
	Vedanta Guidance Note
Document Name	GN-42 Pre-Startup Safety Review Guidance Note
Document No.	VED/CORP/SUST/GN42
Date of Issue	6 th September 2022
Revision No.	R0
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Reference Doc.	HZL Pre-Startup Safety Review Procedure (HZL/PSM 06)
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1. Scope and Field of Application

1.1 Scope

This standard provides direction for ensuring that all appropriate elements of Process Safety Management (PSM) have been addressed satisfactorily in the **new and modified equipment** and the facility is safe for **new start up and restart up after long shut down**. In addition to the mandatory requirements of this standard, facilities shall comply with all mandatory regulatory requirements.

Those requirements in this standard which are noted in *italics* are mandatory.

1.2 Principle

The PSSR provides a final checkpoint for new and modified equipment's/ facilities to confirm that all appropriate elements of PSM have been addressed satisfactorily and the facility is safe to start up.

Note: For capital projects, planning for success with the pre-start-up review begins with assembling a project team and scheduling the time for the PSSR in the project schedule. Effective project management, including careful planning and coordination of all PSM elements, is important to achieve a smooth start-up.

2. Reference

- MS-7 Management of Change Standard
- Integrated Management System, legal compliance etc.

3. Management Responsibilities

Line management in businesses and functions has the responsibility to implement this standard.

Line management shall help ensure that personnel involved in activities with hazardous materials and operations are familiar with and comply with the mandatory requirement of this standard.

3.1 Site Leadership

Location Head shall have the following responsibilities:

- Provide support and resources to ensure that the Pre-Startup Safety Review process is implemented for the respective facility and is consistent with this Guidance Note.
- Responsible to appoint PSSR Administrator(s) for the facility.
- Help to ensure effective management of PSSR so that PSSR element is effectively implemented.
- Periodically reviews PSSR effectiveness.

3.2 PSSR Administrator

- Responsible to oversee and provide guidance in implementation of this guidance note at site.
- Coordinate / conduct self-audits for effective implementation of this guidance note.
- Appoints the PSSR Team including a PSSR Team Leader, appropriate to the scale of the new / modified facility.
- He will act as an overall custodian of the PSSR documentation.

3.3 PSSR Team

- Conducting the PSSR as per guidelines mentioned in this GN. This also includes ref to Annexure 2.
- Develop recommendations to be implemented before start-up.
- Develop recommendations that could be implemented after the start-up without compromising basic safety principles, WPS, PSM, standards intent & guidelines.

3.4. Location Safety Head / Safety Professionals

- Part of the PSSR Team

3.5. Actions Owners (Actions generated from the PSSR recommendations)

- To complete the action as per the agreed target date

3.6. SBU Head / Plant Manager

- To ensure timely completion of PSSR and to verify closure of PSSR recommendations to mitigate the identified risk before start of the plant.
- To communicate PSSR report to plant team.
- To fix responsibility, in discussion with PSSR team, for closure of recommendations / actions required before start-up.

3.7. Operation Head

- To sign the PSSR pre-start up action completion report to authorize the plant team for start-up.

4. PSSR Procedure

PSM is directed toward preventing process-related incidents that might affect plant personnel, off-site communities, or the environment or result in the significant loss of property or business.

Sites shall perform PSSRs for following cases:

- *Start of a new facility*
- *Start of a modified facility*
- *Start of new Project Area*
- *Installation of new Equipment*
- *Installation of Equipment after modification*
- *Restart after long shutdown*
- *Restart after major overhauling*
- *Or for all modification that results in a change in the documented PT (Process Technology).*

Prior to the introduction of hazardous substances to a facility, the PSSR team shall confirm that

- *Construction and equipment are in accordance with design specifications.*
- *All relevant elements of PSM have been appropriately addressed (PSM assessment).*
- *Basic safety, health, and environmental- and fire-protection items have been checked during a physical inspection of the facility. These inspections are usually guided via a pre-prepared “good practice” checklist.*
- *The facility is safe to start up. This may be contingent on completion of certain recommendations.*

4.1. Scale and timing

All PSSRs shall include both a PSM element assessment and a physical inspection. Assessments are conducted by using a PSSR checklist.

Decisions on the scale and timing of the assessment are the responsibility of the Unit Head.

Significant capital expenditures

For significant capital expenditures (more than INR 100 Lacs), it may be helpful to carry out a two-part review. The first should take place when design is complete, and construction is at an early stage or has not yet begun. This allows operating procedures, emergency planning, and training to be upgraded well in advance of start-up.

The second part of the review can then take place just prior to introduction of hazardous substances and focus on checking that construction and equipment are in accordance with design.

Smaller projects or modifications

For smaller projects or modifications, the assessment can be conducted using a PSSR checklist. The PSSR team should select relevant parts of a PSSR checklist to review, as appropriate, for the project or modification.

4.2. Team Formation

The PSSRs shall be conducted by multidisciplinary teams consisting of a PSSR Team leader and other members from operations (including operator), technical, design, engineering & maintenance, and appropriate safety representatives on an as-needed basis. Other personnel or specialists may be included on an as-needed basis (e.g., electrical, instrumentation and control, ergonomics, and software).

For very minor changes, a smaller PSSR team may be used and could consist of two team members where there is no PT (Process Technology) change. Examples of minor changes include installation of a new drain valve and instrument transmitter bracket modifications. The team composition is the key to maximizing the value of a PSSR. *The Location Head shall take responsibility for assembling a multidisciplinary team with knowledge and experience appropriate to the task.*

The following points on team makeup are for guidance:

- Even for the smallest PSSRs, such as one that is conducted prior to starting up a single piece of equipment (e.g., a pump, heat exchanger, or vessel), the team should have minimum two

representatives from different backgrounds (e.g., operations, maintenance, design, and appropriate safety representatives). This helps to create a more searching and valuable review. People who operate or maintain the facility (e.g., an operator and a mechanic) should be included.

- Where the change involves introducing hazards (i.e., process, material, or environmental) that are new to the site, the PSSR team should consider including off-site personnel who have relevant knowledge and experience. These could be operations, maintenance, or appropriate safety representatives.
- PSSR team leader (independent of the operation/facilities/sections) should foster an open atmosphere where the project team members consider the review as an opportunity to upgrade the process safety of the facility and do not become defensive of the design or preparations for start-up.
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4.3. PSM element assessment

The PSSR team shall help ensure that all relevant PSM elements have been appropriately addressed. Elements to consider include the following:

4.3.1. Technology

a) Process Technology (PT)

Process Technology (i.e., hazards of materials, equipment design basis, and process design basis) has been appropriately documented communicated to the Site Leadership/Unit Head and archived to a central location so that such information is readily available to facility personnel.

b) Process Hazard Analysis (PHA)

Recommendations have been addressed and appropriate actions associated with start-up have been completed.

c) Operating Procedures & Safe Practices (OP & SP)

- Are in place, properly authorized, and adequate.
- Are consistent with the PT as documented.
- Have incorporated appropriate PHA recommendations.

d) Management of Change (MOC-T)

A system has been set up to confirm that changes are properly authorized by competent personnel and recorded (e.g., by updating process and instrument drawings). Field changes made during project construction (i.e., following design and PHA) should be checked for proper authorization and recording.

4.3.2. Personnel

a) Training and performance

All personnel should receive training on specific safety and health hazards, procedures, operating fundamentals, and emergency response. Training program should include consequence of non-compliances.

b) Contractor safety

Planned use of contract personnel should be in compliance with the principles and essential

features stated elsewhere in this guidance. For example, contractors should know of any potential fire, explosion, or toxic- release hazards near or at their place of work.

c) Incident investigation

Procedures are in place to investigate incidents and follow up on recommendations. Recommendations from the Incident Investigation reports to be verified.

d) Emergency Response Plan (ERP)

A written plan should be in place and personnel should be trained in how to respond. Procedures should be adequate and consistent with process technology.

e) Auditing

Following start-up, the new facility should be included in the site PSM audit system.

4.3.3. Facilities

a) Quality Assurance (QA)

Procedures have been followed to fabricate critical equipment in accordance with design specifications and codes and to properly assemble and install it.

b) Mechanical Integrity (MI)

Systems have been established and are in place (i.e., equipment test and inspections of critical equipment, reliability engineering analysis, maintenance procedures, and safety interlock checks).

c) Management of change—facilities

A system has been set up to manage subtle changes.

4.4. Physical inspections (using a PSSR checklist)

Physical inspections shall be guided by pre-written checklists and involve extensive field inspections. The attributes of a PSSR checklist are as follows:

a) A clear front sheet stating what equipment has been inspected, when and by whom, including:

- A statement that the installation is consistent with design specifications
- A statement that the PSSR team concludes that the facility is safe to start up after certain recommendations have been satisfactorily resolved
- A record of recommendations (if any) with timing and responsibility

b) A check that the following basic safety and occupational health areas have been appropriately addressed:

- General safety
- Machinery safety
- Ergonomics
- Occupational health

c) A check that the following PSM elements and topics have been appropriately addressed:

- PT (e.g., hazards, process design, equipment design basis, and PSM-critical

- equipment identification)
- MOC-T and Facilities
- PHA (e.g., hazards, recommendations, and communication of results)
- QA (e.g., specifications, vendor inspections, certificates, and installation inspections)
- MI (e.g., written maintenance procedures, training, inspection frequencies, and spare parts listing)
- OP and SP (e.g., Standard Operating Conditions, PPE requirements, and detailed procedures and consequences of deviation)
- Training and performance
- Contractor safety
- Safety instrumented systems (e.g., safety interlocks and alarms)
- Heat-transfer media
- Highly toxic materials

d) Where applicable, unique PSM regulatory coverage and requirements

e) A check that other relevant SHE topics have been addressed

- Environmental
- Community awareness and emergency response
- Electrical safety
- Fire protection

4.5. PSSR documentation and recommendations:

The PSSRs shall be documented, signed by each member of the review team, and authorized by the Site Leadership/Unit Head. The pre-start-up review document shall include a statement as follows.

“The PSSR team concludes that the equipment / facility is safe to start up after completion of recommendations required before start-up.”

A system shall be established and controlled by the Site Leadership/Unit Head to help ensure that review recommendations are resolved (including documentation) before hazardous substances are introduced to the facility.

Similarly, a system shall be established by the Site Leadership/Unit Head to help ensure resolution of review recommendations that are to be completed after start-up.

Periodic reports listing open recommendations should be published monthly and distributed to the site’s management, all persons assigned to follow up a recommendation, and the supervisors of persons assigned the recommendation’s follow- up. The report should highlight recommendations that are past the due date.

This GN contains a PSSR report format in Annexure -1 and PSSR checklist in Annexure -2.

5. Management systems

5.1. Support resources

Site PSM Committee / functions shall maintain resources to help resolve issues related to requirements, corporate standards, and policies.

5.2. Management records

Documentation shall be maintained as per company policy.

5.3. Audit requirements

Unit Safety function shall facilitate & ensure that periodic audits are carried out to ensure implementation of this Guidance Note.

5.4. GN renewal process

This GN shall be reviewed and revised as necessary and, at a minimum, not later than three years from the date of the last revision.

5.5. Deviation process

Deviation from any part of this GN must be authorized by the Location Head after consultation with the Safety and Legal functions. Deviations must be documented, and documentation must include the relevant facts supporting the deviation decision. Deviation authorization must be renewed periodically and no less frequently than every year.

5.6. Training and communications requirements

Training (Offline/Online) and communications shall be carried out in accordance with requirement of this GN.

6. APPENDICES

Annexure - 1 - PSSR Report

Annexure - 2 - PSSR Checklist

Annexure-1: PSSR Report

INSPECTION DATE	
DEPARTMENT/ AREA	
PROJECT TITLE	
PROCESS/ EQUIPMENT	

APPROVAL BY PSSR TEAM

The PSSR team concludes that the equipment / processes are safe to start-up after completion of recommendations/ actions required before start-up.

PSSR Team Member Name	Department	Signature

ACTION-ITEMS TO BE COMPLETED BEFORE START-UP:

Ref. No (Ref. clause from PSSR checklist)	Action	Responsible	Target Date / Signature of responsible person

(Add more rows as required)

START UP AUTHORISED BY:

(Operations Head Name):	Signature / Date
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NOT TO BE SIGNED UNTIL THE ABOVE ACTION ITEMS ARE COMPLETED

ACTION-ITEMS THAT CAN BE COMPLETED AFTER START-UP:

Ref. No (Ref. clause from PSSR checklist)	Actions	Responsible	Target Date/ Signature of responsible person

(Add more rows as required)

Annexure - 2 Check list for Pre-Startup Safety Review

This checklist is presented in the form of questions. It is required to check [v] the appropriate box while answering these questions. Any checks in boxes with an asterisk (*) should be addressed through appropriate recommendations.

It is emphasized that this is not an all-inclusive listing but should serve to stimulate additional questions and actions.

A. SAFETY & HEALTH

1.1 General Safety		NO	YES	N/A	Remarks (If 'No' is ticked [v])
1.1.1	Have ALL personnel, (Operations, Maintenance, Technical, and Supervision), received adequate and appropriate training on the process /equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.2	Has adequate and appropriate PPE (Personal Protective Equipment) been specified and provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.3	Have measures been taken adequately to guard dangerous part of the equipment? (360 deg. Machine Guarding)				
1.1.4	Has sufficient provision been made for the electrical and/or mechanical isolation of the equipment? (LOTO)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.5	Are points of isolation clearly marked/labeled and readily accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.6	Have bump/trip hazards been identified and all sharp edges removed?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.7	Has proper guarding, handrails/barriers, been provided to prevent falls?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

1.1.8	Have all hot/cold surfaces been adequately guarded to prevent burns?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.9	Are Safety Showers and Eye Wash facilities provided and adequate?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.10	Has Lighting / Lux Survey has been carried out? Has sufficient lighting been provided as per survey recommendations so that operation, servicing, maintenance, and repair of the facility can be carried out safely?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.11	Are display systems for providing operational instructions, safety warnings and emergency information provided and positioned so that they are clearly visible and easily read?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.12	Are all required statutory licenses, consents, and approvals in place?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.13	Is housekeeping as per acceptable standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2 Machinery Safety		NO	YES	N/A	Remarks (If 'No' is ticked [√])
1.2.1	Has the machinery been installed so that it will be stable and secure during operation?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.2	Has all access to dangerous moving parts, (or danger zones created by moving equipment) been prevented by the provision of the correct guards, interlocks and/or fencing?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.3	Have the correct safety measures been taken to prevent any risk from hot/cold surfaces, ejection of material, failure of parts and their ejection, overheating/fire?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.4	Has safe access been provided to those parts of the machinery that require operator access for operation, adjustment, service, maintenance, or repair, i.e.,	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

	elimination of slip, trip, trap, crush, entanglement, fall, bump and cut hazards?				
1.2.5	Is the machinery provided with the properly identified START/STOP and EMERGENCY controls that are positioned for safe operation without hesitation, or loss of time, and without ambiguity?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.6	Is the machinery provided with a clearly identified means to securely isolate it from ALL energy sources?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.3 Ergonomics		NO	YES	N/A	Remarks (If 'No' is ticked [√])
1.3.1	Has the workstation, workplace, or equipment, been constructed so that the need for stooping, bending, stretching, over-reacting, and working over-head during operation has been eliminated, or reduced, to the minimum?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.3.2	Has the need to lift, carry, push, or pull, heavy loads, or parts, been eliminated as far as possible?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.3.3	Are all display screens, dials, START/STOP/EMERGENCY buttons positioned so that they are easily seen and accessible by those who will operate the equipment, or machine?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.3.4	Have Visual Display Screens been positioned so that interference from glare is reduced to the minimum?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.3.5	Has the workstation been designed and equipped so that a comfortable position can be adopted by the operator? i.e., able to stand, or change position and sit upright, angle at elbows and knees 90 deg., feet on floor.	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.3.6	Does the operation of the equipment does not increase the risk of UpperLimb Disorder, e.g., repetitive tasks, handling of loads, machine paced work, and prolonged operation?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

1.4 Occupational Health		NO	YES	N/A	Remarks (If 'No' is ticked [v])
1.4.1	Have all health risks due to liquids, dusts, mists vapors or gases, used by, contained in, or emitted by the process/ equipment been assessed, and where necessary, eliminated or adequately controlled?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.2	Has adequate Personal Protective Equipment (PPE) and/or Respiratory Protective Equipment (RPE) been specified in the Operating Procedures?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.3	Has the need for an Occupational Health Monitoring Program been assessed?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.4	Have Operating Procedures been reviewed to take into account any additional "hazards to health" which may arise from operation or maintenance of this equipment?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.5	Has adequate Local Exhaust Ventilation (LEV) been installed, tested, balanced, and entered on an Inspection (PM) Schedule?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.6	Have adequate inspection/cleaning ports been provided on all ductworks?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.7	Are relief facilities directed to a safe place away from the workplace?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.8	Has a Noise Survey been considered, and a Noise Compliance Plan prepared, if required?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.9	Has all pipe work, tanks, etc., containing hazardous materials been adequately labeled?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
1.4.10	Are medical facilities available with competent medical personnel and are adequately stocked?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

B. PROCESS SAFETY MANAGEMENT

2.1 Process Technology (PT)		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.1.1	Are up to date material safety data sheets available?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.1.2	Have the hazardous effects of inadvertent mixing of different materials including waste streams been considered (i.e., has a chemical interaction matrix been prepared/updated)?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.1.3	Has the process design basis (e.g., Standard Operating Conditions) been documented /updated?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.1.4	Has the equipment design basis (e.g., Design specification/P&ID) been documented /updated?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.2 Process Hazards Analysis (PHA)		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.2.1	Have project PHAs been approved, and a final project safety report been prepared?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.2.2	Are all action items, deemed necessary by the PHA team for start-up, complete?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.2.3	Has the facility been approved as "Safe to Operate" by the PHA team?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.3 Management of Change – Technology / Facilities		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.3.1	Has a management of change (MOC) – technology/facilities site procedure been approved?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.3.2	Are all action items, arising from the MOC, that were deemed necessary for start-up, complete?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.3.3	Have all changes made during construction/modification been recorded and authorized?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.4 Quality Assurance (consult with personnel who have qualification responsibilities)		NO	YES	N/A	Remarks (If 'No' is ticked [v])

2.4.1	Have checks and inspections been made to ensure that critical equipment is installed properly and is consistent with design specifications and vendor's recommendations?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.4.2	Have quality assurance inspection reports, covering fabrication, assembly, and installation, been completed as per the project's qualification plan and reports filed with the equipment design basis documentation?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.4.3	The PSSR team should agree on, and field check specific items: (a) Does the construction meet the design specifications? (b) Does the construction match the drawings?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.5 Mechanical Integrity		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.5.1	Have maintenance procedures been approved and issued?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.5.2	Have maintenance personnel been trained?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.5.3	Have inspections and tests (including regulatory requirements) for the following equipment been included in preventive maintenance schedule (i.e., added to the SAP System)?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Pressure vessels and storage tanks	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Pressure relief systems, vent systems, and devices	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Critical controls, interlocks, alarms, and instruments	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Emergency devices, including shutdown systems and isolation systems	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Fire protection equipment	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Piping systems in critical service	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Electrical grounding and bonding	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

	Emergency alarm and communication system	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Monitoring devices and sensors	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Pumps	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Lifting equipment	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
	Other identified PSM critical equipment (if any)	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.5.4	Is the equipment inspected by an internal/external agency and certificates are available? (E.g., lifting equipment test certificates, pressure systems regulations, etc.).	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.5.5	Have all commissioning tests or inspections been identified? (e.g., pressure or leak tests)	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.6 Operating Procedures & Safe Work Practices		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.6.1	Have operating procedures been prepared/updated and approved?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.6.2	Have site procedures for safe work practices (e.g., Permit to work, LOTO, Work at Height, Confined space entry etc.) been prepared/updated and approved?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.7 Training and Performance		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.7.1	Has specific process (or job task) training been given to all personnel?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.7.2	Have initial/refresher training records been updated?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.8 Contractor Safety		NO	YES	N/A	Remarks (If 'No' is ticked [v])
2.8.2	Have all contract personnel been adequately trained in appropriate maintenance and operating activities?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9 Interlocks and Alarms		NO	YES	N/A	Remarks (If 'No' is ticked [v])

2.9.1	Has the alarm/interlock been classified into safety (or) process interlocks and appropriate integrity levels are determined?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.2	Is the SOP for interlock/critical alarm testing been written and implemented prior to this PSSR?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.3	Have all interlocks been checked to ensure that those actions, under all conceivable failure conditions, to be fail-safe?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.4	For alarms/interlocks with more than one software or hardware circuit, have all possible interlock routes been tested?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.5	Do you have an appropriate procedure to ensure that your software is protected? (E.g., routinely archived, key/password protected etc.).	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.6	Has the software been properly documented and filed? (E.g., logic drawings, schematics, sequence/batch descriptions).	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.7	Has all software been properly validated and tested?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.8	Have you ensured that the equipment does not restart either on the resetting of a protective device such as an interlock or the re-establishment of power after an outage?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
2.9.9	Are all installation and / or any changes to the SCADA / DCS (Control Software) have been tested and verified by the operators as functional?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

C. ENVIRONMENT

3.0 ENVIRONMENT	NO	YES	N/A	Remarks (If 'No' is ticked [√])
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3.1	Are all secondary containment/bundling facilities adequate?(Curb walls, Dykes etc.)	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Are all material storage facilities adequate and appropriately labeled?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.3	Have adequate arrangements been made, prior to start-up,for the identification, classification and safe disposal of all waste materials?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.4	Do Area Spill Procedures need to be developed / updated?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.5	Are relief vents/ facilities adequate and directed to an environmentally safe location?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.6	Have the Corporate Resource Conservation Guideline been followed during the design stage of this project?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.7	Have all waste streams been identified, quantified, analyzed and minimized?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
3.8	Is there a procedure for disposal of solid/liquid waste?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

D. EMERGENCY RESPONSE PLANNING

4.0 EMERGENCY RESPONSE PLANNING		NO	YES	N/A	Remarks (If 'No' is ticked [v])
4.1	Are all necessary Emergency warning signs, lights or other devices installed where necessary?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
4.2	Have all necessary precautions been taken to ensure that the equipment inspected is not a source of ignition to any flammable materials, irrespective of their source?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
4.3	Are fire protection facilities adequate, e.g., fire extinguishers, fire walls, sprinkler systems, Alarm Boxes, foam system etc., and have they been included on an Inspection Schedule?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

4.4	Are Emergency Escape Routes, including ladders, adequate and properly signposted?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
4.5	Is Emergency Lighting adequate & tested?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
4.6	Is sufficient Respiratory Protective Equipment, such as Escape Sets or Self-Contained Breathing Apparatus (SCBA) available?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Have Emergency Procedures been prepared, and relevant personnel trained?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
4.8	Are assembly points / muster points clearly marked and appropriately selected?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

E. ELECTRICAL SAFETY

5.0 ELECTRICAL SAFETY		NO	YES	N/A	Remarks (If 'No' is ticked [✓])
5.1	Have operations/areas been electrically classified?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.2	Has the equipment been properly installed and constructed to the company standards and local legislation and does it meet any special installation requirements noted on the manufacturer's certificate?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.3	Are all live parts adequately enclosed to prevent access?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.4	Do earthing/ grounding / bonding comply with local standards/legislation?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.5	Are MCCs and electrical isolation devices appropriately labeled?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.6	Have fuses or circuit breakers been provided which will automatically disconnect the supply?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.7	Are first aid stations, single line drawings and PPE requirements available in	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

	MCC/PCC/Main Load Tension Panel (MLTP)/Sub stations as appropriate?				
5.8	Have all relevant documentation and drawings (e.g., P&IDs,SLD's, Schematics, equipment arrangement, I/O, logic, electrical classification and Panel Schedule drawings) been updated to reflect the current installation?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.9	Have all new Substation Breakers, MCC isolators, starters or other appropriate equipment been added on to the site inspection schedule?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.10	Have any electrical circuits, made redundant by this installation, been properly removed?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
5.11	Whether Lightning arrester circuit / connectivity is there or not.	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

F. FIRE PROTECTION

6.0 FIRE PROTECTION		NO	YES	N/A	Remarks (If 'No' is ticked [√])
6.1	Does the site have a written emergency control plan that includes a list of the major workplace fire hazards, proper handling and storage procedures, potential ignition sources (such as welding, smoking and others), and the type of fire protection equipment or systems that can control a fire involving them?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.2	Are fire separations/ Fire walls identified and maintained properly to prevent fire spread including separations between operations and storage areas?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.3	Does the site fire water supply have sufficient capacity to supply the design demand for the specified duration (one to four hours – depending on the severity of the hazard)?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

6.4	Can the fire pumps deliver 100% of the maximum fire water demand at the required pressure for the largest credible fire expected to occur on the site?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.5	Have new sprinkler/foam systems been tested to ensure they meet the Acceptance Requirements of NFPA 13/NFPA 16 and will all sprinkler systems be maintained in accordance with NFPA 25?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.6	Are all the facilities that handle flammable liquids fully protected with water spray, foam, or other automatic suppression system that complies with a nationally recognized code or standard?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.7	Is Nomex or garments made from other flame-resistant fibers worn by personnel who work with flammable liquids?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.8	Is all portable fire extinguishing equipment located in proper locations along normal paths of travel, including exits from areas, and will this equipment be properly maintained per NFPA 10?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.9	Is there a site fire alarm system and are alarms perceivable and above ambient noise or light levels?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	
6.10	Has the site established a site ERT and are all ERT members trained to a level of competency commensurate with the duties members are expected to perform?	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	

G. OTHERS (For any additional requirement specific to Equipment)

7.0 OTHERS	NO	YES	N/A	Remarks (If 'No' is ticked [√])