

Proposed Amendment - PNGRB (ERDMP) Regulations, 2010

SN	Clause No.	Clause Description	Proposed Change	Justifications
1		Title& Commencement: (1)These regulations may be called the Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for Refineries and Gas Processing Plants) Regulations, 2020.	Word Refineries should be Corrected as, "Petroleum Refineries"	
2	2	Defination: (jj)"Refinery" means a group of one or more units or facilities i.e. unloading or loading, storage, processing, associated systems like utilities, blow down, flare system, fire water storage and fire water network, control room and administration service buildings like workshop, fire station, laboratory, canteen etc.;	Defination is not complete. It is an industrial process plant or group of units where crude oil is converted and refined into more useful products such as petroleum naphtha, gasoline, diesel fuel, asphalt base, heating oil, kerosene, liquefied petroleum gas, jet fuel and fuel oils etc.Group of units or facilities includes,unloading or loading, storage, processing, associated systems like utilities, blow down, flare system, fire water storage and fire water network, control room and administration service buildings like workshop, fire station, laboratory, canteen etc.;	Description of oil processing must be the part of defination.
3	2	Defination: Classification of petroleum products	23 °C 65 deg.C	Formatting
4		(ss)"Water capacity" means capacity in litres of the pressure vessel when completely filled with water at 150 C;	(ss)"Water capacity" means capacity in liters of the pressure vessel when completely filled with water at 15°C ;	Spelling & Formatting
5	3	Application Definitions of design, material selection, installation, commissioning, testing, corrosion control, operation, maintenance & safety of equipment and piping system components of Refineries and Gas Processing Plant shall be in accordance with the requirements of these regulations.	This regulation applies to all entities engaged in Operation of Petroleum Refineries and/ or Gas processing plant to ensure Safe and reliable operations through complete lifecycle of the project .	Make it simple. As safety of the person is confusing between equipment and pipeline.
6	7	(3)Any entity intending to set up Refineries and Gas Processing Plants shall make available its detailed plan including design consideration conforming to these regulations to PESO for their approval prior to seeking registration with the Board.	(3)Any entity intending to set up Refinery and / or Gas Processing Plant shall make available its detailed plan including design consideration conforming to these regulations to PESO for their approval prior to seeking registration with the Board Should PESO ammend the RULE?	Not clear. PESO may not demand the requirements and would not certify.
7		(4)If an entity has laid, built, constructed, under construction or expanded the Refineries and Gas Processing Plants based on some other standard or is not meeting the requirements specified in these regulations, the entity shall carry out a detailed Quantitative Risk Analysis (RA; HAZOP & HAZID) of its infrastructure. The entity shall thereafter take approval from its Board for non-conformities and mitigation measures. The entity's Board approval along with the compliance report, mitigation measures and implementation schedule shall be submitted to the Board within six months from the date of notification of these regulations.	Since this is a new regulation, practically each refinery would have to conduct QRA???	Are we making QRA mandatory?
8	Schedule 1			
9	1.1	The minimum distances recommended many years ago need review in the context of today's environment in the industry.	This sentence is unwanted for in this regulation. To be removed	
10	1.3.1.o	(n)(o)Separate collection system should be provided for different types of waste generated in the process plant such as oily water, caustic, acid effluents, fecal etc.	What's fical?	
11	1.4.1.r	(r)Operators cabin may be provided in the process unit. The cabin should be located upwind side of the unit in non-hazardous area and away from draining / sampling facilities. The cabin should be for minimum occupancy of the shift operators of the respective facilities only.	(r)Operators cabin should be avoided in the process unit.	
12	1.6.1	(d)Rail loading/unloading of LPG should be restricted to a maximum of half rake. Full rake loading / unloading is shall be done on two separate rail gantries having a minimum distance of 50m	(d)Rail loading/unloading of LPG should be restricted to a maximum of half rake. Full rake loading / unloading is shall be done on two separate rail gantries having a minimum distance of 50m	
13	2.1.1	(A)Set Pressure of Relief Valves:normal operating pressure should not be less than 2 Kg/CM2normal operating pressure should not be less than 2 Kg/CM2 g	

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14	2.1.3 Compressors:	(iii)Where the process fluid contains contaminants like H2S, manufacturing process shall require materials and special heat treatment in conformity with NACE MR-103/ NACE MR0175 Standard.	There is a reference given to NACE standard.. Requirement included in latest revision may get modified with the revision in standard. How to cope up in that case. Suggest. (iii)Where the process fluid contains contaminants like H2S, manufacturing process shall should require materials and special heat treatment in conformity with NACE MR-103/ NACE MR0175 Standard.	
15	2.1.3.1Temperature:	(ii)In case of reciprocating compressor in utility services, the discharge temperature should not exceed 170 degree centigrade.	"Utility Services" to be added in definitions	
16	2.1.3.4	2.1.3.4Guidelines for Compressor Design and Manufacture: should we go into such details? The equipment are designed referring to API standards, why should we repeat he requirements and make the document bulky?	To be reviewed	
17	2.2.2.9 Fittings and Instruments on A Vessel:	(b)Minimum two nos. of manhole shall be provided on top of the vessel.	Should we not mention minimum capacity above which 2 manholes are required.	
18	3.3 Development of Pre-Commissioning Plan:	(1)A plan is developed that identifies all of the major pre-commissioning activities by system. The plan will be developed in reverse and will clearly identify "system ready for pre-commissioning" milestones. (2)Commencement of system turnover from construction to commissioning should ideally commence at approximately 70% erection completion. From this point handover of systems should be made on a regular basis. Safety is impaired when there is a period of low activity followed by a period of high activity to achieve target-pre-commissioning progress. (4)Commissioning input to the Design Process: Input of commissioning experience to the design process will ensure that: a.Commissioning and operating safety is addressed in the design b.All phases of the initial start-up (Including one-off special procedures) are adequately covered in the design specifically including definition of systems and system turnover sequence. c.Consideration has been given to the pre-commissioning of the process units. (5)To achieve this commissioning group representatives will attend and provide input at P&ID reviews, HAZOP Reviews and Model Reviews: They will also review cause and effect diagrams and spare parts orders.	Tghere are no requirements defined in these two paragraphs and can therefore be deleted.	
19	3.5.1 Hydrostatic Testing of process equipment / lines	(v).aIn any case, the water shall be drained and the equipment thoroughly dried immediately thereafter.	In any case, the water shall be drained and the equipment thoroughly dried immediately thereafter and preferably put under positive Nitrogen pressure	
20	3.5.6Records:	condition to P7ID requirement shall be retained in each Systems Completion Manual	What are P71D requirements?	
21	3.6.1.1 to 3.6.1.1	3.6.1.1Operational Tightness Testing / system integrity testing; these are the procedures included in regulations, we need to keep only critical requirements which shall be followed to avoid confusion.	To be reviewed	
22	3.6.2 General commissioning activities	Following Auxiliary systems shall be commissioned and in operation prior to the commissioning of the main process unit.	Following Auxiliary systems shall should be commissioned and in operation prior to the commissioning of the main process unit.	
23	3.7	3.7Standard Operating Procedures (SOP):	Section shall be deleted as it is included in Schedule 13	
24		4.1Asset Integrity Management System (AIMS)		
25	4.1 Asset Integrity Management System (AIMS)	AIM is a product of many activities, usually performed by many people. When these activities are done well, AIM can provide the foundation for a safe, reliable facility that minimizes threats to the workforce, the public and the environment.	Replace with, Asset integrity management shall become the important element of organizations process safety management system to ensures the integrity and safe operation of process equipment through inspection, testing, preventive maintenance and quality assurance.	
26	4.3	In successful AIM programs, supervisors and managers emphasize how each person contributes to preventing incidents and improving process reliability.	can be removed	
27	4.3	Corporate AIM center should establish corporate AIM standards and drive efforts to continuously improve the safety and reliability of facility assets	Corporate AIM center should establish corporate AIM standards / practices and drive efforts to continuously improve the safety and reliability of facility assets	

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28	4.4.1	AIM philosophies and then technical specifications that address integrity (such as materials of construction, code selection, etc.) should to be established before detailed engineering can progress	AIM philosophies and then technical specifications that address integrity (such as materials of construction, code selection, etc.) should to be established before detailed engineering can progress	
29	4.4.3.4 Criteria for Accepting Equipment after Maintenance:	Following considerations should be considered while accepting equipment after maintenance	Following considerations aspects should be considered while accepting equipment after maintenance	
30	6	6.0 Inspection:	This Schedule 6 Shall be merged with AIM (Asset integrity management system) Schedule 4	
31	7	7.0 FIRE & GAS DETECTION AND PROTECTION FACILITIES	The section Occupies 33% of total contents of this document. Need to trim the contents,	
32	8.O	Every entity shall develop, implement, and maintain a written Competency Assessment and Assurance plan.(CA&a). The plan should include relevant functional competencies required for personnel to ensure safe, reliable and compliant operations at Refineries and Gas Processing Plant	Every entity shall develop, implement, and maintain a written system of assessing and confirming Operator and Technician competence, ensuring that they can carry out their assigned duties, correctly and safely. CA&A is mandatory for all personnel who hold Safety Critical positions. These positions include but are not limited to: Panel Operator (officer) Shift Engineer Shift Superintendent Field Operator Mechanical Technician Electrical Technician Instrument Technician SCADA and Metering	Applicability of CA&A defined
33	Schedule-9	9.0Safety Audits	The title shall be Changed to Functional audit or Process safety audit	This would ensure all elements of regulations goes through verification for ensuring the compliance.
34	9.2	The scope includes all the components of the system viz. management policy, leadership and organization raining	The scope includes all the components of the system viz. management policy, leadership and organization training	Edit, T added to raining
35	9.3.2	Safety Audit may vary depending on the Group and areas to be audited	Safety Audit may vary depending on the Group size and number of plants / facilities areas to be audited	More Clarity
36	9.3.2	however, person(s) concerned should have necessary experience and background to undertake in-depth audit in a particular discipline	however, person(s) concerned should have necessary experience and background- competence to undertake in-depth audit in a particular discipline	Appropriate wordings
37	13.1.1..3	(viii)Assurance of quality and mechanical integrity of equipment- Procedures should in place and	(viii)Assurance of quality and mechanical integrity of equipment- Procedures should be in place and	
38	6.The standard.Refineries and Gas Processing Plants shall be as specified in Schedule - 1 which cover design and layout,Refineries and Gas Processing Plants shall be as specified in Schedule - 1 to 13 which cover design and layout,	More Clarity
39	6.The standard.which cover design and layout, electrical systems, process system, maintenance, inspection, competency assessment, fire prevention, leak detection, firefighting system and safety management systemwhich cover design and layout, electrical systems, process system, maintenance, inspection, competency assessment, fire prevention, leak detection, firefighting system and safety management system (Including Personal Safety and Process Safety).	Focus on Process Safety
40	7. Compliance to these regulations.	Processing Plants based on some other standard or is not meeting the requirements specified in these regulations, the entity shall carry out a detailed Quantitative Risk Analysis (RA; HAZOP & HAZID) of its infrastructure. The entity shall thereafter take approval from its Board for non-	Processing Plants based on some other standard or is not meeting the requirements specified in these regulations, the entity shall carry out a detailed Qualitative and....(HAZID, HAZOP, RA, LOPA and QRA) of its infrastructure. The entity shall thereafter take approval from its Board for non-	More Technical clarity
41	2.1.1.2	(c)The vent of relief valve shall discharge at a minimum elevation of 3 meters above grade or the tallest structure, within a radius of 15 meters, whichever is higher	(c)The vent of relief valve shall discharged at aSafe height of based on CA	as per API 520/521

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42	3.5.1 Hydrostatic Testing of process equipment / lines	(xi)If piping is tested pneumatically, the test pressure shall be 110% of the design pressure. Any pneumatic test shall be increased gradually in steps, allowing sufficient time for the piping to equalize strains during the test. All joints welded, flanged or screwed shall be swabbed with soap solution during these tests, for detection of leakage. Safety valve shall be provided to protect the equipment/ piping from unwanted over pressurization .	Please add, Pneumatic tests are recommended only, •For low pressure applications. •When the systems are designed in such a way that it cannot be filled with water •When the systems are such that it is to be used in services where traces of the testing medium cannot be tolerated. Entity should have process for authorisation for carrying out Pneumatic tests, as Pneumatic tests are potentially more dangerous than hydrostatic tests because of the higher level of potential energy stored during compressing the gas. Also, care must be exercised to minimize the chance of brittle failure during testing by initially assuring the system is suitable for pneumatic testing. Pneumatic tests could be performed only when at least one of the following conditions exists.	To bring Clarity on aviding potentially dangerous Pneuematic tests
43	7.0 FIRE & GAS DETECTION AND PROTECTION FACILITIES	The Fire Protection Philosophy should be based on Loss Prevention and Control considering that a hydrocarbon processing plant carries inherent potential hazard. A fire in one part/section of the plant can endanger other sections of plant as well. If fire breaks out, it must be controlled / extinguished as quickly as possible to minimise the loss to life and property and to prevent further spread of fire.	The Fire Protection Philosophy should be based on Loss Prevention and Control considering that a hydrocarbon processing plant carries inherent potential hazard. A flammable / toxic gas release , fire in one part/section of the plant can endanger other sections of plant as well. If fire-breaks if a leak or fire occurs it must be detected, controlledout, it must be controlled / extinguished as quickly as possible to minimise the loss to life and property and to prevent further spread of fire.	More Clarity on Detector usage
44	7.17.1.1	The exact location and number of points should be decided on need basis.	The exact location and number of points should be decided on-need-basis -Based on consequence analysis- which is usually based on composition, parameters and property of chemicals/hydrocarbons, probable leak sources, probable leak locations (GL and elevation), coverage area(distance between leak sources), prevailing/ other probable wind direction, etc.	More clarity
45	7.23 Fire Alarm & Gas Detection		Delete the section	Why another section with varied requirements when covered in section 7.17???
46	References		Add API 520/ 521	
Engg				
47	2(dd)	(a) "Maximum Allowable Working Pressure" means the maximum gauge pressure permissible at the top of equipment, a container or a pressure vessel while operating at design temperature;	As per API 521 and OISD, the Definition of MAWP - Maximum gauge pressure permissible at the top of a completed vessel in its normal operating position at the designated coincident temperature specified for that pressure.	Please review
48	2.1.1.A. 1	1. Pilot Operated Valves:	Pilot Operated Valves – Add another criteria of inlet line losses greater than 3%	Please review
49	2.1.1.2 :	The individual relief valve vent shall discharge to atmosphere in upward direction, so sized that minimum exit velocity of 150 meter/sec would be obtained	This is applicable for PSV on equipments at the mentioned areas. In marketing terminals we have thermal safety valves on LPG liquid transfer lines open to atmosphere. here it would be difficult to maintain velocity criteria and also the TSV will release only in spurts leading to local liquid discharges. For these TSV's, is it not safe to route all the TSV's into a KO drum and give a local vent stack at suitable height from the KO drum. This will prevent accidental release of light hydrocarbon in liquid form into atmosphere.	Please review
50	2.1.4.2 :	Steam Purity:	Purpose of giving steam purity is not understood. Also the last four line represent what limits.	Please review
51	2.2.1.1.:	"Tanks shall be provided with at least two numbers of level instruments of which one may be local and the other remote, located in control room or office. In addition, high/low level alarms with independent primary sensing device are recommended ."	what is the need for local level measurement. In RIL we give one DCS level measurement and separate transmitter connected to ESD system for high high and low low level sensing. This transmitter signal is also connected to DCS by soft link from PLC. Hence we have 2 independent level measurement in DCS but no local level measurement.	Please review
52	2.2.2.9	(i) The top of the vessel shall be provided with nozzles for vapour outlet and recirculation, which shall also be provided with fire-safe ROVs. ROVs for vapour / recirculation lines should be provided at the ground level with an isolation valve at top. In case, ROV is provided at top of the vessel, there is no need to provide an isolation valve".	Are we not adding risk of leakage through two additional flange joints by locating ROV at ground level and adding an isolation valve .	Please review

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53	2.1.1 Storage Tank:	a. Tanks shall be provided with at least two numbers of independent level instruments with different measuring principle.	Agree with the comment We may not be complying to this requirement, if we modify the clause, as understood we have installed Radar type level instruments on both the nozzles	Please review
54	2.1.1.1, Level:	b. Overfill protection shall be provided for storage tanks as per API 2350. LPG service overfill protection shall be as per OISD-144. For liquid service having class A classification (Flammable liquids having flash point below 23 deg.C), overfill protection shall be as per OISD-152.	Can I request to elaborate, this removing reference of OISD requirements. This would help directly include the requirement as we want to include	Please review
55	2.1.3.3, Process Control & Protection System: 2.1.4, Steam Turbine 2.1.5, Gas Turbine	For Compressors & Steam / Gas turbine, Standalone control system shall be provided for Process Control & Protection System.	Ok. As understood this requirement shall be added in 2.1.4.3 Process Control and Protection Systems and 2.1.5.5 Process Control and Protection Systems:	Please review
56	3.5.1, Hydrostatic Testing of process equipment / lines	After installation of Instrument process Impulse lines, Instrument Contractor shall carry out Hydro testing at 1.5 times of design pressure.	OK. As understood the requirement shall be added under 3.5.1 below the paragraph titled, "Hydrostatic Testing of Instrument lines / connections: "	Please review
57	Hydrostatic Testing of Instrument lines / connections:			
58	5.8.7, Equipment for Uninterrupted Power Supply System	UPS Battery backup Duration after Main supply failure: 30 minutes for all control systems, except 6-hours for F & G, Process CCTV, CEEMS Analyzer and Emergency Services (e.g. PA system etc.)	Can we provide reference of any Engineering / design standards / regulation for this.	Please review
59	5.8.12, Instrument earthing	Separate Instrument Earth shall be provided for Intrinsically safe & Non-Intrinsically safe instruments.	Ok. Not sure, what would be the impact on other Old Refinery installations in India	Please review
Mfg				
60	Schedule-10 (Pg 93)	Road Safety	All vehicles should be provided with Seat Belts in conformance to the Automotive Research Association of India.	Please review
61	Schedule-4 (Pg 33)	Asset Integrity Management System	Asset Integrity Management System (AIMS) and Schedule-13: Safety Management System (SMS) will have an overlapping systems and Process. Companies should adopt systems specific to their organizational requirements.	Please review
62	Schedule-3 (Pg 24)	Operations (Commissioning, Pre-commissioning, SOP)	This schedule should include the following: Development of HSE management plan to support the design, construction and commissioning phases of a project. The section could provide details on: •Content of HSE management plan •Timing when to develop and update plan •Typical studies/work activities conducted at various stages of a project – with basic description of studies /activities •Project HSE performance management i.e. identification of suitable project KPIs •Audit/review process for HSE management plan at various project stages	Please review
63	2.1.1.1 Installation of safety devices	Safety relief valves	May consider inclusion of isolation valves at inlet and outlet of a safety valve considering maintenance	Please review
64	5.8.11 EARTHING SYSTEM (Pg 46)	Bonding and grounding	Bonding and grounding of loading/unloading tankers to be included to address static electricity issue	Please review
65	7.18 (iv) Fire Sirens (Pg 71)	Fire siren code should be as follows: 1.Small Fire: No siren 2.Major Fire: A wailing siren for two minutes. 3.Disaster: Same type of siren as in case of Major Fire but the same will be sounded for three times at the interval of one minutes i.e. (wailing siren 2min + gap 1 min + wailing siren 2min + gap 1min + wailing siren 2min) total duration of Disaster siren to be eight minutes.	Small fire and major fire to be defined in the definition section. Also, major fire siren and disaster siren needs to be clarified as the statement is not clear with respect to PNGRB ERDMP document.	Please review
66	7.20 Fire Protection Training (Pg 74)	A mock fire drill should be conducted once in a month to rehearse the fire emergency procedure and to keep the fire fighting team trained and alert and facilities in top order.	As per PNGRB ERDMP guidelines, frequency of mock drill for onsite is to be conducted once in 3 months and off site in 12 months.... To be clarified or to be updated in the same line	Please review

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67	9.2.1 Types of Safety Audits: (Pg 90)	Two types of Safety Audits are proposed to be carried out as below: (i) Internal Safety Audit:	Other type of audit (May be External Safety audit) is not specified in this section. To be added	Please review
68	Other points	--	- Electrical heat tracing is covered under electrical section. However, Steam tracing and hot oil tracing is not covered in the document. - Fired Heaters may be covered under section 2 - Functional safety details/reference can also be included-SIL verification and assessment To be noted.	Please review
69				
70	Schedule-1 1.2	at road junctions shall be designed to facilitate movement of the largest fire-fighting vehicle in the event of emergency.	(f) A at road junctions shall be designed to facilitate movement of the largest fire-fighting vehicle in the event of emergency.	Editorial. Bullet numbering to be updated.
71	Schedule-1 1.3.1.	Rail loading facilities should be located along the periphery of the installation.	(l) Rail loading.....	Editorial. Bullet numbering to be further updated accordingly for other points.
72	Schedule-1 1.3.1.	Equipment drawing air (e.g. air compressors, air blower, FD fan etc.) should be located away from Sulfur recovery unit / Sulfur handling facility.	Equipment drawing air (e.g. air compressors, air blower, FD fan etc.) should be located away from Sulfur recovery unit / Sulfur handling facility or other toxic or dust explosion producing sources	To be added
73	Schedule-1 1.3.1.	(p) Main pipe racks / pipe track shall not be routed through process units. Provide overhead clearance for vehicles over roadways and railroads.	(q) Main pipe racks / pipe track shall not be routed through process units. Provide overhead clearance for vehicles over roadways and railroads. Such overhead clearances shall be protected by protective goal posts about 10 meters before on either side,	To be added
74	Schedule-1 1.3.3	In order to promote Inherently Safer Design, various PHA studies should be used e.g. HAZID, HAZOP, SIL Assessment, CA, QRA etc. Hierarchy of Control shall be applied to minimize process hazards and the associated occupational health & safety hazard to personnel.	In order to promote better-estimated separation distances, the results of principles of Inherently Safer Design , Hierarchy of Control , various PHA studies e.g. HAZID, HAZOP, SIL Assessment , CA, QRA etc. should be used. Hierarchy of Control, shall be applied to This will minimize process hazards and the associated occupational health & safety hazard to personnel.	Rewording
75	Schedule-1 1.6.1.3	(d)Rail loading/unloading of LPG should be restricted to a maximum of half rake. Full rake loading / unloading is shall be done on two separate rail gantries having a minimum distance of 50m.	(d)Rail loading/unloading of LPG should be restricted to a maximum of half rake. Full rake loading / unloading is shall be done on two separate rail gantries having a minimum distance of 50m.	Editorial
76	Schedule-2 2.1.1 (B)	When rupture disc is used, the bursting pressure of the rupture disc and safety valve set pressure shall be kept at same nominal value A pressure gauge/bleeder between rupture disc and relief valve helps to indicate the health of the rupture disc.	When rupture disc is used, the bursting pressure of the rupture disc and safety valve set pressure shall be kept at same nominal value . A pressure gauge/bleeder between rupture disc and relief valve helps to indicate the health of the rupture disc.	Editorial
77	Schedule-3 3.7		Note: Companies will have management flexibility on methodology and extent of details while implementing the guidelines/requirements of this schedule as per complexities of the installation and Risks involved.	To be added
78	Schedule-4 4.4.4		Note: Companies will have management flexibility on methodology and extent of details while implementing the guidelines/requirements of this schedule as per complexities of the installation and Risks involved.	To be added
79	Schedule-5 5.7.1	b. All electrical equipment for hazardous area shall be certified by CIMFR, PTB, BASEEFA, UL, ATEX or FM or equivalent independent testing agency for the service and the area in which it is to be used.		All certification or any one certification will do?
80	Schedule-7 7.2.5 (i)	*Water spray rings for columns of height more than 45 M shall be provided		Please condition it. There are very tall columns in modern gas processing plants like 100 Mtrs or even more. So, water spray system should be optimized with combination coverage by water monitors and spray systems at strategic locations, as per risk rather than gold-plating with spray system everywhere beyond 45 mts which will be difficult to inspect and maintain over a period of time

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81	Schedule-7 7.2.7	Clean agent based automatic fire detection and extinguishing system shall be provided for all control rooms and satellite rack rooms (SRR). Selection of Clean Agent and design of Fire protection system for process control rooms and SRR shall follow the Standard on "Clean Agent Extinguishing systems NFPA Standard 2001 (latest edition) including its safety guidelines with respect to "Hazards to Personnel", electrical clearance and environmental factors in line with environmental considerations of Kyoto & Montreal Protocols and latest MoEF regulations	Clean agent based automatic fire detection and extinguishing system shall be provided for all control rooms and satellite rack rooms (SRR). Selection of Clean Agent and design of Fire protection system for process control rooms and SRR shall follow the Standard on "Clean Agent Extinguishing systems NFPA Standard 2001 (latest edition) including its safety guidelines with respect to "Hazards to Personnel", electrical clearance and environmental factors in line with environmental considerations of Kyoto & Montreal Protocols and latest MoEF regulations. Continuously manned areas of the above installations should not have clean agent flooding.	To be added
82	Schedule-7 7.3.3	The fire water network shall be kept pressurised at minimum 7.0 kg/cm2g at all the time.		Please clarify ----- both in horizontal and vertical directions ????
83	Schedule-7 7.14.2	Other firefighting Equipment	7.14.2Other firefighting Equipment and in-built safety features:	To be added
84	Schedule-7 7.14.2		iii) Safety shower and eye wash in areas with likely exposure to chemicals, iiiv) Wind socks at prominently visible locations such as tall columns to facilitate personnel to reach safe assembly points during emergency.	To be added
85	Schedule-7 7.14.2	iii) Other Equipment like Portable Gas detectors, Explosive meter	iiiv) Other Equipment like Portable Gas detectors, Explosive meter	Editorial
86	Schedule-7 7.23.3	The areas covered should include but not limited to the following: •Light hydrocarbon pumps in process unit • Process cooling tower top platform in the units having pressurized cooling water return •Eurl Gas knockout drum • Suction side of forced draft air blowers if located where hydrocarbon vapours can be present •Light hydrocarbon pump stations if located below grade level •LPG pump house •LPG mounded bullet •LPG bulk truck loading area •LPG wagon loading area •LPG bottling, storage, repair sheds •Gas compressor area •Air intake for control room •Potential leak source of class A tank dykes etc	The areas covered should include but not limited to the following:- •Light hydrocarbon pumps in process unit • Process cooling tower top platform in the units having pressurized cooling water return •Eurl Gas knockout drum • Suction side of forced draft air blowers if located where hydrocarbon vapours can be present •Light hydrocarbon pump stations if located below grade level •LPG pump house •LPG mounded bullet •LPG bulk truck loading area •LPG wagon loading area •LPG bottling, storage, repair sheds •Gas compressor area •Air intake for control room •Potential leak source of class A tank dykes etc	Repeated. Already mentioned in 7.17.1.1
87	Schedule-10 10.1		(g) A company is recommended to have its vehicle fitness standard and certification.	To be added
Fire				
88	7.2.5	Water spray rings for columns of height more than 45 M <u>shall</u> be provided.	Water spray rings for columns of height more than 45 M <u>shall should</u> be provided or alternatively, elevated monitor should be provided for protection of columns.	
89	7.3.4.1	Where fresh water source is not easily available, fire water supply can be sea water or other acceptable source like treated effluent water	Where fresh water source is not easily available, fire water supply can be sea water or other acceptable source like treated effluent water provided that the water quality of treated water should not be detrimental to fire fighting foam generation.	
90	7.4.3	When total numbers of working pumps are more than two, 50% standby pumps shall be provided.	50% stand by pumps for more than two working pumps need to be discussed . For e.g. If an organisation is having 12 nos. of pump in an area, total nos. of pump including stand by becomes 18 which is too higher.	
91	7.6.2	To be added (New)	Monitors can be placed at elevated platform to increase its vertical reach to protect column. Operating valve for such monitors should be kept at grade level for its operation during the requirement.	
92	7.10.6	Portable monitors/ Medium Expansion foam generator/ foam hose streams shall be considered for fighting fires in dyke area, spills and oil separator.	Portable monitors/ Medium Expansion foam generator/ foam hose streams should be considered for fighting fires in dyke area, spills and oil separator.	

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SN	Clause No.	Clause Description	Proposed Change	Justifications
93	7.15.2	In addition to fixed monitors provided in the tank farm, following additional mobile equipment shall be provided:	In addition to fixed monitors provided in the tank farm, following additional mobile equipment should be provided:	
94	7.15.2.ii	ii) Minimum 2 nos. of Trolley mounted water cum foam monitors of capacity of minimum 2000 GPM with field adjustable variable flow which are listed / approved by national / international standards like BIS, UL, FM etc. and UL/FM listed / approved. Foam induction to the monitor shall be possible from minimum 60M distance from the monitor.	ii) Minimum 2 nos. of Trolley mounted water cum foam monitors of capacity of minimum 2000 GPM with field adjustable variable flow which are listed / approved by national / international standards like BIS, UL, FM etc. and UL/FM listed / approved	
95	7.19.1.ii	The water reservoir shall be emptied out & cleaned once in 3 years.	Frequency to be discussed and suitably addressed.	
96	7.19.2	Fire water Pumps i) Every pump should be tested by running it minimum two times a week. ii) Once a month each pump should be checked for the shut off pressure and auto start operation. Observations should be logged. iii) Once in six months each pump shall be checked for performance.	Testing: A weekly test of fire pump assemblies shall be conducted without flowing water. A valve installed to open as a safety feature shall be permitted to discharge water. i. Fire pumps are allowed to start automatically weekly. ii. Electric pumps are tested weekly for a minimum of 10 minutes. iii. Diesel pumps are tested weekly for 30 minutes. iv. The automatic controls of the fire pumps are checked weekly. All pumps are tested annually to ensure that they - a. Meet their rated flow capacity. b. Furnish not less than 150 percent of rated capacity at not less than 65 percent of rated pressure.	
97	7.19.7	DCP tender should be visually inspected every week. This should include checking of expelled gas.	Pressure checking of expelling system should be done once in a month	