	PROJECT		Standby SRU & Additional Tanks		
	CLIENT		IOCL Paradip Refinery		
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JOB SPECIFICATION FOR PRE -START UP SAFETY REVIEW PROCEDURE (PSSR)

0	05/12/2019	ISSUED FOR IMPLEMENTATION	KMK	TNVS	TNVS	JMC
REV.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED	AUTHORIZED

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1. Introduction:

INDIAN OIL CORPORATION LIMITED (IOCL) has awarded Fax of Acceptance (FOA) dated 29th August 2019 to M/s. Technip India Limited (TPIL) for Consultancy services (PMC/EPCM services) for overall project management, FEED Review / FEED, Detailed Engineering, Procurement & expediting services, Tendering & award, Construction Management & Supervision, Assistance in start-up, Commissioning & performance test runs for installation of a Standby SRU of 525 TPD capacity and execution of Additional tanks for Paradip Refinery, Odisha, India.

2. Definitions & Abbreviations

Abbreviation	Definition /Expanded form
IOCL/ CLIENT	Indian Oil Corporation Limited
PMC/ CONSULTANT	Technip India Limited
LICENSOR	Party selected by IOCL for process technology ownership for any UNIT
CONTRACTOR	Party whose services are obtained for performing the works specified as part of LSTK / packages.
EPCM	Engineering, Procurement & Construction Management Services.
LSTK	Lump Sum Turn Key portion of the work to be executed by CONTRACTOR
FEED	Front End Engineering Design
AUTHORISED REPRESENTATIVE	IOCL's/ CONSULTANT's representative authorized to act for and on behalf of them.
VENDOR	Any third party supplying the equipment/materials for setting up the Plant
PROJECT	Indicates Standby SRU and Additional tanks Project, Paradip Refinery
UNIT	Indicates any particular portion of the project to be built which can be Process related or Utilities/Offsites related
SRU	Sulphur Recovery Unit

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3. **Scope**

Scope of this document is to describe actions and management systems required, for implementation of the Pre-Startup Safety Review (PSSR). The purpose of the PSSR is to ensure that, all elements relevant to the safe operation of a plant / process or equipment have been adequately addressed, and resolved prior to the initial startup of new or modified facilities.

3.1 **Field of application**

This procedure applies to the Start Up of new facilities, or existing facilities subjected to major modifications, as part of LSTK Contractor's scope of work for the project.

Early startup of single systems/circuits, even if to perform Commissioning activities, fall within the scope of this procedure whenever it involves the introduction, in the process of any substance possessing toxic, reactive, flammable, or explosive properties (ex. introduction of fuel gas inside the fuel gas system to perform furnaces dry-out). This Element is intended to supplement, not duplicate or substitute for required safety review work that is completed throughout the project such as design reviews and monitoring conducted during construction, pre-commissioning and commissioning.

3.2 **Codes and Standards**

OSHA 1910.119 Process safety management of highly hazardous chemicals.

4. **Pre-Start up Safety Review (PSSR)**

The PSSR is a systematic approach used to ensure that: construction has been carried out in accordance with design specifications; adequate safety, operating, maintenance and emergency procedures are in place; all personnel have been properly trained on it; all necessary safety equipment (gas detectors, firefighting, safety showers, breathing apparatus, etc...) are available and in service; all Process Safety Information (PSI) is available and Up-to-Date out; all recommendations arising from the Process Hazard Analysis (Hazop study, etc...) have been either implemented or justifiably cancelled; all the requirements contained in the Management of Change (MOC) for modified facilities have been fulfilled.

4.1 **Pre Start-up Action Item**

Any deficiency found during the PSSR which may result in a hazard if the plant / process or equipment were started up. These items will generally be of such magnitude that they MUST be corrected prior to start up. Failure of an Emergency Shutdown Device (ESD) to respond during testing or of a steam turbine failing to over-speed trip at design condition would be examples of a "Pre-Startup Action Item"



4.2 **Post Start-up Action Item**

Any deficiency found during the PSSR which will not result in a hazard if the plant / process or equipment were started up. These items will generally be of lesser magnitude and may be corrected after start up. Insulation on piping, for reasons other than personnel protection, or installation of a non-essential pressure gauge would be examples of a "Post- Startup Action Item".

4.3 **Process Safety Information**

The collection of information pertaining to the technology of the process, information pertaining to the equipment in the process and information pertaining to the hazards of the highly hazardous chemicals used or produced by the process that enable to identify and understand the hazards posed by this process. Minimum information to be collected is usually defined by Owner requirements, otherwise 29 CFR 1910.119 OSHA regulations may be used as a reference.

The PSSR Team leader is the Start Up Manager or other person appointed by project management to lead and facilitate the PSSR activity.

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PSSR team leader shall form an interdisciplinary team with specialization from operations, maintenance, mechanical, process engineering, HSE, inspection, electrical, project, instrument and control systems as appropriate. Depending on contractual specification and plant condition some members of the interdisciplinary team could belong to the OWNER/ PMC organization. In any case OWNER/PMC project and operation representatives should be invited to participate to PSSR activities.

4.4 PSSR Methodology

PSSR is a systematic review of documents and actual plant conditions, performed by an interdisciplinary team, aimed to verify at least the followings:

- Construction and equipment installation is in accordance with design specifications by checking that all quality control and inspection plan is completed and punch list is cleared.
- Maintenance pre-operational activities such as: strainer and blind removal, re-gasketing, repairs adjustments, and leak tests have been successfully completed.
- Field inspection items such as: unfinished thermal insulation, temporary covers, metal insulation straps, steam trap discharge, scaffolding, un-welded plugs and nipples are identified.
- Checks have been conducted to ensure that there are no deviations from instrumentation logic philosophy.
- Field inspection safety items such as: availability and functionality of protective safety equipment (safety showers, detectors, sprinklers, etc.).
- Operating Procedures are in place and are up-to-date.
- Adequate Safe Work Practices are in effect.
- Process Hazards Analysis has been conducted and all recommendations have been satisfactorily resolved, implemented and documented.
- Trained and qualified operation and maintenance personnel available and instructed.
- Confirmation that adequate Emergency Response Plan has been implemented and Emergency response team is available, qualified and trained.
- Confirmation that remaining construction workforce is trained and qualified to work in the operating plant.
- Needed additional HSE measures (e.g. notifications to the authorities and/or surrounding communities) has been addressed and implemented.
- All requirements identified during the MOC have been met prior to start-up, if any.

The PSSR shall include a physical field inspection (walkthrough) aimed to ascertain that general site conditions (housekeeping, facility accessibility, area segregation, safe work practices implementation) are satisfactory.

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4.5 Pre-Start up Safety Review Checklist

PSSR Checklists are developed to assist the PSSR activity. Pre-set checklists are provided in attachment A.

As a part of the preparatory work for the PSSR, the assigned PSSR Team Leader shall customize the pre-set checklist herein included and develop from this a checklist more suited for the project by:

- Identifying those questions from the checklist which he considers to be not applicable to the project (insert "N/A" in the column headed "Remarks/Comments")
- Rephrasing some other questions deemed necessary by him, and inserting additional questions if required.

Project checklist shall be distributed prior to holding the pre-PSSR meeting to all members of the PSSR team in accordance with PSSR Team Leader requirements.

4.6 Pre-PSSR Meeting

The PSSR Team Leader shall arrange and conduct a Pre-PSSR meeting with all Team Members and the concerned OWNER / PMC representatives. At this review meeting, he shall present an overview of the project and plant start up.

The PSSR Team and Owner representatives shall review, and agree upon the content of the applicable PSSR Checklist, and ensure all areas of concern are adequately addressed. The Team Leader shall then assign specific duties to individual Team Members and agree upon a completion schedule in advance of the forecasted startup date.

4.7 PSSR Execution

In accordance with the duties assigned during the Pre-PSSR meeting, each PSSR Team member shall evaluate the facility by using the previously agreed PSSR Checklist. This evaluation shall include review of all applicable documentation as well as "On Site" review of the installation (where applicable).



4.8 PSSR Review Meeting

The PSSR Team Leader shall arrange for and lead the PSSR Review meeting(s). Each question will be read out in the meeting and the relevant PSSR Team Member in charge will provide a response.

If the team decides that the issue raised in the question has been satisfactorily addressed and that no further action by any party is necessary, then the representative will sign it off in the same column.

If the team decides that the question cannot be closed out, then the PSSR Team will select one of the following two options:

- Raise a "Post Start-up Action Item" clearly identifying the person responsible for satisfactorily completing the assigned action and the estimated completion time. Usually those items are included in the punch list as "Exception items" to be closed after the Start Up (punch items cat."D" as defined in "Handover Procedure").
- Assign a "Pre-Start-up Action Item" clearly identifying the appropriate person responsible for satisfactorily completing the assigned action and the estimated completion time. Review impact on the overall start-up schedule and seek management advice on the acceptability of any potential delays, if necessary.

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After the PSSR Review meeting, the Team members and Owner/ PMC representatives shall be requested to sign off the Checklist to indicate their agreement on the contents and acceptance of responsibility to complete the action items assigned to them.

4.9 PSSR Close Out

When all Pre-Startup Action Items have been resolved, the PSSR Team Leader shall hold a Post-PSSR meeting with all Team Members and the concerned Owner representatives. At this meeting, the resolution of Action Items will be presented.



If all Pre-Startup Action Items have been completed, or justifiably cancelled to the satisfaction of the Owner representatives, a PSSR Close Out report will be prepared by the PSSR Team Leader. All team members and Owner representatives shall sign the report to indicate their agreement on the contents and acceptance of readiness for start-up. Under no circumstances shall the plant be started up until all Pre-Start-up Action Items have been either completed or justifiably cancelled. The PSSR Team Leader shall follow up and resolve all such items for start- up under his control.

The only exception to the above shall be in cases where the Pre-Start-up Action Item only affects a specific part of a plant, not the entire unit / complex. In such instances, permission for startup may be given for the non-affected sections only.

For example, start-up of the Atmospheric Section of a Crude Unit may be allowed meanwhile a Pre-Start-up Action Item on the Vacuum Section is pending.

4.10 PSSR Record

PSSR documentation, including filling of PSSR Checklists with observations, completion of items required and PSSR Close out reports and recording as part of Project documentation.

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5. **Attachment A Pre Start-Up Safety Review (PSSR)Check List**

Date:



System /Area description:

Team composition	Name	Company	Role	signature
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PSSR Team Leader:



PSSR Members :

Remarks if any:

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
A. GENERAL								
1.	Have Mechanical Completion been reached?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Was HAZOP conducted and all recommendations satisfactorily resolved, implemented and documented?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Was a MOC Review conducted and all requirement satisfactorily resolved, implemented and documented?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Have start-up teams and relative line authority been established on a regular schedule?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Have adequate provisions been made for the technical or supervisory support during initial operation?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Is PTW system in effect?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Has availability of utilities been checked for safe start up?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Has communication been done with other facilities/units to ensure that they are operating in a way that it does not affect safe start up (e.g. supply of feedstock, flaring, utilities, emergency operations)?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9.	Has needed additional HSE measures identified and taken (e.g. notifications to the authorities and/or surrounding communities)?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
B. DOCUMENTATION AND TRAINING								
1.	Have operation procedures been provided and reviewed? Do they cover start-up, shutdown, emergency shutdown (various conditions), and normal operation?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Have operating and special procedures such as sampling methods, equipment lubrication, equipment openings, emptying dikes, spill containment etc., been provided?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Have Safe Work Practices (such as confined space, hot works, rigging, etc...) been reviewed considering new plant hazards/condition?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Are process flow diagrams (PFD's), P&IDs and other Process Safety Information available to start up / operating personnel?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Have unit safety equipment lists been issued /updated?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Has the unit alarm list been issued / updated?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Has the unit safety relief device list been issued / updated?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Have all pertinent operation, inspection/maintenance, contractor and supervisory personnel been properly trained?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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						DESCRIPTION	RESPONSIBILITY	
C. SAFETY AND HEALTH								
1.	Are required personal protective equipment ,respirators available and operable?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Are adequate personal protective equipments and working clothes provided to all personnel?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Does equipment layout provide safe access for operation, inspection/maintenance?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Have all unwanted scaffoldings been removed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Is primary lighting installed and adequate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Is emergency lighting installed and adequate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Do walkways and ladders provide safe access at all levels where required?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Do all ladders have gates or chains across opening?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9.	Are walking and working surfaces level, properly secured, and providing traction?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
10.	Are handrails and toe boards installed and secured?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
11.	Are process sight glasses, flow indicators, gauges, etc., properly Armoured?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE		REMARKS
						DESCRIPTION	RESPONSIBILITY	
12.	Do signs adequately identify work area hazards and provide appropriate instruction?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
13.	Has potential for exposure to high noise levels been addressed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
14.	Is the physical layout acceptable w.r.t height of equipment, accessibility, and lifting?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
15.	Is piping insulation for personnel protection completed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
16.	Are MSDS(s) available at the locations where the chemicals will be handled?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
17.	Has the job site been properly cleaned up?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
18.	Has presence of non-key personnel minimized and kept under PTW control during start up?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
D. FIRE PROTECTION								
1.	Has fire and safety equipment (e.g., fire extinguishers, eye baths, safety showers, steam lances, hose boxes, monitors, hydrants, snuffing steam, etc..) been provided and located where needed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Is the fire water available on the firewater ring header? Is the ring properly open / isolated?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Are deluge valves available, tested and in operation?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Is unobstructed access to safety and fire protection equipment provided?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Has the fire proofing on Equipment? / structure been installed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
E. EMERGENCY PLANNING								
1.	Have emergency procedures been reviewed and revised as appropriate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Are exits and egress routes clearly identified?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Are emergency and rescue equipment available, adequate and tested?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Have all employees participated in an emergency exercise under the latest plant plan?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Any significant deficiencies found and corrective action have been taken?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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						DESCRIPTION	RESPONSIBILITY	
F. PIPING, VALVES AND VESSELS								
1.	Has piping, valves and vessels been pressure tested?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Has tightness test been performed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Has piping, valves and vessels been adequately purged?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Has a P&IDs field check conducted to ensure that the piping is installed as specified?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Has pipe been located such that it cannot slip or fall due to line expansion during cleanup, start up, or shutdown?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Is the piping system adequately supported or braced?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Have check valves been reviewed to ensure that they are installed in the proper direction?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Are bolts properly torqued?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9.	Are vessels, piping, instruments and other components supported?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
10.	Have the correct gaskets been installed according to the valve and piping specifications?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
11.	Have the blind lists been verified to ensure all test blinds have been removed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
12.	Have pipe, vessels and other equipment been checked for unfinished thermal insulation.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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						DESCRIPTION	RESPONSIBILITY	
	temporary covers, metal insulation straps, steam trap discharge?							
13.	Have electrical continuity and grounding been provided and checked?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
14.	Is freeze protection complete (steam, electrical tracing)?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
15.	Are vents and drains located such that they do not create personnel hazards?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
16.	Has appropriate colour-coding been provided where needed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
17.	Have lines and vessel been clearly labelled, including flow arrows as required?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
18.	Have drawings been revised to show "as built" condition?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
19.	Have unused / provisional piping branches been eliminated? Have unused temporary piping connections been removed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
20.	Has safe access to valve operation been provided?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
21.	Have all PSV tested, verified that are in place and operational?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
22.	Are relief device discharge directed to a safe location?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			



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						DESCRIPTION	RESPONSIBILITY	
23.	Is relief device discharge adequately braced?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
24.	Has Emergency depressurization system been tested and put in service?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
25.	Are block valves between protected vessels, piping, and downstream discharge points car sealed open/locked?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
26.	Have Emergency MOV's been tested and put in service?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
27.	Are sample points properly configured for safe sampling?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
28.	Are hoses and fittings of the approved type?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
29.	Have needed temporary strainers in place and recorded?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
G. ROTATING AND MECHANICAL EQUIPMENT								
1.	If new lubricants or buffer fluids have been introduced, have MSDS's been provided?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Have equipment guards been installed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Do provisions exist for cleanup, isolation, and lockout of equipment to perform maintenance?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Are capacities of lifting equipment, floors, and hoists clearly displayed and visible to the operator?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Has the proper rotation of equipment been assured?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Is the drive unit grounded?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Have the lubricants and seal fluids been properly charged?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Is tubing on seal flushing arrangement identified to ensure correct hookup following maintenance?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			



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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
H. ELECTRICAL SYSTEMS								
1.	Have start/stop switches and electrical switchgear been properly labelled?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Can electrical equipment be isolated safely for repair work?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Do lockout provisions exist both at the switchgear and at the start/stop switch?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Have conduit fittings been properly sealed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Have electrical protective relays and safety devices been calibrated?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Is electrical equipment properly grounded?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Have electrical interlocks been tested for proper operation?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Has the proper rotation of motors been assured?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9.	Have electrical drawings been completed to reflect “as installed” condition?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
10.	Have electrical equipment manuals been appropriately filed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			



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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
11.	Have electrical guards been installed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
12.	Are indicator lights operating properly?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
13.	Have electrical test results been reviewed and approved?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
14.	Has electrical heat tracing been properly labelled?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
15.	Has electrical critical equipments (MCC switch gears, etc...) been properly labelled?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
16.	Is all electrical equipment consistent with hazardous (classified) location?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
I. CONTROL SYSTEM / FIRE & GAS DETECTION								
1.	Has the fail-safe function of valves been properly installed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Are interlocks and alarms provided in accordance with approved specifications?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Are guards provided to prevent accidental tripping of switches?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Have new instruments and alarms been identified and designated as such in the inspection, test, and preventive maintenance program?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Has the operation of interlocks and alarms been verified including ESD?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Have all process analyzers been verified and put on line?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Have the actuator air supplies been valved in?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Has the operation of all control loops been verified?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9.	Has the fire and gas detection system been installed / tested?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
10.	Has the Burner Management System been verified and put in service?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
L. MAINTENANCE								
1.	Are spare parts for Start Up and Operation available?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Are specialty tools acquired?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Are equipment maintenance manuals available?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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ITEM #	CHECK ITEMS	REPLY BY	YES	NO	N/A	CORRECTIVE ACTION		REMARKS
						DESCRIPTION	RESPONSIBILITY	
M. WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION								
1.	Are dikes, draining, and curbing provided in accordance with design?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2.	Have provisions been made for disposal of all wastes (i.e., drums, bags, filter elements, liquid residues)?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3.	Will runoff rainwater be contained if it becomes chemically contaminated?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4.	Are provisions made for drum or other portable container handling?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.	Are sewers in the area properly identified as "clean" or "process" sewers?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.	Are maps of sewers up to date?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	Have dike isolation valves been closed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Are on line analyzer been tested to check emission to the environment?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9.	Are chemicals for waste water treatment available?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Comments
