline 401
Irritation/corrosion	Skin:- Species: rabbit, Result: Slightly irritating, Method: OECD guideline 404 Eye:- Species: rabbit, Result: irreversible damage, Method: OECD guideline 405
Sensitization	Species: guinea pig, Result: Non-sensitizing, Method: OECD guideline 406
Genetic Toxicity	Exp./calculated data: OECD guideline 471 Ames-test Salmonella typhimurium: negative
Aspiration Hazard	No aspiration hazard expected
Ethane-1,2-diol (107-21-1)	
LD50 oral rat	4000-10200 mg/kg
LD50 dermal rat	10600 mg/kg
LD50 dermal rabbit	9530 mg/kg
ATE US (oral)	500.000 mg/kg bodyweight
ATE US (dermal)	10600.000 mg/kg bodyweight

Carcinogenicity	Subject: Male, Female Rat, Result: Negative - Oral TClO, Dose: 1125 mg/kg., Exposure: 2 years (7 days per week)
Teratogenicity	Subject: Rat, Result: Negative - Oral, Dose: 500 mg/kg., Exposure: 10 days (7 days per week)
Potential chronic health effects	Species: Male, Female Rat, Result: Sub-chronic NOAEL Oral, Dose: 488 mg/kg. Exposure 13 weeks (7 days per week)
	Species: Male, Female Rat, Result: Sub-chronic NOAEL Dermal, Dose: 400 mg/kg. Exposure 13 weeks (2 days per week)

SECTION 12: Ecological information
12.1. Toxicity

2-(2-butoxyethoxy) ethanol (112-34-5)	Parameter	Method	Value	Duration	Species
Acute toxicity fishes	LC50 fresh water	Equivalent OECD 203	1300 mg/l	96 h	Lepomis Macrochirus
Acute toxicity fishes	LC50 salt water	Equivalent OECD 203	2000 mg/l	96 h	Menidia sp.
Acute toxicity invertebrates	EC50 fresh water	Equivalent OECD 202	4950 mg/l	48 h	Daphnia Magna
Acute toxicity invertebrates	LC50 salt water		13415 mg/l	96 h	Americam ysis Bahia
Toxicity algae & other aquatic plants	EC50 fresh water	Equivalent OECD 201	>100 mg/l	96 h	Desmodesmus subspicatus
Toxicity aquatic micro-organisms	EC10 fresh water	Equivalent OECD 209	>1995 mg/l	30 min.	Activated Sludge
D-Glucopyranose, oligomers, glycosides (68515-73-1)	Parameter	Method	Value	Duration	Species
Acute toxicity fish	LC50	DIN EN ISO 7346-2	> 100 mg/l	96 h	Brachydanio rerio
Chronic toxicity fish	LC50	OECD guideline 204	>1-10 mg/l	96 h	Brachydanio rerio
Aquatic invertebrates	EC50	OECD guideline 202, part 1	> 100 mg/l	48 h	Daphnia Magna
Chronic toxicity aquatic invertebrates		OECD guideline 202, part 2	>1-10 mg/l		Daphnia Magna
Aquatic plants		Directive 88/302/EEC, part C, p.89	>10-100 mg/l		Scenedesmus subspicatus
Micro-organisms/Effect on activated sludge		OECD guideline 209	EC0>100 mg/l		Pseudomonas putida
Micro-organisms/Effect on activated sludge		DIN 38412 part 8	EC0>100 mg/l		Pseudomonas putida
Degradability/persistence/Biological/Apiological	Readily biodegradable (according to OECD criteria)				
Ethane-1,2-diol (107-21-1)	Parameter	Method	Value	Duration	Species
Fish 1	LC50	Equivalent OECD 203	41000 mg/l	96 h	Oncorhynchus mykiss
Daphnia 1	EC50	Equivalent OECD 202	46300 mg/l	48 h	Daphnia Magna
Fish 2	LC50	Equivalent OECD 203	14-18 mg/l	96 h	Oncorhynchus mykiss (static)

12.2. Persistence and degradability

HD AFFF 3% - C6

Biochemical oxygen demand (BOD)	2666 mg/lit @20°C (5 days)
Biochemical oxygen demand (BOD)	14666 mg/lit @20°C (20 days)
Chemical oxygen demand (COD)	7000 mg/lit
Biodegradability (BOD)/(COD)	2.09 (20 days)
2-(2-butoxyethoxy) ethanol (112-34-5)	> 80% (28 days) OECD 301C method, modified MITI test (I) (biodegradation water), Conclusion: Readily biodegradable in water.
D-Glucopyranose, oligomers, glycosides (68515-73-1)	Readily biodegradable (according to OECD criteria)
Ethane-1,2-diol (107-21-1)	Biodegradable in the soil, Readily biodegradable in water.

12.3. Bioaccumulative potential

HD AFFF 3% - C6

Bioaccumulative potential	The product is not expected to bioaccumulate.
2-(2-butoxyethoxy) ethanol (112-34-5)	Low potential for bioaccumulation (Log Kow <4), Method Equivalent to OECD 107
D-Glucopyranose, oligomers, glycosides (68515-73-1)	Significant accumulation in organisms is not to be expected
Ethane-1,2-diol (107-21-1)	Log pow -1.93, Not bioaccumulate

12.4. Mobility in soil

HD AFFF 3% - C6

Mobility in soil	No data available.
2-(2-butoxyethoxy) ethanol (112-34-5)	Surface tension: 27mN/m (25°C, 0.00212 mol/g) Low potential for adsorption in soil.
D-Glucopyranose, oligomers, glycosides (68515-73-1)	Adsorption to solid soil phase is not expected
Ethane-1,2-diol (107-21-1)	Surface tension: 48 mN/m (20°C) No (test) data on mobility of the substance available.

12.5. Results of PBT and vPvB assessment

HD AFFF 3% - C6

PBT & vPvB: not relevant	No registration required.
2-(2-butoxyethoxy) ethanol (112-34-5)	Substance does not meet the screening criteria for persistency nor bioaccumulation so is neither PBT nor vPvB.
Ethane-1,2-diol (107-21-1)	This substance contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
D-Glucopyranose, oligomers, glycosides (68515-73-1)	According to Annex XIV of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

12.6. Other adverse effects

Other adverse effects Environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 – Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations Dispose in a safe manner in accordance with relevant local/national regulations. Do not allow to enter into surface, water or drains. Do not re-use empty containers.

Ecology - waste materials Avoid release to the environment.

European List of Waste (LoW) code 16 03 05* - organic waste containing dangerous substances.

SECTION 14 – Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

	ADR	IMDG	IATA	ADN	RID
14.1. UN number	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

No supplementary information available

SECTION 15 – Regulatory information
15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

2-(2-butoxyethoxy) ethanol (112-34-5)	Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
D-Glucopyranose, oligomers, glycosides (68515-73-1)	Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Ethane-1,2-diol (107-21-1)	Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Contains no substance on the REACH candidate list. Contains no REACH Annex XIV substances.

15.1.2. National Regulations

AIR (Prevention & Control of pollution) Act, 1981.

Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003.

Hazardous and Other Wastes (Management & Transboundary Movement) Amendment Rules, 2019

15.2 Chemical Safety Assessment

No additional information available.

SECTION 16 – Other information

Refer to the next page.

Abbreviations

These terms are hazard classifications and hazard statements used in chemical safety regulations and labeling systems to communicate the potential risks associated with chemical substances or products. Here's an explanation of each term:

- Acute Toxicity 4 (Inhalation: dust, mist): Indicates that the substance has low acute toxicity when inhaled as dust or mist. Acute toxicity refers to harmful effects that occur shortly after exposure.
- Acute Toxicity 4 (Oral): Indicates that the substance has low acute toxicity when ingested orally.
- Acute Toxicity 3 (Inhalation: dust, mist): Indicates that the substance has moderate acute toxicity when inhaled as dust or mist.
- Acute Toxicity 3 (Dermal): Indicates that the substance has moderate acute toxicity when it comes into contact with the skin.
- Eye Damage 1: Indicates that the substance can cause serious eye damage.
- Eye Irritation 2: Indicates that the substance can cause eye irritation.
- Flam. Liq. 2: Indicates that the substance is a flammable liquid with moderate flammability.
- Skin Irrit. 2: Indicates that the substance can cause skin irritation.
- STOT RE 2: Indicates specific target organ toxicity from repeated exposure, category 2. This means the substance may cause toxicity with repeated exposure.
- STOT SE 1: Indicates specific target organ toxicity from single exposure, category 1. This statement warns of acute toxicity upon single exposure to the substance.
- Hazard Statements (H-codes): These are standardized codes used to convey specific hazards associated with chemicals. Each H-code corresponds to a particular hazard.
 - H225: Highly flammable liquid and vapor.
 - H302: Harmful if swallowed.
 - H311: Toxic in contact with skin.
 - H315: Causes skin irritation.
 - H318: Causes serious eye damage.
 - H319: Causes serious eye irritation.
 - H331: Toxic if inhaled.
 - H332: Harmful if inhaled.
 - H370: Causes damage to organs.
 - H373: May cause damage to organs through prolonged or repeated exposure.
 - H400: Very toxic to aquatic life.
 - H401: Toxic to aquatic life.
 - H410: Very toxic to aquatic life with long-lasting effects.
 - H412: Harmful to aquatic life with long-lasting effects.
- ACGIH = American Conference of Governmental Industrial Hygienists.
- ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE = Acute Toxicity Estimate CAS = Chemical Abstracts Service
- CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
- EC = European Community / Effective Concentration.
- EINECS = European Inventory of Existing Commercial chemical Substances EUH statement = CLP-specific Hazard statement
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container / IMDG = International Maritime Dangerous Goods LC = Lethal Concentration, LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) OECD = Organisation for Economic Co-operation and Development
- PBT = Persistent, Bioaccumulative and Toxic
- PEL = Permissible Exposure Limit / REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals. RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
- STEL = Short Term Exposure Limit
- STOT-SE = Specific Target Organ Toxicity - Single Exposure SVHC = Substances of Very High Concern / UN = United Nations vPvB = Very Persistent and Very Bioaccumulative

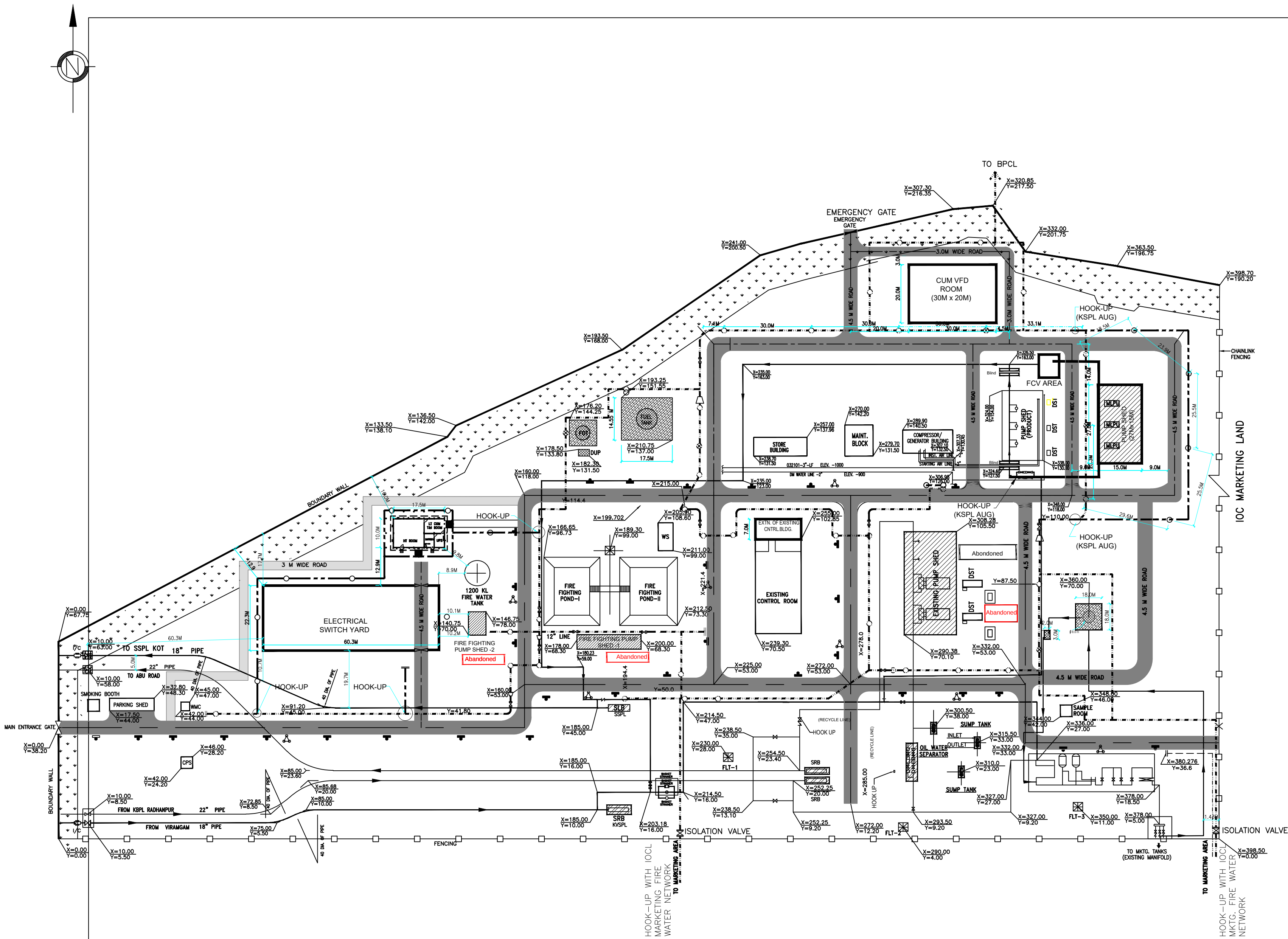
Last Rev. Date of this Document: 1st June 2024

Disclaimer:

The information provided herein is based on our current understanding and is intended solely for the purpose of describing the product about health, safety, and environmental requirements. It should not be interpreted as a guarantee of any specific property of the product. Users are responsible for ensuring the suitability of the product for its intended use, compliance with regulations, and for its safe handling and disposal. HD FIRE PROTECT PVT. LTD shall not be held accountable or liable for any injury or accident resulting from the use of the product.

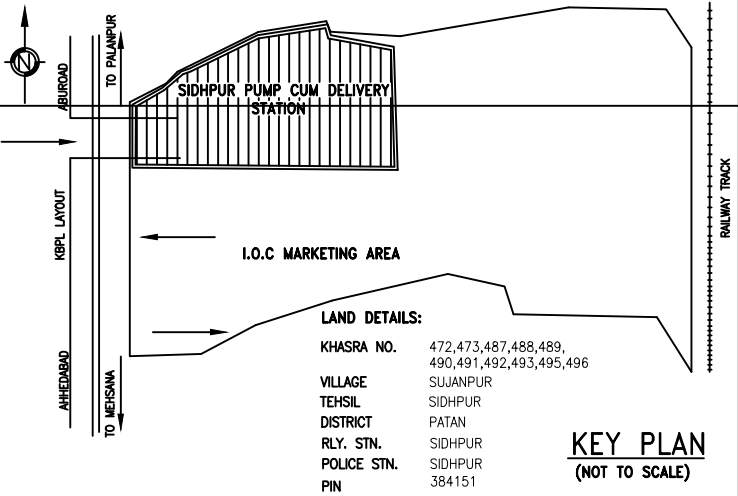
ANNEXURE – 2

PLANT LAYOUT, P & ID & INTERDISTANCES



INTERDISTANCE & SAFETY DISTANCE BETWEEN FACILITIES:

S.NO	DESCRIPTION	RECOMMENDED IN OISD-STD-118/141/214/226 (METERS)	ACTUAL(METERS)
01.	CONTROL ROOM & PUMP HOUSE	16	111
02.	FIRE PUMP HOUSE TO PRODUCT PUMP HOUSE	30	179
03.	BETWEEN TANK FARM & PUMP HOUSE	8	53.1
04.	BETWEEN TANK FARM & FIRE WATER PUMP HOUSE	15	153
05.	BETWEEN PUMP HOUSE & SUBSTATION	30	230
06.	BETWEEN STORAGE TANK & COMPOUND WALL	15	128
07.	BETWEEN STORAGE TANK & DYKE WALL OF THE TANK	H/2, i.e. 4.3	6.7
08.	FIRE WATER HYDRANT/MONITOR & PROCESS PIPING	15	16



NOTES:
1. ALL DIMENSIONS & CO-ORDINATES ARE IN METERS UNLESS OTHERWISE MENTIONED.

LEGEND:-

SYMBOL	DESCRIPTION
	EXISTING FACILITIES
	PROPOSED FACILITIES
	FACILITIES TO BE DISMANTLED
	FIRE HYDRANT
	FIRE FIGHTING WATER LINE
	EARTHING PIT
	STREET LIGHTING
	ZONE-I, DIVISION-I AREA
	ZONE-I, DIVISION-II AREA
	ZONE-II, DIVISION-I AREA
	ZONE-II, DIVISION-II AREA
	SAFE AREA

EXISTING LICENCE NO.
P/HQ/GJ/15/1552(P11925)

1.	HAZARDOUS AREA CLASSIFICATION OF SIDHPUR	KB-D-03-02DWG-003-EXP
S.NO.	REFERENCE DRAWING	DWG. NO.

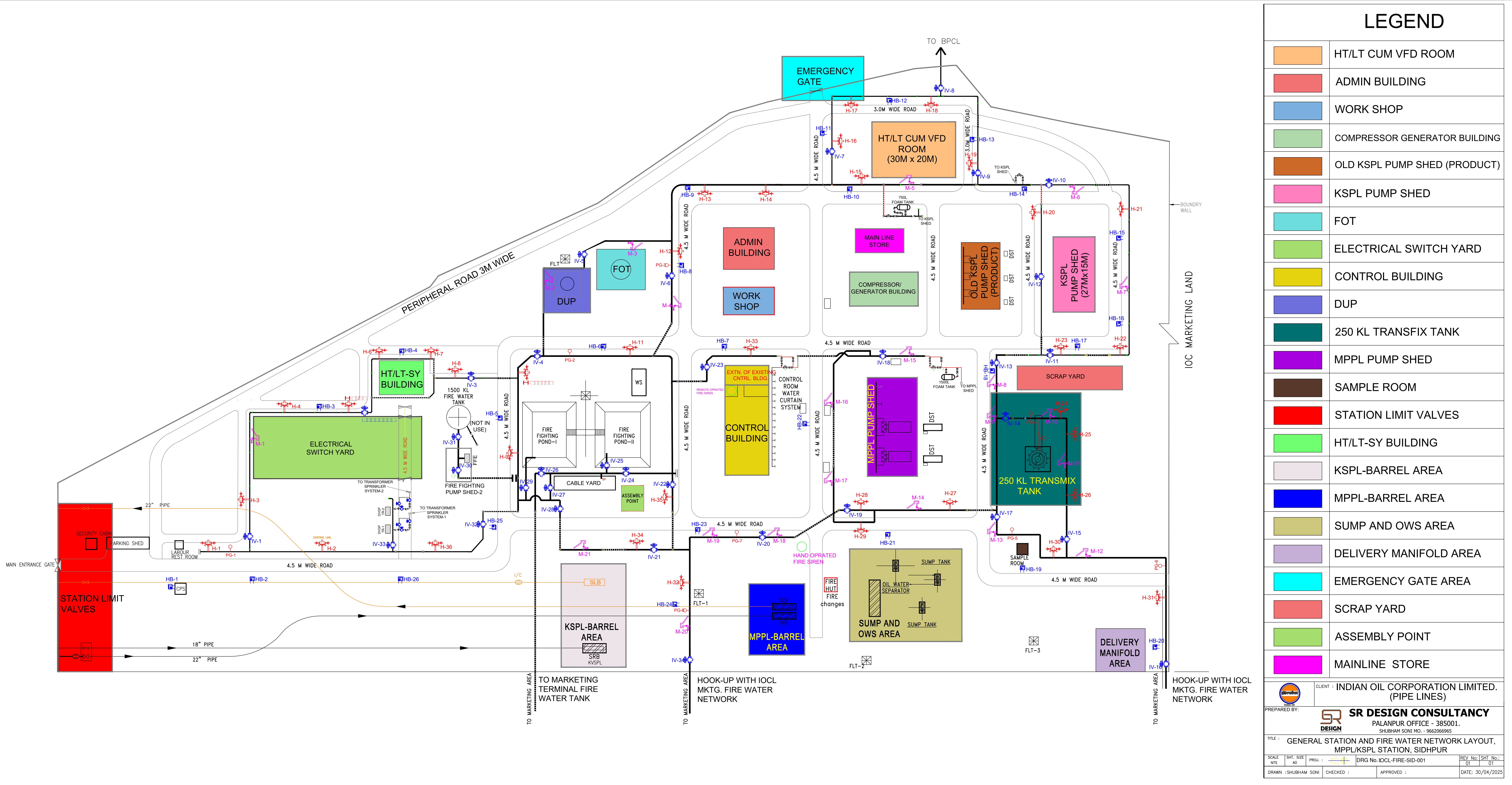
PURPOSE AS BUILT FOR PESO APPROVAL

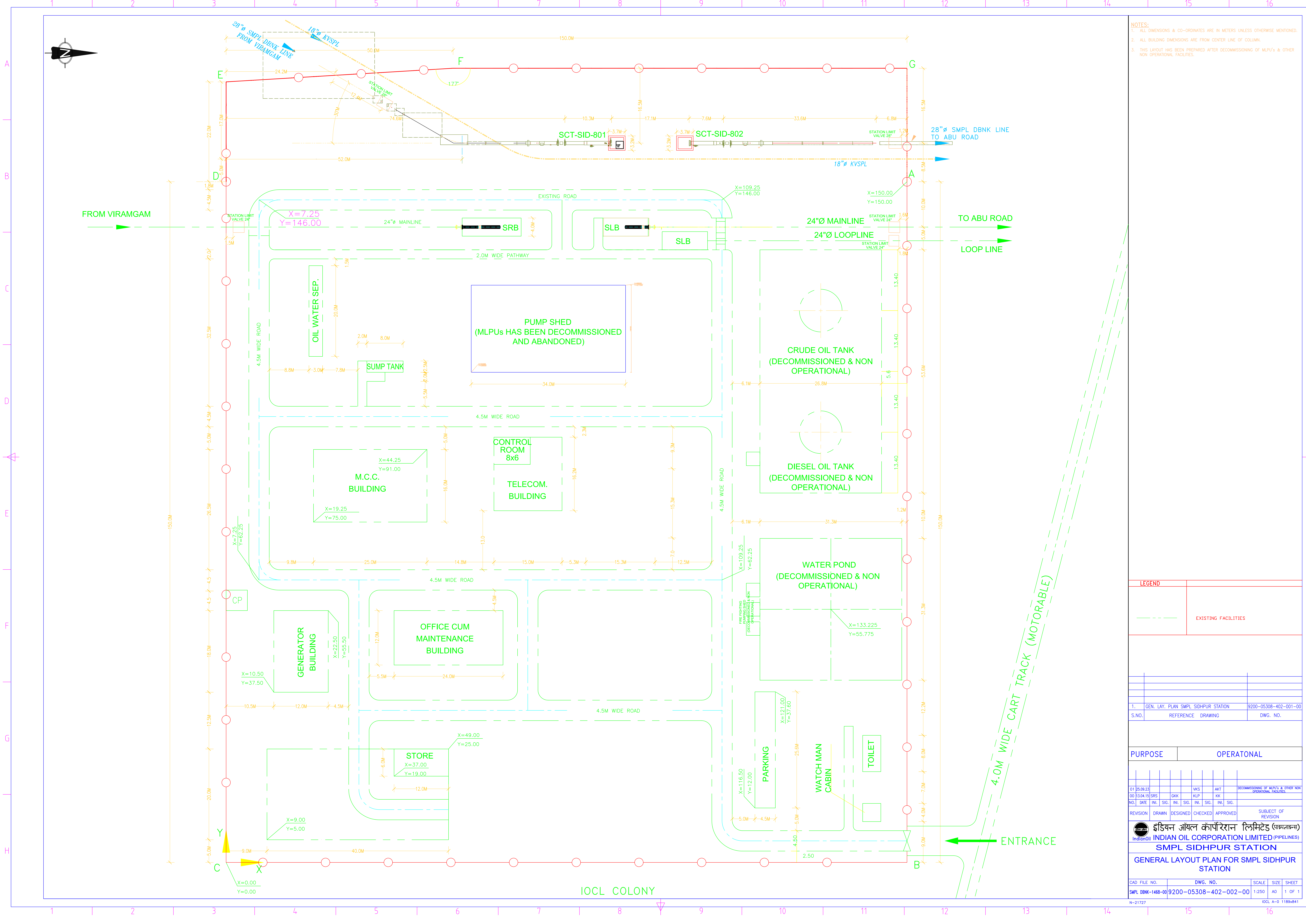
04	22.01.19	PPM							AS BUILT FOR COMMISSIONING
03	10.04.17	PPM							ISSUED FOR KSPL AUG
02	03.02.17	PPM							AS BUILT FOR COMMISSIONING
01	07.10.16	PPM							ISSUED FOR FIRE WATER REVAMP
00	09.06.15	PPM	SS	RS	TKD				FOR COMMISSIONING OF TRANSMIX TANK
NO.	DATE	INI.	SIG.	INI.	SIG.	INI.	SIG.	INI.	SIG.
REVISION	DRAWN	DESIGNED	CHECKED	APPROVED					SUBJECT OF REVISION

INDIAN OIL CORPORATION LIMITED (PIPELINES)

AS BUILT GENERAL LAYOUT PLAN
SIDHPUR (MPPL & KSPL) PUMP STATION

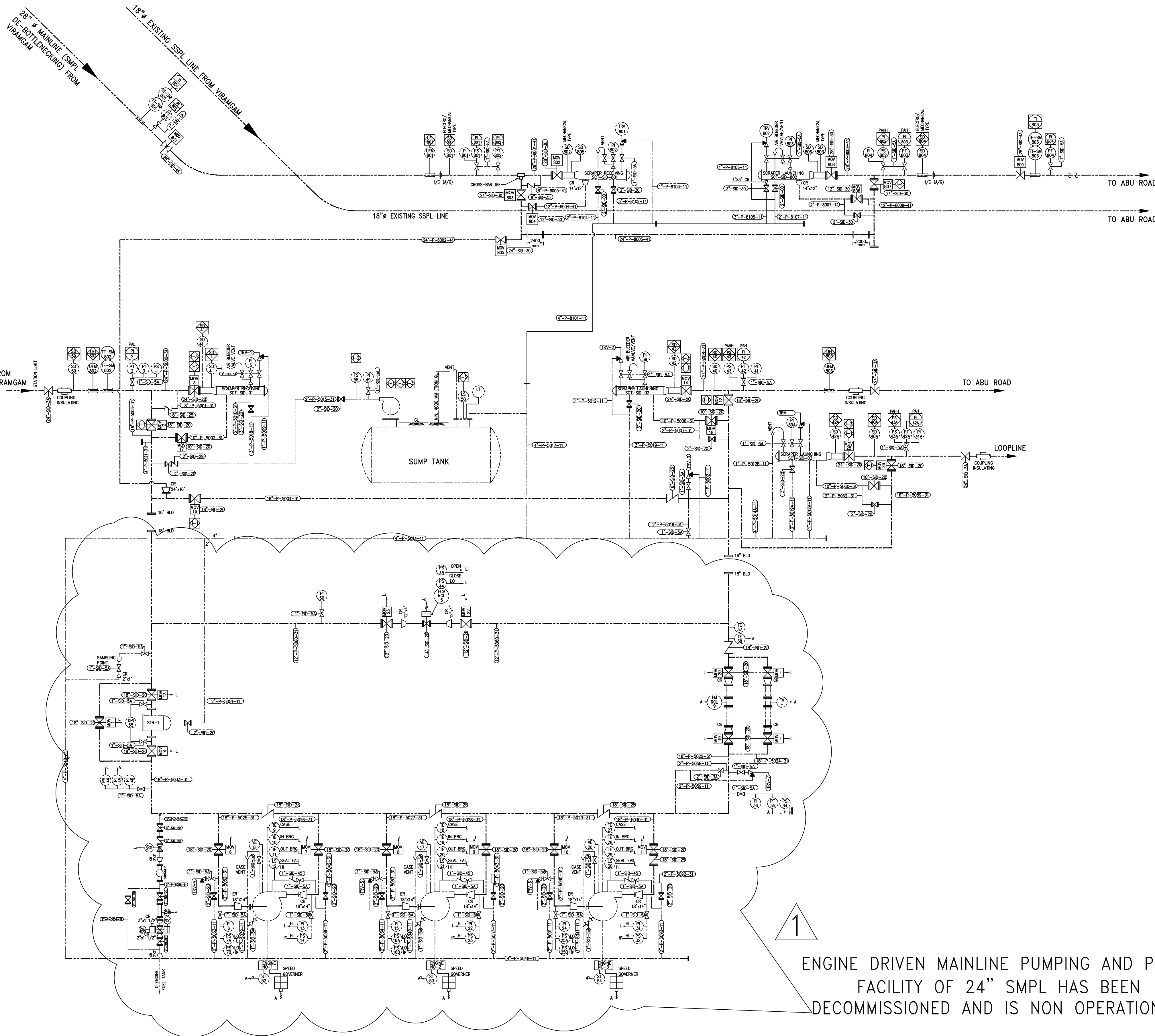
CAD FILE NO.	DWG. NO.	SCALE	SIZE	SHEET
CCE-26-04	9200-99712-502-701-04	1:500	A1	1 OF 3





NOTES:
1. ALL DIMENSIONS & CO-ORDINATES ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. ALL BUILDING DIMENSIONS ARE FROM CENTER LINE OF COLUMN.
3. THIS LAYOUT HAS BEEN PREPARED AFTER DECOMMISSIONING OF MLPUs & OTHER NON OPERATIONAL FACILITIES.

LEGEND																			
---										EXISTING FACILITIES									



ENGINE DRIVEN MAINLINE PUMPING AND PIPING
FACILITY OF 24" SMPL HAS BEEN
DECOMMISSIONED AND IS NON OPERATIONAL.

NOTES:

TEMPERATURE INSTRUMENTS

TI TEMPERATURE INDICATOR
TE TEMPERATURE ELEMENT
SMRTD SURFACE MOUNTED RTD

PRESSURE INSTRUMENTS

PT PRESSURE TRANSMITTER
PI PRESSURE INDICATOR
PS PRESSURE SWITCH
PA PRESSURE ALARM

LEVEL INSTRUMENTS

LI LEVEL TRANSMITTER
LI LEVEL INDICATOR
LS LEVEL SWITCH
LA LEVEL ALARM

FLOW INSTRUMENTS

FA FLOW ALARM
FS FLOW SWITCH
UFM ULTRASONIC FLOW METER

FUNCTIONAL SYMBOLS

- FIELD MOUNTED INSTRUMENT
- LOCAL PANEL INSTRUMENT
- REAR LOCAL PANEL INSTRUMENT
- CENTRAL PANEL MOUNTED INSTRUMENT
- REAR CENTRAL PANEL MOUNTED INSTRUMENT
- INTERLOCK FUNCTION

THE INSTRUMENT TAG NO. WITH SUFFIX
"C" INDICATES THE CORRECTED PARAMETER.

OTHER INSTRUMENTS

PSV PRESSURE SAFETY VALVE
TSV TEMPERATURE SAFETY VALVE
MOV MOTOR OPERATED VALVE
AF FLAME ARRESTOR
HOV HAND OPERATED VALVE
PB PUSH BUTTON
SS SELECTOR SWITCH
LSS LOW SIGNAL SELECTOR
HSS HIGH SIGNAL SELECTOR
XL INDICATION LAMP
ZSH POSITION SWITCH HIGH (VALVE OPEN)
ZSL POSITION SWITCH LOW (VALVE CLOSE)
ZLH POSITION LIGHT HIGH (VALVE OPEN)
ZLL POSITION LIGHT LOW (VALVE CLOSE)
SD PIO DETECTOR INDICATOR / SWITCH
ZAL POSITION ALARM LOW (VALVE CLOSE)
HSH HAND SWITCH HIGH (PUMP START)
HSL HAND SWITCH LOW (PUMP STOP)
XLH INDICATION LAMP HIGH (ON POSITION)
XLL INDICATION LAMP LOW (OFF POSITION)
XAL INDICATION ALARM LOW (OFF POSITION)
XSL LOCAL/REMOTE SWITCH
XRL REMOTE OPERATION INHIBITED INDICATION

LEGENDS

----- EXISTING FACILITIES

1.	P&I DIAGRAM FOR SMPL SIDHPUR STATION	SMPL-AUG/INST/SID/3503
S.NO.	REFERENCE DRAWING	DWG. NO.

PURPOSE				OPERATIONS			
02	25.8.23			ELEC T&I MECH	AKT	DECOMMISSIONING OF PUMPING & PIPING FACILITIES & MARKED AS	
01	23.2.17	SA (GEL)	GKK	ELEC T&I MECH	SKJ	ISOLATION OF INTERCONNECTION LINE OF 28" V-C LINE WITH EXISTING FACILITY	
00	13.4.15	SRS Sd/-	GKK Sd/-	ELEC T&I MECH	KK Sd/-		
NO.	DATE	INI.	SIG.	INI.	SIG.	INI.	SIG.
REVISION	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION		

INDIAN OIL CORPORATION LIMITED (PIPELINES)

P&I DIAGRAM FOR SMPL SIDHPUR STATION

CAD FILE NO.	DWG. NO.	SCALE	SIZE	SHEET
SMPL DBNK-1466-01	9200-05308-402-054-01	-	A1	1 OF 1

INTERDISTANCE & SAFETY DISTANCE BETWEEN FACILITIES:

Name of station-KSPL Sidhpur

INTER DISTANCE CHART FOR KSPL																													
Sr. No.	From / To	1		2		3		4		5		6		7		8		9		10		11		12		13		14	
		Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act	Req	Act
1	Booster or Mainline Pump Shed	X	X	16	169	X	122	16	115	30	160	30	40	30	230	16	43	30	125	30	120	X	320	X	16	X	120	X	X
2	Scraper Launcher / Receiver	16	169	X	X	X	160	16	70	30	30	16	150	16	90	16	210	30	110	16	80	X	150	X	180	X	130	X	X
3	Filters / Metering / Sampling Point	X	122	X	160	X	X	16	90	30	160	16	170	30	170	16	160	30	100	16	130	X	240	X	110	X	155	X	X
4	Control room UPS / SCADA - Telecom / Office building	16	115	16	70	16	90	X	X	16	42	16	140	X	130	X	120	30	60	X	30	16	220	16	90	16	70	16	X
5	Fire Pump House / Fire water storage tanks	30	160	30	30	30	160	16	42	X	X	12	150	X	40	16	120	60	110	X	53	X	140	30	80	30	115	30	X
6	Compound wall	30	40	16	150	16	170	16	140	12	150	X	X	X	110	6	35	16	160	X	90	5	13	16	50	16	155	16	X
7	Electric Substation / Switch yard / Transformers	30	230	16	90	30	170	X	130	X	40	X	110	X	X	X	190	#	220	#	100	16	90	30	210	30	210	30	X
8	Motor control valve / Power control Centre / Variable Frequency Drive	16	43	16	210	16	160	X	120	16	120	6	35	X	190	X	X	#	160	#	80	16	290	16	70	30	160	30	X
9	API Oil Water Separators	30	125	30	110	30	100	30	60	60	110	16	160	#	220	#	160	X	X	#	120	X	300	30	120	30	32	X	X
10	Service Building (Stores / Amenities)	30	120	16	80	16	130	X	30	X	53	X	90	#	90	#	80	#	120	X	X	16	200	16	90	16	120	16	X
11	Station Block Valve	X	320	X	150	X	240	16	220	X	140	5	13	16	90	16	290	X	300	16	200	X	X	X	310	X	250	X	X
12	Metering	X	16	X	180	X	110	16	90	30	80	16	50	30	210	16	70	30	120	16	90	X	310	X	X	X	120	X	X
13	Sump Tank (U/G)	X	120	X	130	X	155	16	70	30	140	16	155	30	220	30	160	30	32	16	120	X	250	X	120	X	X	X	X
14	API Separator (closed type)	X	X	X	X	X	X	16	X	30	X	16	X	30	X	30	X	X	X	16	X	X	X	X	X	X	X	X	X
Note : I. All distances are in meters. All distances shall be measured between the nearest points on the perimeter of each facility. II. #- Safety distances as per OISD-STD-118. III. For other station facilities not covered in the above shall be governed by OISD- STD- 118. IV. x - Any distance suitable for constructional and operation convenience. or not applicable																													

INTERDISTANCE & SAFETY DISTANCE BETWEEN VARIOUS FACILITIES

NAME OF STATION :MPPL Sidhpur

INTER DISTANCE CHART FOR MPPL SIDHPUR

From / To	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Act	Act	Act	Act	Act	Act	Act	Act	Act	Act	Act	Act	Act	Act
Booster or Mainline Pump Shed	X	58	X	33	90	115	136	95	30	38	226	X	50	X
Scraper Launcher / Receiver	58	X	X	58	90	115	185	120	65	95	190	X	70	X
Filters / Metering / Sampling Point	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Control room UPS / SCADA - Telecom / Office bulding	33	58	X	X	42	140	180	85	50	21	190	X	50	X
Fire Pump House / Fire water storage tanks	90	90	X	42	X	150	80	70	110	55	115	X	110	X
Compound wall	115	115	X	140	150	X	30	120	115	85	11	X	120	X
Electric Substation / Switch yard / Transformers	136	185	X	180	80	30	X	120	136	105	70	X	136	X
Motor control valve / Power control Centre / Variable Frequency Drive	95	120	X	85	70	120	120	X	140	80	290	X	145	X
API Oil Water Separators	30	65	X	50	110	115	136	140	X	70	235	X	30	X
Service Building (Stores / Amenities)	38	95	X	21	55	85	105	80	70	X	160	X	95	X
Station Block Valve	226	190	X	190	115	11	70	290	235	160	X	X	235	X
Metering	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sump Tank (U/G)	50	70	X	50	110	120	136	145	30	95	235	X	X	X
API Separator (closed type)	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Note : I. All distances are in meters. All distances shall be measured between the nearest points on the perimeter of each facility.

II. # - Safety distances as per OISD-STD-118.

III. For other station facilities not covered in the above shall be governed by OISD- STD- 118.

IV. x - Any distance suitable for constructional and operation convenience. or not applicable

ANNEXURE – 3

LIST OF EMERGENCY CONTACT DETAILS

ANNEXURE – 03 – INTERNAL AND EXTERNAL EMERGENCY CONTACTS

This section gives details of Internal and External Emergency contact numbers and addresses of police, fire station, hospitals, mutual aid industry, factory inspectors, Board, State Pollution Control Board, Petroleum and Explosive Safety Organization (PESO), etc.

A3.1 Medical Services at Sidhpur

SN	Doctor's Name	Hospital's Name	Contact Number(s)
1	Regional Medical officer (RMO)	Civil Hospital	6357163334/9426948839
2	Dr. Nishith B Ajani	Ajani Hospital	220530/9228148470
3	Dr. M. U. Sengar	Shifa Hospital	H - 8141621010 Dr.9925990109
4	Dr. Ramesh H Patel	Maulik Hospital	220035/9409996435/9825329935
5	Dr. Chirag Gohil	Navkar Eye hospital	9104104371

A3.2 First aid facilities are available in First Aid centre at the Installation

SN	Hospital Name	Contact number	Total number of beds	Emergency ward beds	Burn ward	Ambulance
1	Sonam Hospital, Sidhpur	223332	18	2	1	-
2	Bhanu Orthopaedical Hospital, Sidhpur	225999	15	2	-	1 (Contact no.- 9879540397)
3	Civil Hospital, Sidhpur	6357163334/9426 948839	150	20	1	3
4	Lions Hospital, Mehsana	02762-251103	300	5	1	4
5	Civil Hospital, Ahmedabad	079-22683721	2100	150	2	8

A3.3 Contact Details of NDRF Officers

Unit	Address	Commanding Officer	Designation	Telephone No.	Control Room No.	Fax No.	E-mail
6 th Battalion NDRF	6 th BN NDRF, Jarod Camp, Teh-Wagodia, Vadodara, (Gujarat) Pin – 391 510	Sh. Surender Singh	Commandant	02668–299201 / 09870006730	09429199493 / 02668–274245	--	guj06–ndrf[at]nic[dot]in

A3.4 Other Important Telephone Numbers

SN	Description	Name	Contact Number
1.	GPCB Palanpur (Regional Officer)	Sh. Tushar Trivedi	9429648135/02742-251300
2.	Superintendent of Police, Banaskantha	Shri A kshay Raj Makvana	9978405065/02742257015
3.	District Collector, Banaskantha	Shri Mihir Patel	9978406204/0274253909
4.	Police Control Room, Palanpur		02742-252600
5.	Palanpur City West Police Station	Sh. P R Maru	7567301302
6.	GETCO, Sujanpur		7574859056
7.	GETCO, Sidhpur		02767-220205
8.	Deputy Engineer GETCO Sidhpur		9925212152
9.	Factory Inspector, Mehsana	Sh. J B Bodat	9601298852
10.	Superintendent of Police, Mehsana	Sh. Tarun Duggal	9978405074
11.	District Collector, Mehsana	Sh. S K Prajapati	+919978406214/02762-222200
12.	SDM Sidhpur	Sh Jaykumar Harshadkumar Barot	02767-220215/7567008302
13.	Labour Enforcement Officer (LEO), Gandhidham	Sh. Nirvan Singh Thakur	9977167651
14.	Superintendent of Police, Patan	Sh. Vasant Kumar K Nayi	02766-230104/ 9978405078

SN	Description	Name	Contact Number
15.	District Collector, Patan	Shri Tushar Bhatt	02766-233301
16.	Special Operation Group (SOG)- Inspector Patan	Sh. J G Solanki	8000661199
17.	Fire officer Sidhpur		9898628550
18.	Fire officer Unjha		(02767) 247501/9925251455
19.	Amirgadh S u b - Police Inspector	Sh. Praveen Singh Vaghella	6359625462/9427643186
20.	Chhapi Police Inspector	Sh. H.R. Vaghella	6359625897/9099079931
21.	Bomb Disposal Sqad Patan	Sh. P K Desai	9974591717/02767-230502
22.	Unava Police Inspector	Sh. K U Rabari	9724565732
23.	Chanasma Police Inspector	Sh. R H Solanki	02734-222019/9106962576
24.	Sidhpur Police Inspector	Sh. J B Acharya	02767-220057/9624262198
25.	Becharaji Police Inspector	Sh. Siddhraj Singh	9978888239

A3.5 Manpower: Mutual aid

MUTUAL AID MEMBERS OF WRPL SIDHPUR				
S. No.	ORGANIZATION	NAME	CONTACT DETAILS	EMAIL-ID
1	IOCL, PIPELINES DIVISION, SIDHPUR	Amit Kumar Tripathi	9687915538	TRIPATHIAK@INDIANOIL.IN
		Chitransh Katiyar	9779249260	katiyarch@indianoil.in
		Control Room	7573029628	
2	IOCL MARKETING DIVISION, SIDHPUR	C. B. PRASANNA KUMAR	9488069073	CPRASANNAKUMAR@INDIANOIL.IN
		Nirvit Sareen	7016577347	SareenNH@indianoil.in
		Control Room	02767-220825/220251	-
3	BPCL SIDHPUR MARKETING DIVISION,	Subhadip Chanda	9096069179	subhadipchanda@bharatpetroleum.in
		Atul Kumar Prajapati	9586587027	atulkumarnpraja@bharatpetroleum.in
		Control Room	7359028555	
4	HPCL PALANPUR MARKETING DIVISION	Manoj Kumar	9598932111	manojkumar1@hpcl.in
		Chetan Kumar	8374385897	chetan.kumar@hpcl.in
		Control Room	02742-283091	
5	HPCL PALANPUR, PIPELINES DIVISION	Akhil Luhadia	9602672222	akhilluhadiya@hpcl.in
		Ajit Singh	8607696464	ajit.singh2@hpcl.in
		Control Room	02742-283733	-

6	HMEL - PIPELINES DIVISION JUNA RAVIYANA	Ramesh Rojasara	9727785306	Ramesh.Rojasara@hmel.in
		Sandipkumar Patel	9649901287	Sandipkumar.patel@hmel.in
		Control Room	7069041005/7069041572	-
7	GSPL Kalol	Kishore Kumar Singh	9879599464	KISHOREKUMAR@GSPC.IN
		Rishi Kumar Singh	7574848617	rishi.s@gspc.in
		Control Room	079-23268849/50/46/88	-
8	IRM ENERGY LTD. PALANPUR	Budhram Siyag	9512490065	budhram.siyag@irmenergy.com
		Sudhir Bisee	9313924612	sudhir.bisee@irmenergy.com
		Control Room	9328913942	-

A3.6 Important IOCL Telephone Numbers

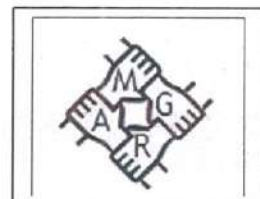
SN	Description	Telephone Number	
		Office	Residence
1	ED, WRPL, Gauridad	9871160273	0265-3502360
2	CGM(O), WRPL, Gauridad	9978995802	0120-2497141
3	CGM (T), WRPL, Gauridad.	9818900416	0120-3548931
4	GM(Security), WRPL, Gauridad	8238117705	02717-407705
5	GM, WRPL, Viramgam	8290991155	02715-2788393
6	DGM (O), WRPL, Viramgam.	9978488931	02715-9157383359
7	COM , WRPL, Sidhpur.	9687915538	
8	OM(HSE), WRPL Viramgam	7814303103	
9	Control Room, MPPL/KSPL, Sidhpur.	7573029628	

ANNEXURE – 4

MUTUAL AID AGREEMENT

MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

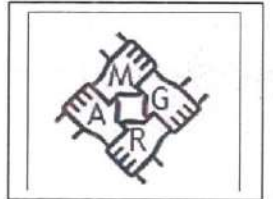
1.0	SCHEME & SCOPE :
	This would be referred as "Mutual Aid Scheme" & shall be applicable for Rendering assistance to neighboring organizations in case of Security/Fire & Safety eventuality, which is very large for the affected unit to handle efficiently". The procedure envisaged in this scheme is acceptable to the organizations listed & binding. This Mutual Aid Scheme is effective from Sept-2004, amended in March 2014, March 2015, October 2016, September 2017, June 2018, June 2019, July-2021 and again Revised herein effective from Aug-2023 onwards.
2.0	MEMBERSHIP :
	A. IOCL (WRPL), Sidhpur
	a. IOCL – MPPL & KSPL (WRPL), Sidhpur
	b. IOCL – SMPL (WRPL), Sidhpur
	B. IOCL(MD), Sidhpur Terminal
	C. BPCL(MD), Sidhpur Top
	D. HPCL (Terminal)-Chandisar
	E. HPCL (MDPL & PVPL)-Chandisar
	F. HMPL, (MBPL) - Vill. Juna Raviyana
	G. GSPL, Kalol
	H. IRM Energy Limited, Banskantha
3.0	GEOGRAPHICAL COVERAGE :
	IOCL (MD), IOCL (MPPL) & BPCL (MD) are located within 1 km. However IOCL (SMPL) is at a distance of 3 km from the three installations in main Sidhpur. HPCL-Chandisar is 40 km away from these three installations. HMPL- IPS-2 Station is 55 km away from HPCL-Chandisar station towards Radhanpur on Deesa-Radhanpur Highway, GSPL Kalol is 87 km away from these three locations and IRMEL is 21 KM away from IOCL (MD), IOCL (MPPL) & BPCL (MD) and 21 KM away from HPCL, Chandisar. Representatives of above listed organization, have awareness about geographical idea. The locations of all the installations are given for easy reference in case of any Emergency.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S. Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

DOCS. NO.: Marg Agreement/001, Dt. 11.08.2023

MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK



LOCATION AND APPROACH OF IOCL (MD), BPCL (MD) and IOCL (MPPL)



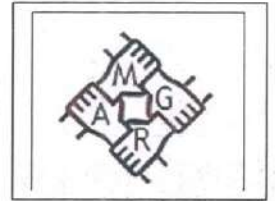
IOCL (MD), IOCL (MPPL) & BPCL (MD) are adjacent to each other, located along Sujapur State Highway (SH 41) in Sidhpur.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

DOCS. NO.: Marg Agreement/001, Dt. 11.08.2023

MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK



LOCATION AND APPROACH OF HPCL, CHANDISAR



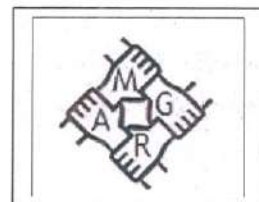
HPCL Chandisar is located along 'National Highway 14' around 16 kms from the city of Palanpur. HPCL installation is approximately 40 kms away from the installations of IOCL (MD), BPCL (MD) and IOCL (MPPL).

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

DOCS. NO.: Marg Agreement/001, Dt. 11.08.2023

MUTUAL AID SCHEME

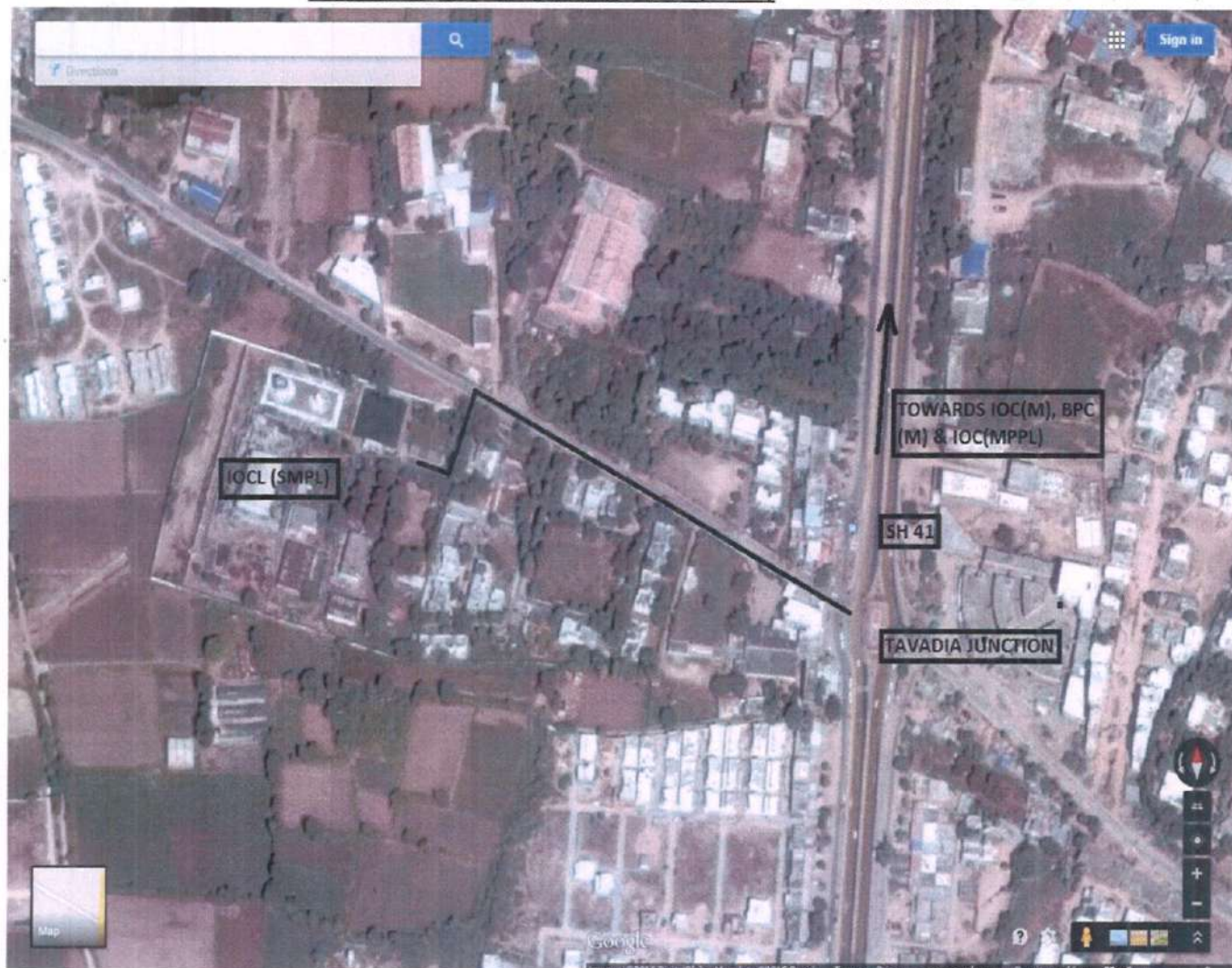
PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK



LOCATION AND APPROACH OF IOCL (SMPL)



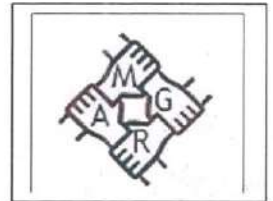
IOCL (SMPL) is located just 500 meters interior (towards Tavadia Village) from Tavadia Junction at Sidhpur. SMPL division is located just 3 kms from the three installations of IOCL (MD), BPCL (MD) and IOCL (MPPL) division.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME

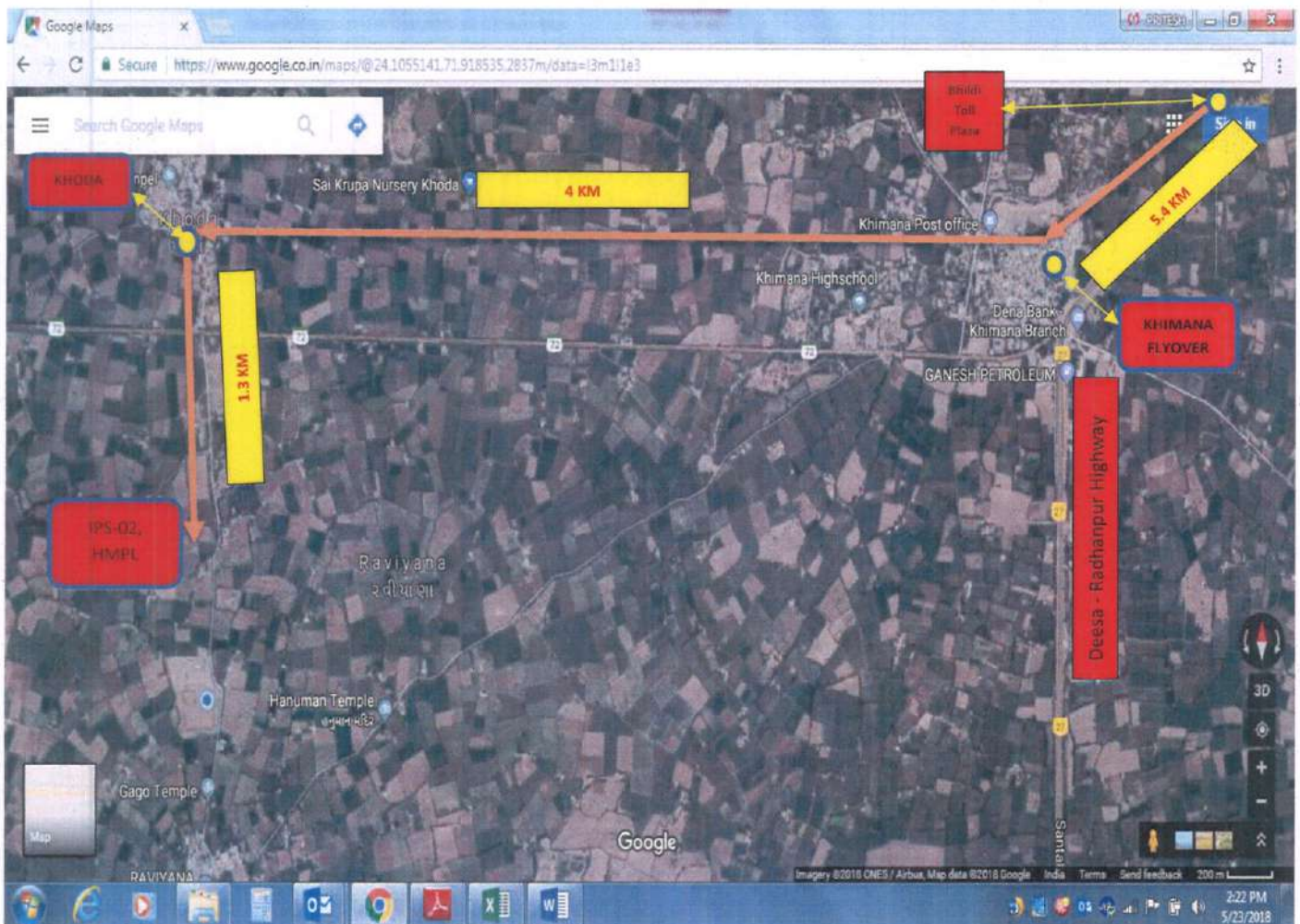
PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK



LOCATION AND APPROACH OF IPS-2, HMPL (MBPL)



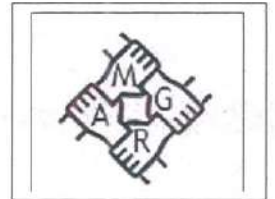
HMPL, IPS-2 Station Juna Raviyana is located at 5.3 km away from KHIMANA Village-which is located on State Highway-72 to DIYODAR road. HMPL IPS-2 station is 68km away from Palanpur, 40.5 Km from Deesa, 55 Km from HPCL Chandisar Station.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojarsa Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK



Demographic Location of IFFCO Kalol (Ahmedabad Base)



Demographic Location of IFFCO Kalol (Ahmedabad Base)

Legends: -

- Yellow Square Symbol- GSPL, IFFCO Terminal (NH-41 Kalol-Mehsana Highway)
- Yellow Dot Symbol - GGL CNG terminal
- Red Square Symbol - Oil & Natural gas Cooperation
- Green Square Symbol - Swaninakaran College of Engineering



Indian Farmer fertilizer Cooperative Limited



Abu Road - Ahmedabad Railway track fly Over



Temple, Saij Shertha Road village



Sherish Parswanath temple

GSPL Ahmedabad Base Office (IFFCO Metering Terminal) is located along 'National Highway 41' in the city of Kalol Opp. to IFFCO Plant. GSPL-IFFCO installation is approximately 132 kms away from the installation of HPCL-PVPL-PALANPUR.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

DOCS. NO.: Marg Agreement/001, Dt. 11.08.2023

MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS

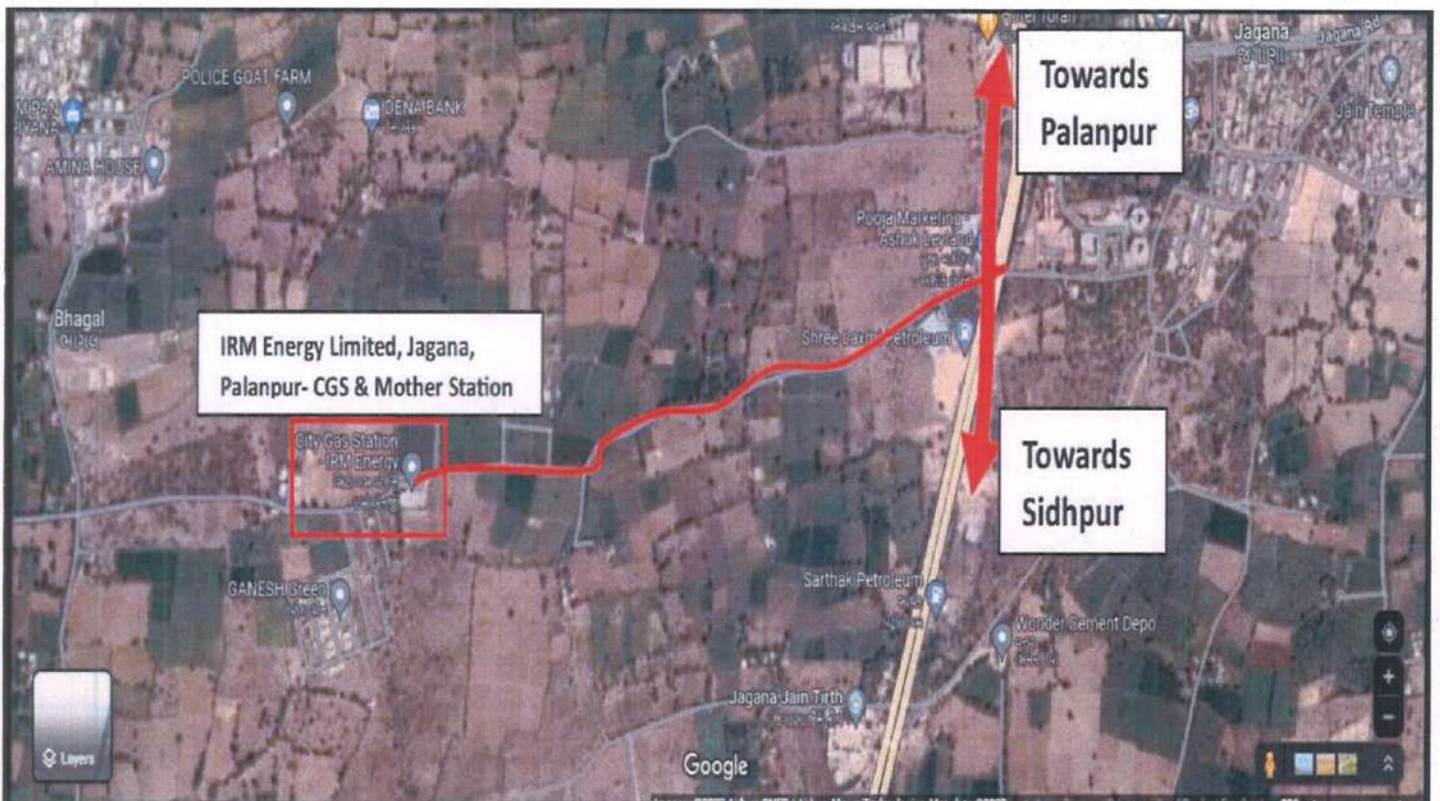


IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

Demographic Location of IRMEL, Palanpur



Palanpur-Ahmedabad Highway (NH41), Jagana, IRMEL, Palanpur is approximately 21 kms away from the installation of IOCL, BPCL, Siddhpur and 21 Kms away from HPCL, Chandisar

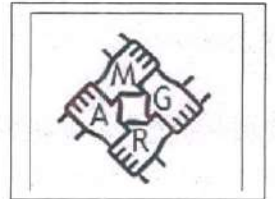


City Gate Station of IRM Energy Limited, Jagana, Banaskantha

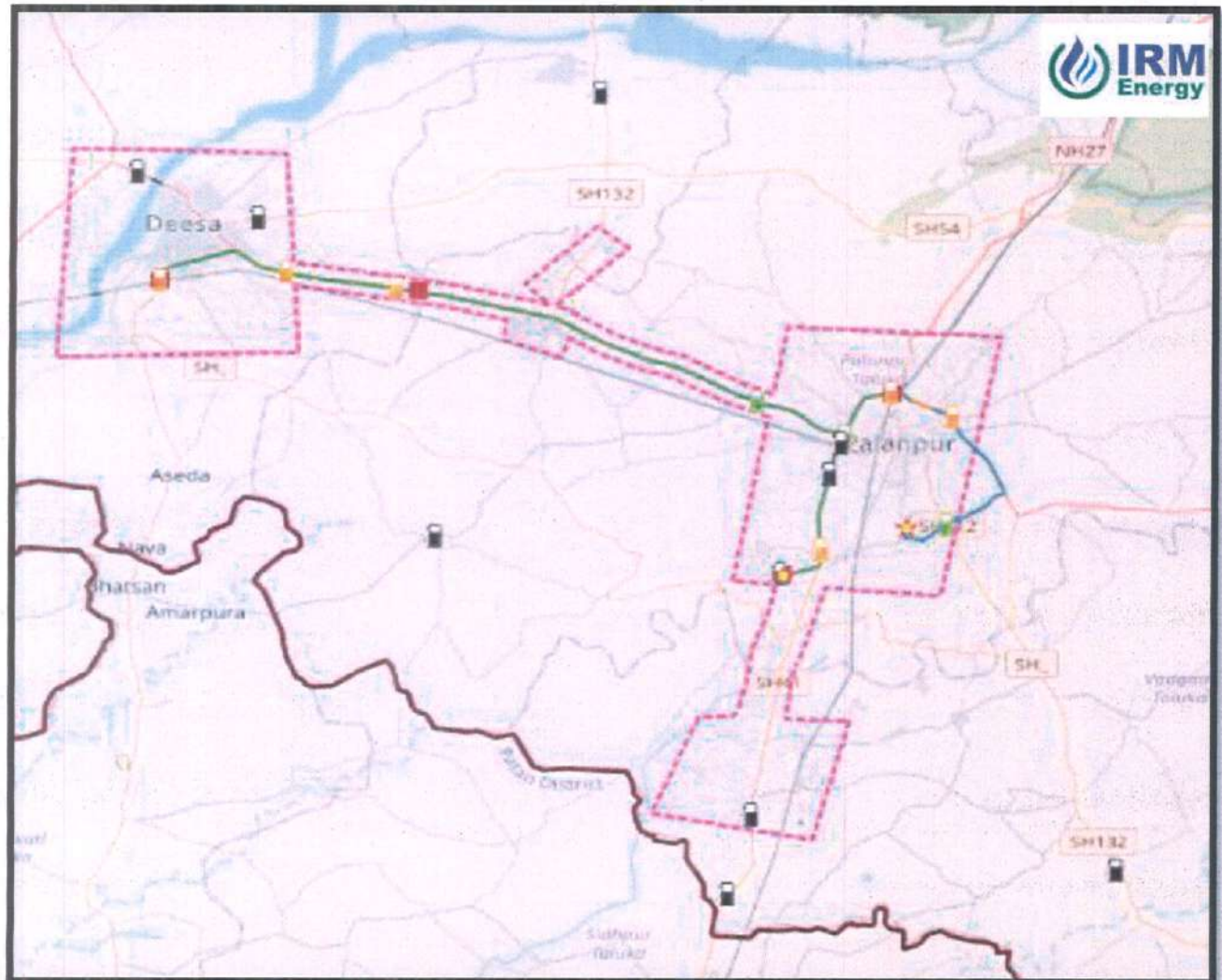
Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal ETM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

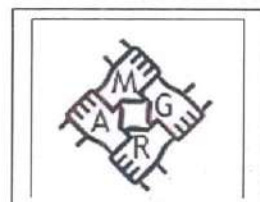


PNG Operational area of IRM Energy Limited, Banaskantha Geographical Area.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

A. FIRE-FIGHTING FACILITIES AVAILABLE :										
S.N o.	Safety Equipments	IOCL (M)	IOCL (MPPL+ KSPL)	IOCL (SMPL)	BPCL (M)	HPCL (MDPL & PVPL)	HPCL (Trm.)	HMPL (MBPL)	GSPL KALOL	IRMEL BK
01	Water Storage	9730 KL	0	0	3750 KL	8700 KL	4500 KL	3600 KL	Nil	Nil
02	10 kg DCP	74	55	20	40	59	90	67	22	30
03	Above 50 kg DCP	0	6	6	9	3	3	2	70	2
04	Foam Storage	16	12.96 KL	0	10 KL	3.0 KL	10 KL	3.6 KL	Nil	Nil
05	Foam Trolley- Above 100 Ltrs	12 KL	1	0	1	1	3	0	Nil	Nil
06	Fire Hoses	90	54	0	46	42	58	47	Nil	Nil
07	Safety Torches	3	1	1	5	1	2	2	1	1
08	Fire Proximity Suit	1	1	0	2	1	2	1	1	2
09	Helmets	50	40	10	25	25	15	15	27	19
10	First Aid Box	5	1	1	6	4	5	7	8	2
11	Water Jet Blanket	1	1	1	5	1	1	2	Nil	Nil
12	Sand Buckets	10	39	15	16	20	38	70	27	15
13	Stretcher	1	1	0	2	1	2	2	3	2
14	Jet Nozzles	30	29	0	22	20	17	18	Nil	Nil
15	Jet Branch Pipe	1	NIL	NIL	4	5	3	1	Nil	Nil
16	Fog Nozzle	5	4	0	4	5	1	1	Nil	Nil
17	Water Curtain	3	5	0	2	3	1	4	Nil	Nil
18	Universal Nozzle	4	4	0	4	5	2	3	Nil	Nil
19	CO ₂ FE	16	80	15	20	60	22	76	66	7
20	DCP Powder Stock	250 Kg	200 kg	0	450 Kg	350Kg	700 Kg	300kg	Nil	Nil
21	Air Breathing App.	2	1	1	4	1	2	2	4	Nil
22	Bore Well	2	1	1	2	0	2	2	1	Nil
23	Emergency Response Vehicle	0	-	-	0	1	Nil	1	Nil	2

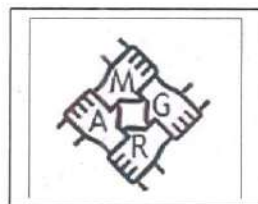
This table provides the data of total Fire Fighting Facilities available in each location. However, since all the equipment cannot be shared during an Emergency, a separate list is enclosed for facilities that can be shared during such scenarios.

In case of emergency, the stock shall be delivered to the distress location. A register approachable shall be kept on the main gate. Helping location that has brought the items shall enter & immediately take the items in for rescue operation. However, later on (within 30 days), consumed/lost items shall be replaced (as per specification) by distressed location.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

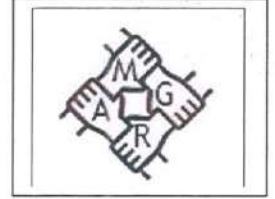
FIRE-FIGHTING EQUIPMENTS that can be SHARED in an EMERGENCY SITUATION										
S.No.	Equipments	IOCL (M)	IOCL(MP PL+KSPL)	IOCL (SMPL)	BPCL (M)	HPCL (MDPL)	HPCL (Trm.)	HMPL(M BPL)	GSPL KALOL	IRMEL PLN
1	Fire Water*	1000 KL	0	0	800 KL	3 KL (FT)	0	5KL (FT)	0	0
2	10 kg DCP FE	5	5	2	5	8	5	5	8 (25 Kg)	10
3	Above 50 kg DCP	1	1	0	2	0	0	0	0	0
4	Foam Concentrate	2 KL	1.5 KL	0	400 L	400 L	400 L	1.0KL	0	0
5	Foam Trolley- Above 100 Ltrs	2	NIL	NIL	0	0	0	0	0	0
6	Fire Hoses	10	10	0	6	5	5	10	0	0
7	FLP Torches	1	1	NIL	1	NIL	1	1	0	0
8	Fire Proximity Suit	1	1	NIL	0	0	0	1	1	1
9	Helmets	20	10	0	10	10	10	10	5	10
10	First Aid Box	2	1	1	2	1	1	2	2	1
11	Water Jet Blanket	1	1	NIL	1	0	0	1	0	0
12	Sand Buckets	5	10	10	8	5	0	0	3	10
13	Stretcher	1	1	0	1	1	1	1	1	1
14	Jet Nozzles	5	8	0	6	2	2	3	0	0
15	Jet Branch Pipe	1	1	0	0	2	0	2	0	0
16	Fog Nozzle	2	1	0	1	2	1	1	0	0
17	Water Curtain	2	1	0	1	1	1	2	0	0
18	Universal Nozzle	2	1	0	1	2	1	2	0	0
19	CO ₂ FE	4	4	0	2	5	2	3	3	4
20	DCP Powder	50 Kg	100 Kg	0	50 Kg	50 Kg	50 Kg	100 kg	0	0
21	Air Breathing App. (SCABA)	1	1	NIL	1	0	1	1	1	0
22	Resuscitator	1	1	NIL	0	1	0	0	0	0
23	Emergency Response Vehicle	0	NIL	NIL	0	1	0	1 (MOSRU)	0	1

Note: * - 1. Facility can be shared only between neighboring industries due to distance constraints.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojarsara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

DOCS. NO.: Marg Agreement/001, Dt. 11.08.2023

MUTUAL AID SCHEME PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

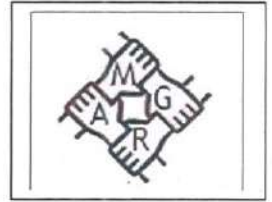
Sr. No.	Company	Strength in each shift			Type of Security	
1	IOCL (MD)	5 in each shift			DGR sponsored	
2	IOCL (MPPL)	1 in each shift + 1 in G shift			DGR sponsored	
3	IOCL (SMPL)	1 in each shift			DGR sponsored	
4	BPCL (MD)	3 in each shift + 1 in G shift			DGR sponsored	
5	HPCL Terminal	7 in each shift + 2 in G shift			DGR sponsored	
6	HPCL MDPL & PVPL	NIL				
7	HMPL (MBPL)	1 in each shift				
8	GSPL, Kalol	1 in each shift + 2 in G shift				
9	IRM Energy Limited	1 in each shift				

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasa Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

	B. ALL IMPORTANT TELEPHONE NOS. SHALL BE DISPLAYED IN SECURITY CABIN ON MAIN GATE
	C. Roles and Responsibilities of Mutual aid member
a)	The affected locations' incident controller will be overall in charge of the location and helping mutual aid member shall aid only as per his advice.
b)	All necessary facilities like water and electricity will be provided by the affected location.
c)	All decision such as requesting further help, change in mode of controlling incidence or all clear etc. will be taken by incident controller of victim organization. Consultation can be done from helping mutual aid member.
d)	Mutual aid member will not stop helping the affected location and will not wind up his equipment from site without the permission of incident controller. After getting clearance only from incident controller, mutual aid member will wind up and leave the site of incidence.
e)	The unit summoning assistance shall ensure complete personnel protection against health hazard and all other eventualities.

Note:

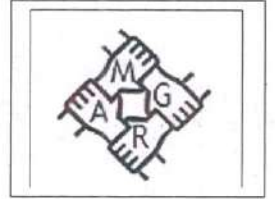
- ❖ Considering the fact that there is a distance of 40 Kms between HPCL and BPCL/IOCL, due consideration to be given in terms of response time.
- ❖ Considering the fact that there is a distance of 55 Kms between HMPL- RAVIYANA and HPCL-CHANDISAR, & another 40 Kms to Siddhpur, due consideration to be given in terms of response time.
- ❖ Considering the fact that there is a distance of 132 Kms. between HPCL-Chandisar and GSPL installations, due consideration to be given in terms of response time.
- ❖ Original copy of Mutual aid agreement retained at IOCL WRPL Sidhpur (MPPL-KSPL)
- ❖ Contact details of members are attached in separate annexures.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

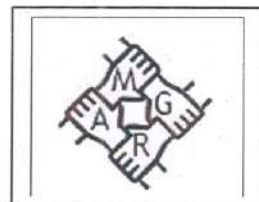
Annexure-1

DETAILS SHARED TO OVERCOME EVENTUALITIES AS STATED IN THE ABOVE PARA NO. 1.0					
A. MANPOWER:					
Company	Name (Shri)	Designation	Telephone No.		E-mail ID
			Office	Mobile No.	
IOCL (Pipeline)	Amit Kumar Tripathi	COM (WRPL)	02767-220899	9687915538	tripathiak@indianoil.in
	SIC	Control Room (SMPL)	02767-220506		
		Control Room (MPPL/KSPL)	02767-221436		
	Chitransh Katiyar	Safety Officer		9779249260	katiyarch@indianoil.in
IOCL (MD)	S Nandagopal	CTM		9426416105	nandagopals@indianoil.in
	SIC	Control Room	+918758803033		
		Safety Officer		7016577347	sareennh@indianoil.in
HPCL (Terminal)	Manoj Kumar	Sr. Manager-Installation	02742-283091	9598932111	Manojkumar1@hpcl.in
	SIC	Control Room			
	Chetan Kumar	Safety Officer		8374385897	Chetan.kumar@hpcl.in
HPCL MDPL & PVPL	Sh. Akhil Luhadiya	Sr. Station Manager	-	9602672222	akhilluhadiya@hpcl.in
	SIC	Control Room	02742-283733	9687655049	
	Ajit Singh	Safety Officer		8607696464	ajit.singh2@hpcl.in
	Prakash Ram Choudhary	Manager (I/C) Sidhpur TOP	02767-223437	7874811177	prakashramc@bharatpetroleum.in
			02767-292800		

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

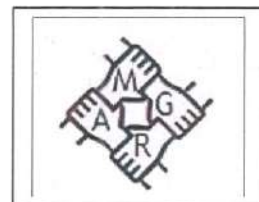
BPCL (SIDHPUR TOP)		Control Room	7359028555		
	Atul Prajapati	Safety Officer		9586587027	atulkumarnpraja@bharatpetroleum.in
HMPL (MBPL)	Ramesh Kumar Rojasara	Location In charge		9727785306	Ramesh.rojasara@hmel.in
	SIC	Control Room		7069041572	
				7069041005	
	Sandip Patel	Safety Officer		9649901287	Sandipkumar.patel@hmel.in
GSPL Kalol	Kishore Kumar Singh	Base In charge		9879599464	kishorekumar@gspc.in
		Control Room	079- 23268849/50/4 6/88	18002333323	
				9879560025	
				98250 49892	
	Rishi Kumar	Safety Officer			rishi.s@gspc.in
IRMEL- BK	Budhram Siyag	Chief Manager & GA Head- Banaskantha		9512490065	<u>budhram.siyag@irmenergy.com</u>
	SIC	Control Room	18008911310		
	Mridul Kumar	Safety Officer		9313924600	<u>mridul.kumar@irmenergy.com</u>

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

Annexure-2

MODE AND MODALITY OF RECEIPT AND DISPATCH OF EMERGENCY AIDS									
Sl No.	Details	IOCL-WRPL	IOCL (MD)	BPCL Terminal	HPCL Terminal	HPCL (MDPL)	HMPL (MBPL)	GSPL (Kalol)	IRMEL, BK
1	Contact Person who will be responsible for receiving Aids (Fire Extinguishers, Fire Hoses, Nozzles etc) along with contact number.	Amit Kumar Tripathi 9687915538	S Nandagopal 09426416105	Prakash Ram Choudhary 7874811177	Manoj Kumar 9598932111	Akhil Luhadiya 9602672222	Ramesh Rojasara 9727785306	Kishore Kumar Singh 09879599464	Budhram Siyag 9512490065
2	Alternate Contact Person with Contact details	Chitransh Katiyar 9779249260	Nirvit Sareen 7016577347	Atul Kumar Prajapati 9586587027	Chetan Kumar 8374385897	Ajit Singh 8607696464	Gopal Gupta 9988881426	Amit Aggarwal 9825114951	Mridul Kumar 9313924600
3	Modality of receipt of Aids, i.e., through which gate?	Main Gate	Main Gate	Main Gate	Main Gate	Main Gate	Main Gate	Main Gate	Main Gate
4	Contact Person who will be responsible for dispatching Aids (Fire Extinguishers, Fire Hoses, Nozzles etc) along with contact number.	Amit Kumar Tripathi 9687915538	S Nandagopal 09426416105	Prakash Ram Choudhary 7874811177	Manoj Kumar 9565093999	Akhil Luhadiya 9602672222	Sandip Patel 9649901287	Kishore Kumar Singh 09879599464	Budhram Siyag 9512490065
5	Alternate Contact Person with Contact details	Chitransh Katiyar 9779249260	Nirvit Sareen 7016577347	Atul Kumar Prajapati 9586587027	Chetan Kumar 8374385897	Ajit Singh 8607696464	Gopal Gupta 9988881426	Amit Aggarwal 9825114951	Mridul Kumar 9313924600

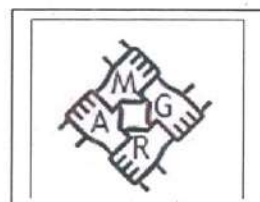
The practice of contacting on telephone by each oil company security personnel during holiday & non-working office time among IOC (MD & PL), BPCL (M) & HPCL (T&PL), GSPL and IRM energy Ltd. shall continue and logged with clear indication of call received or made. This exercise must be minimum twice in the night & logged security to be trained in the matter.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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MUTUAL AID SCHEME

PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

Annexure-3

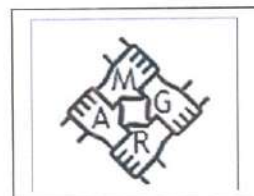
LIST OF CERTIFIED FIRST AIDER that can be SHARED in an EMERGENCY SITUATION										
1	First Aider-1	S Nandagopal	Chitransh Katiyar	<i>[Signature]</i>	Atul Prajapati	Bharat Parmar	-	Ashok Singh	Kishore Singh	Mridul Kumar
2	First Aider-2	R G Patel	Mohit Dhaka	Mukesh Patel		Ajit Singh	-	Sandip Patel	Amit Aggarwal	
3	First Aider-3	-	-	-		Mahesh	-	Jaypal D.	Rishi Singh	
4	First Aider-4	-	-	-		Ram Singh	-	Gopal Gupta	-	

<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasa Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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PETROLEUM OIL INSTALLATIONS



IOC (WRPL), IOC (MD), BPCL-SIDHPUR, HPCL TERMINAL-CHANDISAR, HPCL-MDPL & PVPL -CHANDISAR, HMPL-JUNA RAVIYANA, GSPL-KALOL & IRM ENERGY LTD.- BK

Annexure -4

Response Lead Time Matrix

Location Inter Distance vs Travel Time		IOCL (WRPL)	IOCL(MD) Terminal	BPCL Top	HPCL Terminal	HPCL (MDPL & PVPL)	HMPL (MBPL)	GSPL	IRM Energy Ltd.
		Sidhpur	Sidhpur	Sidhpur	Chandisar	Chandisar	Raviyana	Kalol	Palanpur
IOCL (WRPL)	Sidhpur	0	1 KM 10 Min	1 KM 10 Min	40 KM 48 Min	40 KM 48 Min	103 KM 123 Min	87 KM 104 Min	21 KM 25 Min
IOCL(MD) Terminal	Sidhpur	1 KM 10 Min	0	1 KM 10 Min	40 KM 48 Min	40 KM 48 Min	103 KM 123 Min	87 KM 104 Min	21 KM 25 Min
BPCL Top	Sidhpur	1 KM 10 Min	1 KM 10 Min	0	40 KM 48 Min	40 KM 48 Min	103 KM 83 Min	87 KM 104 Min	21 KM 25 Min
HPCL Terminal	Chandisar	40 KM 48 Min	40 KM 48 Min	40 KM 48 Min	0	0 KM 10 Min	55 KM 66 Min	127 KM 152 Min	19 KM 22 Min
HPCL (MDPL & PVPL)	Chandisar	40 KM 48 Min	40 KM 48 Min	40 KM 48 Min	0 KM 10 Min	0	55 KM 66 Min	127 KM 152 Min	19 KM 22 Min
HMPL (MBPL)	Raviyana	103 KM 123 Min	103 KM 123 Min	103 KM 83 Min	55 KM 66 Min	55 KM 66 Min	0	159 KM 190 Min	74 KM 89 Min
GSPL	Kalol	87 KM 104 Min	87 KM 104 Min	87 KM 104 Min	127 KM 152 Min	127 KM 152 Min	159 KM 190 Min	0	108 KM 130 Min
IRM Energy Ltd.	Palanpur	21 KM 25 Min	21 KM 25 Min	21 KM 25 Min	19 KM 22 Min	19 KM 22 Min	74 KM 89 Min	108 KM 130 Min	0

Note	1. Considering 50 km/hrs average speed for Fire Tender
	2. Considering Min. Inter distance 1 KM and Reaching time 10 Min fo nearest location.

Amit Kumar Tripathi, COM WRPL, Sidhpur	S Nandagopal CTM, IOC (MD) Sidhpur Terminal	Prakash R. Choudhary Sr. Manager (I/C) BPCL, Sidhpur	Manoj Kumar Sr. Manager -Installation HPCL, Chandisar	Ramesh Rojasara Location in charge HMPL-Juna Raviana	Akhil Luhadiya Sr. Station Manager HPCL MDPL & PVPL Chandisar, Palanpur	Kishore Singh Base In charge GSPL A'Bad Base	Budhram Siyag Chief Mgr. & GA Head, IRM Energy Ltd. Banaskantha

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ANNEXURE – 5

**EMERGENCY RESPONSE PLAN DURING
PROJECTS OR CONSTRUCTION**

ANNEXURE - 5

Emergency Response Plan during Projects or Construction

Projects in Oil and Gas Sector is widely recognized as one of the accident-prone activities. It should be understood that the size and complexity of projects possess the various hazards and risks associated with construction activities. In majority, slow response, lack of resources, or the absence of trained personnel at construction site will lead to chaos in an emergency. To minimize human suffering and financial losses, it is therefore strongly recommended to develop the emergency response plan before commencement of project.

The Emergency Response Plan shall include the following considerations:

1. Statutory Requirements:

The entity shall ensure compliance of applicable Central and State Rules and Regulations and enactments such as The Building and Other Construction Workers' Act 1996, the Environment (Protection) Act, 1986, the Factories Act, 1948, the Inflammable Substances Act, 1952, the Motor Vehicles Act, 1988, the Public Liability Insurance Act, 1991, the Petroleum Act, 1934, the National Environment Tribunal Act, 1995, the Explosives Act, 1884 etc. Applicability and status of compliance should be made part of Emergency Response Plan.

2. Pre-Emergency Planning:

a) The process of hazard identification and risk assessment involves a thorough review of construction activities such as Excavation, Scaffolding, Platforms and Ladders, Structural Work, Laying of Reinforcement and Concreting, Road Work, Cutting or Welding, Working in Confined Space, Proof or Pressure Testing, Working at Heights, Handling and Lifting Equipment, Vehicle Movement, Electrical, Demolition, Radiography, Shot blasting, transportation of pipes or equipment etc. to identify potential On-Site and Off-Site emergencies.

b) Listing out On-Site (Level I and II) and Off-Site (Level-III) Emergency Scenarios based on the consequences and resources.

3. Emergency Mitigation Measures:

The entity shall have an effective Health, Safety and Environment Management System in place to ensure safety during the following construction activities, namely: -

- a) Health, Safety and Environment (HSE) Policy;
- b) Duties & Responsibilities of Contractor/Executing Agency;
- c) Site planning and layout;
- d) Deployment of Safety Officer/Supervision;
- e) Safety committees with fair participation of workers;
- f) Safety audits and inspections shall be carried out with the help of prescribed checklists;
- g) Work permit system;
- h) Personal protective equipment; and
- i) Safety awareness and training etc.

4. Emergency Preparedness Measures:

- a) Emergency Drill and Exercise on identified scenarios and its evaluations;
- b) Organizing trainings on Emergency Response; and
- c) Mutual Aid.

5. Emergency Response Procedures:

The entity shall prepare well planned and documented procedures to ensure prompt response. The action plan may be documented for all emergency scenarios, identified as On-site and Off-site.

6. Emergency Organization and Responsibilities:

The entity shall formulate organization chart (emergency action flow chart) and define the roles and responsibilities of key personnel for handling the emergency situation effectively at project site. Regulation 14.0 of PNGRB (ERDMP) Regulations, may be referred to develop the emergency organization and responsibilities.

7. Resources for Controlling Emergency:

1) The available emergency control systems and facilities within the project or construction site shall be as under, namely: -

- (a) Fire and gas detection system;
- (b) Fire protection and firefighting system (Active and Passive);
- (c) Ambulance facility in house, if not available then should be available on urgent call basis;
- (d) Rescue facilities and personal protective equipment (PPEs);
- (e) First aid facilities;
- (f) Medical facility in house or tie up with nearby hospital/health center;
- (g) Internal and External Communication facilities along with alerting system;
- (h) Assembly points; and
- (i) Escape route and evacuation zones.

2) Internal and External Emergency contact numbers and addresses of police, fire, station, hospitals, mutual aid industry, factory inspectors, Board, State Pollution, Control Board, Petroleum and Explosive Safety Organization (PESO), etc.

3) Addresses and Telephone Directory of Professional Emergency Responders, Technical Support Services.

8. Emergency Recovery Procedure:

After the emergency, the following activities need to be carried out in detail, namely:

- a) Information to statutory authorities (Refer Clause 23.0 for Reporting of Incident to PNGRB);
- b) Incident investigation;
- c) Damage assessment;
- d) Salvage of products, de-contamination, clean-up and restoration; and
- e) A detailed report shall be prepared based on the entire experience of the incident, including restorations, limitations and lessons learnt.

Secretary, PNGRB

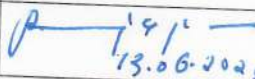
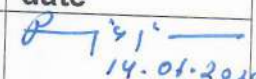
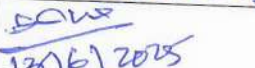
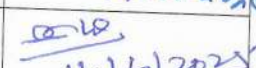
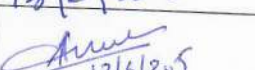
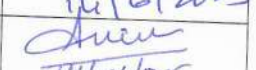
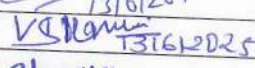
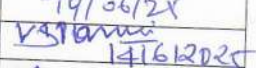
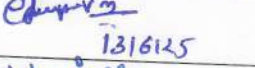
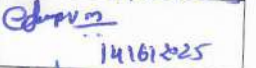
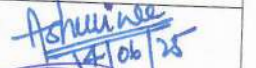
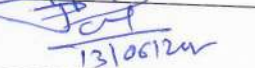
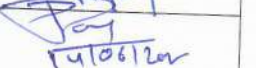
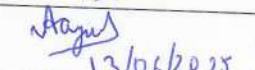
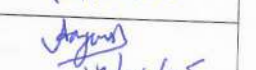
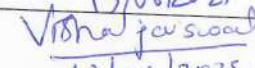
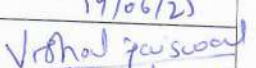
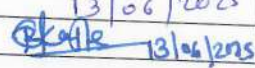
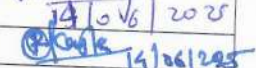
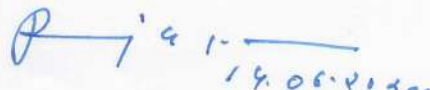
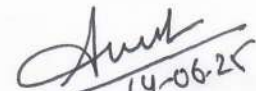
ANNEXURE – 6

**ERDMP AUDIT DOCUMENTS,
RECOMMENDATIONS AND MOCK DRILL
REPORT**

ERDMP CERTIFICATION/T4S AUDIT OPENING / CLOSING MEETING

Documents Number	BSPL/FM/008/5A1
Revision Number	1
Date of issue	18/04/2024
Page Number	Page 1 of 1

Audit Reference Number	BSPL/0709-715
Name of Auditee	IOCL WRPL Sidhpur
Location	IOCL WRPL Sidhpur
Date of audit	14.06.2025
Name of auditors	Sh. P.K. Sinha & Sh. Parimal Mondal
Type of audit	ERDMP Audit
Audit Reference/ STD	PNGRB Regulations

SL NO	Name of representative	Designation/ organization	Department	Opening meeting signature with date	Closing meeting signature with date
1	Sh. P.K. Sinha	Lead Auditor	Bosai Safety	 13.06.2025	 14.06.2025
2	Sh. Parimal Mondal	Associate auditor	Bosai Safety	 13/6/2025	 14/6/2025
3	Sh. Amit Kumar Tripathi	COM	Operations	 13/6/2025	 14/06/25
4	Sh. V. K Solanki	SOM	Operations	 13/6/2025	 14/6/2025
5	Sh. Vipul Champaneri	M(M/L)	Operations	 13/6/25	 14/6/25
6	Sh. Ashwinee Kr. Singh	OM	Operations	 13/06/25	 14/06/25
7	Sh. Dishanat Patel	AM(O&M)	Operations	 13/06/2025	 14/06/2025
8	Sh. Aayush Mangulley	AM(O&M)	Operations	 13/06/2025	 14/06/25
9	Sh. Vishal Jaiswal	T&IE	Operation	 13/06/2025	 14/06/2025
10	Rajesh Kajle	EA(Elec.)	Operation	 13/06/2025	 14/06/2025
 Signature of Team leader			 Signature of Management Representative		

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer



FLASH AUDIT REPORT
BOSAI SAFETY PRIVATE LTD, 906, 9TH FLOOR, TOWER A, C-28-29,
LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA,
SECTOR-62, NOIDA, UP-201309,

Report No.: BSPL/0709-715

Date of Audit: 09.06.2025 to 19.06.2025

Ref. Std.	X	PNGRB	ERDMP			
Type of Audit		Certification Audit	Yes	Recertification Audit	NA	Modification / Follow up
Category (Please Mention yes in respective Column)		Liquefied Petroleum Gas Plants		Refinery / Gas Processing Plant		POL Depot/Tank Farm Storage
		Cross Country Natural Gas Pipeline		Petroleum & Petroleum Products Pipeline		City Gas Distribution / Compressed Natural Gas
		Retail Outlet		Liquefied Natural Gas		

Organization & Address: IOCL WRPL Sidhpur Station

Location
Sidhpur

Name, designation, e-mail id & contact details of Senior/relevant officer

Amit Kumar Tripathi,
Chief Operation Manager,
Tripathiak@indianoil.in
Mob No. 9687915538

Description

To carry out the inspection as per the established documented procedure and following the prescribed guidelines / standards as given in the T4S regulations issued by PNGRB.

Audit Team	S.N.	Name of Auditor	Team Leader/Associate Auditor	S.N.	Name of Auditor	Team Leader/Associate Auditor
	1	Sh. P. K. Sinha	Team Leader	3		
	2	Sh. Parimal Mondal	Associate Leader	4		

Key observations and action plan of entity:

S. No	Key Findings
1.	MSDS of ATF should also be displayed at sampling point and MSDS of AFFF to be displayed at AFFF storage shed.
2.	The siren code is displayed in the control room and near hand siren in the field. It should also be displayed at the main security gate.
3.	Area Classification drawing to be displayed in Switch Yard Building as per OISD 112(IS 5572).
4.	At Khali MOV station, the exhaust fan in battery room to be provided with a timer for auto periodic operation for proper ventilation.

Signature & Date of Team Leader

P.K. SINHA

Signature of Associate Auditor

14/06/2025

Signature & date of Organization's

अमित कुमार त्रिपाठी / Amit Kumar Tripathi
मुख्य प्रबालन प्रबंधक / Chief Operations Manager

Typical Mock Drill Reporting Format

BSPL REFERENCE No.	BSPL/0709-715
1. Date and Time of Mock Drill	14.06.2025 @ 11:21 hrs.
2. Location	WRPL, Sidhpur
3. Details of Emergency Scenario	Leakage and Fire at MPPL Scraper Launching Barrel
4. Details of initiation/activation of emergency	During a routine station round at 11:21 Hrs, Shri Mukesh Patel (Operator) observed a leakage from the MPPL Scraper Launching Barrel (SLB) Drain Valve. He immediately reported the incident to the Control Room, followed by prompt communication to the Maintenance Department via walkie-talkie. While maintenance personnel were engaged in leak arrest activities, a few studs dropped, causing sparks that ignited a fire in the Barrel Area at approximately 11:21 Hrs. In response, a Level-II Emergency was declared, and the fire siren was activated without delay.

5. Description of the Mock drill:
- On June 14th, 2025, at 11:15 Hrs, during a routine station round, Shri Mukesh Patel (Operator) observed leakage from the MPPL Scraper Launching Barrel (SLB) Drain Valve. He immediately informed the Control Room and simultaneously communicated the issue to the Maintenance Department via walkie-talkie. Upon receiving the information, Control Room personnel alerted the Chief Incident Controller (CIC) and the Site Incident Controller (SIC).
- While the maintenance team was engaged in efforts to contain the leakage, at approximately 11:21 Hrs, some studs were accidentally dropped during the repair activity. The resulting sparks ignited hydrocarbon vapors in the vicinity, causing a fire outbreak in the Barrel Area. Upon confirmation of the fire, the fire clock was immediately activated, and automated emergency alerts were triggered. Accordingly, a Level-I Emergency was declared, and the fire siren was activated. Initial response measures were implemented, including alerting emergency teams, isolating the area, and mobilizing the maintenance crew to arrest the leak. The fire combat team, along with the SIC, rushed to the site in accordance with the designated fire clock response protocol.
- At 11:21:20 Hrs, the first responder, Shri Mukesh Patel, operated a 9 kg DCP fire extinguisher to control the blaze. As the fire began to escalate, the SIC assessed the situation and recommended upgrading the emergency level. The CIC reviewed the conditions and confirmed the declaration of a Level-II Emergency at 11:26 Hrs. The Emergency Control Centre (ECC) was instructed to initiate full-scale emergency response measures and reached out to mutual aid partners including IOCL Marketing Division, BPCL Sidhpur, HPCL Palanpur, HPCL Pipelines Palanpur, HMEL Pipelines, GSPL Kalol, and IRM Energy Ltd., Palanpur. Requests were made for additional foam supplies to support firefighting efforts.
- Simultaneously, the State Administrative Department Fire Station at Sidhpur was alerted to dispatch a fire tender, and the Civil Hospital at Sidhpur was informed to send

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer

P. K. SINGH
14.06.2025

Shri
14/6/25

ERDMP CERTIFICATION/T4S Audit MOCK DRILL INSPECTION REPORT FORM

DOCUMENTS NUMBER	DDFL/11/0000/00
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an ambulance for medical support in case of injuries. All emergency teams and resources were mobilized as per protocol to manage and contain the situation effectively.

Firefighting operations commenced immediately, taking into account the prevailing wind direction. Water-cum-Foam Monitors (WCFM) 18 and 19 were deployed adjacent to the MPPL Barrel Area, tackling the fire from two directions. A water curtain nozzle was installed with the help of Hydrant-29 to prevent flame propagation toward the Sump Tank Area, given the wind direction. WCFM-14 at the MPPL Shed was also operated to create a water curtain to protect the MPPL Pump Shed from potential heat and flame spread. Additionally, WCFM-20 was operated to provide a third line of attack on the fire from a different direction.

Simultaneously, security and rescue teams reached the site. The security team ensured the barricading of the affected area and opened the emergency gate to facilitate movement of emergency personnel and equipment. The rescue team located an injured auxiliary staff member near the incident site, rescued him to a safe area, administered first aid, and transported him via the emergency vehicle to the nearest hospital.

The mutual aid partners from IOCL(Marketing) and BPCL Marketing joined the ongoing operations at 11:36 hrs under the guidance of the SIC. Through combined efforts, the fire was successfully extinguished at 11:44 Hrs. Cooling of the surrounding pipeline system continued until 11:50 Hrs to prevent re-ignition. Following this, the SIC instructed the shutdown of all firefighting monitors and hydrant systems. Equipped with SCBA and fire suits, the firefighting team conducted gas concentration checks, confirming that Lower Explosive Limit (LEL) readings were within safe limits and no hydrocarbon vapors were detected in the area.

Once the area was declared safe, the maintenance team was mobilized to begin restoration work on the MPPL SLB Drain Valve, and salvage operations were initiated. After headcount verification and final clearance from the SIC, the CIC instructed the ECC to sound the "All Clear" siren at 11:56 hrs. All personnel assembled at the designated assembly point for a debriefing session, during which observations were shared and both strengths and areas for improvement were discussed.

The mock drill successfully validated emergency preparedness, response coordination, rescue capability, and inter-agency communication under a simulated emergency scenario, fulfilling all key objectives.

6. Communication and Response of Emergency teams				
Events		Expected Response time	Actual Response time	Remarks, if any
a)	Siren activation after initiation	01 Minute	25 seconds	The Control Room personnel activated Level-II Fire Sire as per Instruction of CIC, and the fire clock

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer

[Signature]

[Signature]
14/6/24

ERDMP CERTIFICATION/T4S Audit MOCK DRILL INSPECTION REPORT FORM

DOCUMENTS NUMBER	03FL/11/000000
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				was set as per emergency response protocol.
b)	Reporting of CIC	02 Minute	01 Minute	
c)	Reporting of SIC	01 Minute	01 Minute	
d)	Fire team	02 Minute	01 Minute	
e)	Medical team	02 minute	01 minutes	
f)	Security Team	02 Minute	01 Minute	
g)	Mutual Aid	10 Minute	10 Minute	IOCL Marketing and BPCL Marketing. (Fire tender of HMEL was under maintenance and Municipal Fire tender was occupied on other site)
h)	E&M	Present at site	Present at site	
i)	others	Mutual aid		
7.	Head Count			
a)	Total persons present in the installation before the drill	Employees: 12 Contractual: 26 Others: Visitors 5 Total 43		
b)	Total persons available at Assembly point(s)	42		
c)	Difference of head count after drill	01 Injured Personal		
d)	Action taken to search the shortfall of head counts, if any	Mentioned above		
8.	Time of 'All Clear'	11:56		
9.	Duration of Mock Drill (in Minutes)	35 minutes		

10.	Observations (including highlight the positives of the drill)
	- The emergency response team mobilized swiftly upon receiving the alarm, showcasing strong preparedness and quick action. - Coordination between departments (operations, safety, security, firefighting) was excellent, with clear communication and defined roles. - All personnel wore appropriate PPE, adhering to safety protocols throughout the drill. - Fire hydrants were easily accessible and functional, enabling quick firefighting and cooling efforts. - The drill was well-structured and executed as planned, effectively covering all emergency response aspects. - Mutual aid response from IOCL and BPCL was efficient, with both teams integrating smoothly into the operations.

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer

[Signature]

[Signature]
14/6/24

ERDMP CERTIFICATION/T4S Audit MOCK DRILL INSPECTION REPORT FORM

DOCUMENTS NUMBER	001/1/1/2024/00
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11.	Recommendations
	1. Water leakage from coupling seal of fire hose connected with hydrant no 29 utilized for making water curtain for nearby sump area was observed. Inspection and maintenance for the particular hose coupling to be done. 2. Barricading tape to be used for cordoning off the affected area. 3. The siren code is displayed in the control room and near hand siren in the field. It should also be displayed at main security gate. 4. Direction marker signage should be displayed beside the road to arrive at assembly point
12.	Emergency Exercise Observers
Name of the observer	
Sh. P K. Sinha	Area of Observation
Sh. Parimal Mondal	MPPL Barrel Area (Scrappier Launching Barrel Area)
	MPPL Barrel Area (Scrappier Launching Barrel Area)

done
14/06/2025

Signature
14/6/24
Signature of Station In-Charge
अमित कुमार त्रिपाठी / Amit Kumar Tripathi
मुख्य प्रशासक अधिकारी / Chief Executive Officer

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer



Signature

Date

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer



COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer

[Signature]

[Signature]

TOTAL RECOMMENDATIONS

Documents Number	BOSAI/FM/008/05K
Revision Number	02
Date of issue	18.04.2024
Page Number	Page 1 of 1

Certification / Re-certification Audit - (ERDMP)

Name of Entity	IOCL WRPL SIDHPUR STATION	BSPL Ref. No.	BSPL/0709-715
Location and Address	SIDHPUR	Date of Audit	09.06.2025 to 19.06.2025

A. Main Recommendations as per Check list

S. No	Recommendation
1.	At Khali MOV Station, trilingual danger sign board to be displayed on ACDB panel.
2.	At Khali MOV station, the distance of abandoned earth pit and newly constructed pit is less than 3 m. Minimum separation of 3 m between earth pit to be ensured.
3.	At Khali MOV station, the exhaust fan in battery room to be provided with a timer for auto periodic operation for proper ventilation.
4.	XXXL size IFR suit to be kept for visitors at Pump station.
5.	MSDS of ATF should also be displayed at sampling point and MSDS of AFFF to be displayed at AFFF storage shed.
6.	MSDS for product received at Sample point in KJPPL delivery station displayed. However, the font size is small and not easily readable. Need to be displayed with bigger font.
7.	Area Classification drawing to be displayed in Switch Yard Building as per OISD 112(IS 5572).
8.	SLD and Earth pit drawing displayed in MCC room and are not signed. The signed copy of the drawing to be displayed.

B. Mock Drill Recommendations

S. No	Recommendation
1.	Water leakage from coupling seal of fire hose connected with hydrant no 29 utilized for making water curtain for nearby sump area was observed. Inspection and maintenance for the particular hose coupling to be done.
2.	Barricading tape to be used for cordoning off the affected area.
3.	The siren code is displayed in the control room and near hand siren in the field. It should also be displayed at main security gate.
4.	Direction marker signage should be displayed beside the road to arrive at assembly point

Total Recommendations (A+B) = 12

Compliance status of desk review Report Recommendations -: All

P. K. SINGHA
Signature & Date of Team Leader

Amit Kumar Tripathi
Signature & date of Organization's Head

DAJO
Signature of Associate Auditor(s)

अमित कुमार त्रिपाठी/Amit Kumar Tripathi
मुख्य प्रबालन प्रबंधक/Chief Operations Manager

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer

Audit Reference Number	BSPL/0709-715	Dated: 14.06.2025
Name of Auditee & Address Location	IOCL WRPL Sidhpur	
Date of audit	13-14 /06/2025	
Name of auditors	Sh. P.K. Sinha	
	Sh. Parimal Mondal	
Type of audit	Initial/ certification/ follow-up	
Audit Reference/ STD	PNGRB Regulations, 2010 read with Regulations Amdt 2020	

Description of Organisation/ unit	Indian Oil Corporation Limited Region Pipelines, Sidhpur, Patan, Gujarat	Western
Scope	ERDMP Certification of WRPL, Sidhpur.	

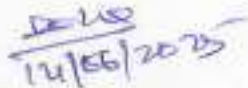
Summary of findings and recommendations (detailed observations to be given in next page:

1.0	Management system is in place & Recommended for Certification	Yes/ No/ NA
2.0	Audit Findings (NC)	Raised
2.1	Documents related finding	Closed
2.2	On-site finding	
3.0	Certification to ERDMP 2020	Recommended for certification (a) Open & Resolution of NCs require submission of documentary evidence (Yes/ No/ NA) . (b) Follow up visit- within 60 days (Yes/ No/ NA) . (c) Not recommended and a full re-audit is required (Yes/ No/ NA) .

Signature  14.06.2025

Team leader Name:

Shri P.K. Sinha

 14/06/2025

Signature 

Unit Head Name:

Shri Amit Kumar Tripathi

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer

Profile of the Organisation/ unit: WRPL Sidhpur

WRPL Sidhpur is a strategically important pumping facility for crude oil and pumping cum delivery location for product pipeline, serving as a critical node in Indian Oil's cross-country pipeline network. The location plays a dual role in the energy infrastructure:

1. Crude Oil Pumping

- Crude oil is received from Mundra
- It is then pumped to refinery located at Panipat.

2. Product Pipeline Interface

- WRPL Sidhpur also acts as a pumping cum delivery station for the Koyali-Jaipur Product Pipeline (KJPPL).
- This function supports efficient movement of refined petroleum products across regions, strengthening the downstream supply chain.

Audit Findings:

SL NO	Check points	Observations	Recommendations
1.	QRA Document	QRA study was conducted in 2020. Total no. of recommendation:29, Complied:29	Nil
2.	HAZOP Report	HAZOP study was conducted in 2020. Total no. of recommendation:23, Complied:23	Nil
3.	Safety Audits	Total Observations/Complied/Balanced T4S - 8/8/0 OISD 2024(MPPL)- 14/13/1 OISD 2023(SMPL): IMS- 02/02/0 ERDMP- 16/16/0	Nil
4.	Safety Committee meeting	Frequency : Monthly chaired by SIC	Nil
5.	Work permit system	Work permit system is being followed as per OISD 105	Nil
6.	Safety Training	Training is being given to employees, contract worker, employees on monthly basis.	Nil
7.	Fire	Hydraulic calculation report of hydrant line available.	Nil

COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
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[Signature]

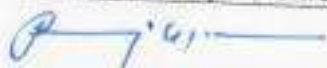
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Onsite Audit Inspection Report for ERDMP Certification

	Protection System	All firefighting equipment like – Hoses/ Nozzles/ Fire Extinguishers etc. have been put back at designated places as per OISD 117. Equipment inspection and maintenance is done as per IMS	
8.	Fire Water Storage	Double scenario. Fire water calculation sheet available.	Nil
9.	Fire Water Pumps	Fire water pumps operated in auto in mockdrill.	Nil
10.	Water spray system	Water spray system is available as per Guidelines.	Nil
11.	Foam Pourer system	Foam pourer system operated in auto in mock drill. Foam testing report available (May 2024)	Nil
12.	Mutual Aid	Mutual aid agreement available from August 2023 to August 2025.	Nil
13.	External Safety Audit	Last audit was OISD – MPPL audit done in Observations/Complied/Balanced: 13/13/0	Nil
14.	Emergency Information board	Emergency Board displayed at Control room (Emergency control center) and Alternate Emergency control center area checked.	Nil
15.	Mock Drill	Fire drill/ Onsite- Monthly/ Half Yearly. Off-site- Yearly Level 2 Mock Drills conducted on 21.03.2025. Last Level 1 Mock Drill conducted on 31.05.2025.	Nil
16.	On-site Emergency Response Drill	Mutual Aid agreement with IOCL Marketing, BPCL, HMEL, IRM Energy, HPCL Pipelines and HPCL Marketing, GSPL is available. All mutual aid members along with Municipal fire crew, Civil hospital, etc were available on mock drill dated 21.03.2025.	Nil
17.	Off-site Emergency Response Drill	Level-III Mock Drill off-site conducted on 07.01.2025 in (Mahesana District) & 28.01.2025 (Patan District) 21.12.2024 (Banaskatha District)	Nil

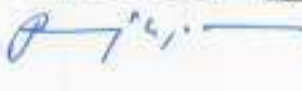
COMPANY	Bosai Safety Pvt. Ltd., Office:- 906, 9TH FLOOR, TOWER A, C-28-29, LOGIX CYBER PARK, C BLOCK, PHASE-2, INDUSTRIAL AREA, SECTOR-62, NOIDA-201309
Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer





18.	Maintenance system	Maintenance of Fire water Protection System is under IOCL marketing division.	Nil																					
19.	SOPs	Approved SOPs are displayed on field.	Nil																					
20.	PESO approved layout	Available in PESO License No. P/HQ/GJ/15/1552(P11925) valid till 31.12.2025 & P/HQ/GJ/15/347(P9950) valid till 31.12.2025	Nil																					
21.	Layout as per OISD	The layout is convenient from operations and safety aspects and is as per OISD 118	Nil																					
22.	Statutory Licenses such as; Factory, PESO, labour etc	<table border="1"><thead><tr><th>STATUTORY LICENSE</th><th>LICENSE/CONSENT NO.</th><th>VALID UP TO</th></tr></thead><tbody><tr><td>Factory License of MPPL/KJP PL Sidhpur</td><td>Regn. No. – 751/19209/1995</td><td>Dec 2028</td></tr><tr><td>PESO License MPPL/KJP PL Sidhpur</td><td>P/HQ/GJ/15/1552(P11925)</td><td>Dec 2025</td></tr><tr><td>Pollution Board Consent :Air and Water- MPPL/KJP PL</td><td>AWH-36841/41002</td><td>SMPL: June '30 MPPL :March '31 KJPPL: Dec '31</td></tr><tr><td>VHF/UHF License</td><td>FL-1254</td><td>Dec 2028</td></tr><tr><td>Environment Clearance</td><td>J-11011/47/2003</td><td></td></tr><tr><td>Govt. Notification for</td><td>GGI/2002/SBI/POA/1097/3348 dt. 01.11.02</td><td></td></tr></tbody></table>	STATUTORY LICENSE	LICENSE/CONSENT NO.	VALID UP TO	Factory License of MPPL/KJP PL Sidhpur	Regn. No. – 751/19209/1995	Dec 2028	PESO License MPPL/KJP PL Sidhpur	P/HQ/GJ/15/1552(P11925)	Dec 2025	Pollution Board Consent :Air and Water- MPPL/KJP PL	AWH-36841/41002	SMPL: June '30 MPPL :March '31 KJPPL: Dec '31	VHF/UHF License	FL-1254	Dec 2028	Environment Clearance	J-11011/47/2003		Govt. Notification for	GGI/2002/SBI/POA/1097/3348 dt. 01.11.02		Nil
STATUTORY LICENSE	LICENSE/CONSENT NO.	VALID UP TO																						
Factory License of MPPL/KJP PL Sidhpur	Regn. No. – 751/19209/1995	Dec 2028																						
PESO License MPPL/KJP PL Sidhpur	P/HQ/GJ/15/1552(P11925)	Dec 2025																						
Pollution Board Consent :Air and Water- MPPL/KJP PL	AWH-36841/41002	SMPL: June '30 MPPL :March '31 KJPPL: Dec '31																						
VHF/UHF License	FL-1254	Dec 2028																						
Environment Clearance	J-11011/47/2003																							
Govt. Notification for	GGI/2002/SBI/POA/1097/3348 dt. 01.11.02																							

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Prepared by	Quality Manager
Reviewed by	Technical Manager
Approved by	Chief Executive Officer







Onsite Audit Inspection Report for ERDMP Certification

		Protected Area Declaration Central Electricity Authority License CGWA :MPPL & SMPL WRIO/GU/C-06943/2024 CGWA/NOC/IND/ORIG/2023/1 9248 CGWA/NOC/IND/ORIG/2023/1 9247 April 2029 26/09/2025 (MPPL) 26.09.2025(SMP L)	
23.	Earthing system	Proper Earthing is available	Nil
24.	Wind Shocks	Visible and are in adequate numbers.	Nil
25.	Hydro-carbon detection system	Smoke detector -35 MSD- 75 Heat detector - 6 Hydrocarbon detector - 7 O- PGD - 2 Point Type Hydrocarbon detector-21	Nil
26.	Emergency Control Room.	ECC has all facilities.	Nil
27.	Briefing to visitors	Assembly points are available for briefing	Nil
28.	Assembly Point	1 no. of assembly point is available	Nil
29.	Evacuation Rout	Evacuation route is properly marked.	Nil
30.	Display of Siren Code	Siren code displayed as per PNGRB guideline	Nil

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P. J. A. I.

Signature

Signature

31.	ESD	MPPL-6 No. of ESDs KJPPL- 16 Nos. of ESDs are displayed in pipeline area	Nil
32.	General safety Awareness	Officer, Employees, Contract workmen, Security, are awarded of their roles and responsibilities	Nil
33.	General awareness among near by areas	Through village awareness program ,Knowledge is being shared with nearby peoples.	Nil

Mock Drill Report:

If the fire scenario is for single Fire contingency, It is to be clearly mentioned that why there is Single Fire Contingency Scenario has been considered.

Mock drill report should be filled up in Format No. – BSPL/FM/008/06. Auditor should write their remarks under the heading "Strength and Area of Improvements" The original report should be enclosed with this report.

In the Mock Drill Report, Bring the Following points MUST BE BROUGHT at appropriate place:

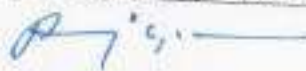
- 1- LIC use the Intrinsically Safe Portable Public Address System during the Drill.
- 2- Activities done by the Security Co-ordinator.
- 3- One or Two casualties should be there during the drill.
- 4- During the drill, it is to be assumed that the emergency may last for 3-4 hours, so necessary action must be initiated for the food, water, energy drinks arrangements for the fire fighters engaged in handling the emergency.
- 5- Before All Clear, checking of the area for Hydrocarbon Vapours was done with the Portable Gas Detector.
- 6- Debriefing Session Was done after the Drill.

Whether Ambulance reported, whether Fire Tender Reported and no. of person with name from the respective Mutual Aid Member to be mentioned.

Auditor Remarks -

Strength:

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1.	Excellent participation by mutual aid partners and all other stakeholders.
2.	Station is well maintained.
3.	All the Equipment of Fire Fighting System operated well.
4.	All the team members are well aware of their roles and responsibilities and well co-ordination among the team member.

Area of Improvement:	
1.	Mock Drill to be conducted at SV location also.
2.	DCP at SMPL scrapper station shall be on stand mounted.
3.	Nomenclature of KJPPL Barrel area is faded same shall be re-painted for better visibility.

Issues Raised in Manual Review before Site visit: There were 00 issues raised during the submitted ERDMP Manual Review and the same are to be closed.

Site Audit Findings: The concerns raised in the report vide points no. 00000 are open and the organization needs to submit corrective action on all the above concerns at earliest.

CONCLUSION:

1. The certification of the documents is pending for closure of the Area of Concern raised during the on-site Audit as mentioned above.
2. Compliance Report for Manual Adequacy Report to be submitted.

Enclosure: Manual Adequacy Report along with Attendance sheet

Signature:

Team Leader:

Date:

Signature:

Unit Head

Date:

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