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Doc Custodian: Safety Supervisor		PR-33 Surface Preparation for Process or Utility Piping and Equipment in Service
Approved By: Sean Levy		
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TABLE OF CONTENTS

1.0	Purpose	2
2.0	Scope	2
3.0	Procedure	2
3.1	Roles and Responsibilities	2
3.1.1	Owning Department Representative	2
3.1.2	Inspection Group	2
3.1.3	MPC Servicing Group Supervisor	2
3.1.4	Environmental	2
3.2	General Requirements	2
3.2.1	Pre-Task Inspection	2
3.2.2	Field Work	4
4.0	Definitions	5
5.0	References	5
6.0	Attachments	5
7.0	Revision History	6

Blanchard Refining Company LLC	Galveston Bay Refinery	
Title: PR-33 Surface Preparation for Process or Utility Piping and Equipment in Service	Doc Number: RSW-000063-GB	Rev No: 0

1.0 Purpose

The purpose of this practice is to provide a safe and efficient practice for surface preparation of process or utility piping and equipment which is under pressure and/or in service for subsequent inspection and/or coating.

2.0 Scope

This practice applies to all surface preparation activities performed on live lines or their associated equipment within the site with the exception of new lines/equipment placed into service within the last twelve months and contingent on satisfactory results from visual inspection by Craft Personnel. Common surface preparations include abrasive blasting, water cleaning below 5000 psi, power tool cleaning and hand tool cleaning the equipment surfaces. Tool cleaning includes pneumatic or electric power tools (air grinder with a wire brush or buffer) and hand tool preparation (see definitions for more details). This applies to all routine maintenance, turnaround, and construction activities whether performed by MPC proprietary or contractor workforces.

3.0 Procedure

3.1 Roles and Responsibilities

3.1.1 Owning Department Representative

The appropriate Owning Department Representative is responsible for verifying that the subject equipment has been identified by Inspection on an attached drawing, verify that there is supporting documentation for each area to be cleaned and ensure that the work in the PR-33A Authorization to Abrasive Blast /Tool Clean form is correct, the Safe Work Permit and Job safety Analysis are complete and a contingency plan if required is in place. When a contingency plan is required the owning department will complete the Form PR-33B. Also, the service of the piping or equipment to be prepared must be communicated to MPC Inspection or their delegate and craft personnel.

3.1.2 Inspection Group

The Inspection group is responsible for inspecting and marking the piping or equipment surface to be prepared. For process piping covered under the mechanical integrity program Inspection will provide marked up isometric drawings identifying the areas of the pipe that will be cleaned.

Inspection personnel will calculate the Risk associated with preparing the surface.

3.1.3 MPC Servicing Group Supervisor

The MPC Servicing Group Supervisor is responsible for assuring that contractors are aware of this HESS practice and meet the requirements.

3.1.4 Environmental

The Environmental Group develops and maintains environmental procedures related to abrasive blasting (GBR-HESS-ENV-39), paint waste management (GBR-HESS-ENV-44) and spent parts washing fluids management (GBR-HESS-ENV-38).

3.2 General Requirements

3.2.1 Pre-Task Inspection

3.2.1.1 The PR-33A Form Authorization for Surface Preparation on Process/ Utility Piping and Equipment Under Pressure and/or in Service will be used to determine if surface preparation can be performed and the level of controls

Blanchard Refining Company LLC	Galveston Bay Refinery	
Title: PR-33 Surface Preparation for Process or Utility Piping and Equipment in Service	Doc Number: RSW-000063-GB	Rev No: 0

needed to mitigate the risk.

- 3.2.1.2 If painted or previously painted, a lead test will be conducted before any blasting or removal.
- 3.2.1.3 MPC Owning Department shall provide information regarding the equipment to be prepared, including the process service (as well as adjacent piping and equipment), special hazards and requirements.
- 3.2.1.4 Water cleaning below 5000 psi and hand tool cleaning do not require thickness readings or completion of the thickness reading risk assessment, provided the following:
 - 3.2.1.4.1 There is no external corrosion (verified by field visual)
 - 3.2.1.4.2 Inspection history shows no internal corrosion that will impact the safety of the cleaning.
 - 3.2.1.4.3 The inspector agrees there is no additional reason for thickness testing.
- 3.2.1.5 MPC Owning Department shall provide a contingency plan to mitigate the event of a leak during the surface preparation. The requirements of the contingency plan will be determined based on the Calculated Risk derived from the table on the PR-33A Form. The Calculated Risk is based on the likelihood value obtained from the Form PR-33A and the RAM score. A contingency plan will be required if the Calculated Risk is Med or High. If deemed necessary by the owning department a contingency plan may be developed if the Calculated Risk is Low. When required the contingency plan will be documented on the PR-33B Form.
- 3.2.1.6 MPC Inspection or their delegate shall perform inspection of piping and equipment surface to be prepared and document inspection, if required by PR-33A. Inspection methods are Visual, Ultrasonic, and Radiograph where appropriate.
 - 3.2.1.6.1 When active corrosion is evident, and the pipe/equipment wall condition cannot be determined without removal of significant corrosion scale, coating, pipe wrap, insulation or other type of external coating one or more X rays, when technically feasible, shall be taken, at representative locations to determine the remaining wall.
 - 3.2.1.6.2 If the actual wall thickness (Tact) is at or below minimum thickness required (Tmin) or the revealed condition is such that Tact cannot be determined due to extreme variations in condition within the areas covered by the radiographs, no further action shall be taken until the actual thickness can be determined.
 - 3.2.1.6.3 If remaining wall, as determined by radiography, is greater than Tmin, careful removal of the coating and clean up to allow better determination of condition is permitted in accordance with the Safe Work Permit Procedure.
 - 3.2.1.6.4 Note:
 - 3.2.1.6.4.1 Visual inspection alone may be sufficient to indicate that inspection by other methods and surface preparation work cannot proceed.

Blanchard Refining Company LLC	Galveston Bay Refinery	
Title: PR-33 Surface Preparation for Process or Utility Piping and Equipment in Service	Doc Number: RSW-000063-GB	Rev No: 0

- 3.2.1.6.4.2 On the other hand, visual inspection alone is not sufficient to determine the actual thickness and if the surface preparation work can proceed.
- 3.2.1.7 MPC Inspector or their delegate will verify design and operating conditions of the line (temperature and pressure) for every job, if the Risk Assessment Outcome from the PR-33A is High or Medium.
- 3.2.1.8 Inspection authority or designee will determine the Tmin values.
- 3.2.1.9 Inspection shall use Tmin to determine if work can be done in accordance with the PR-33A Risk Assessment.
- 3.2.1.10 If actual thickness (Tact) cannot be determined, or if actual thickness is less than Tmin, then the surface cannot be blasted or tool cleaned.
- 3.2.1.11 Areas not acceptable for surface preparation must be identified with paint marker and flagging by the MPC Inspection Group or their delegate. These include: Any areas where rust is de-laminating from the pipe/equipment, areas that Tact is below the minimum thickness specified by Inspection. The paint is to be **RED**.
- 3.2.1.12 Areas which are acceptable for surface preparation shall also be marked by MPC Inspection or their delegate. Limits of surface area to be prepared will be clearly defined and demarcated by MPC Inspector or delegate and fully agreed with people to perform work. The area to be prepared will be identified and/or marked with **PURPLE** paint indicating the start and end points. Anything not identified and/or marked with **PURPLE** paint will not be prepared.
- 3.2.1.13 MPC Inspection or their delegate and the MPC Servicing Group Representative shall provide for the abrasive blasting craft personnel the analysis of the inspection performed prior to surface preparation, including the marked locations. Utilize the PR-33A Form, Authorization for Surface Preparation on Process/ Utility Piping and Equipment Under Pressure and/or in Service.
- 3.2.2 Field Work
- 3.2.2.1 Prior to performing work personnel must review PR-33 procedure.
- 3.2.2.2 Craft personnel must field verify that the inspection process has been completed. Ensure the attached copy of the PR-33A Form Authorization for Surface Preparation on Process/ Utility Piping and Equipment Under Pressure and/or in Service is properly authorized per GBR PR-03 Safe Work Practice.
- 3.2.2.3 A craft person will have a radio tuned to the appropriate unit operations in case of emergency.
- 3.2.2.4 The analysis and the PR-33A Form Authorization for Surface Preparation on Process/ Utility Piping and Equipment Under Pressure and/or in Service shall be communicated to the field personnel prior to surface preparation. Maintenance will provide clear communication in the field as to the service in individual pipes and any adjacent equipment that could be affected by surface preparation.
- 3.2.2.5 Craft personnel shall follow all project procedures for permitting, SWP and JSA.

Blanchard Refining Company LLC	Galveston Bay Refinery	
Title: PR-33 Surface Preparation for Process or Utility Piping and Equipment in Service	Doc Number: RSW-000063-GB	Rev No: 0

- 3.2.2.6 Craft personnel shall identify Safety Showers and Eye Wash stations prior to commencement of work.
- 3.2.2.7 Craft personnel shall protect all adjacent surfaces not to be prepared, including equipment insulation (Asbestos or Asbestos-Free), painted equipment, instrumentation, etc. Grit containment for personnel and equipment protection shall be provided.
- 3.2.2.8 Craft personnel shall then commence with the surface preparation as identified in the scope of work.
- 3.2.2.9 For waste management requirements, refer to GBR-HESS-ENV-39 Abrasives Blasting Management, GBR-HESS-ENV-44 Paint Waste Management, and GBR-HESS-ENV-38 Spent Parts Washing Fluids Management.
- 3.2.2.10 In the event of an emergency, such as a leak/hole, the craft personnel shall immediately notify Operations and vacate the area of work. If an employee is exposed to the product, the employee must immediately proceed to the nearest safety shower in a safe area and decontaminate the exposed area. All surface preparation work will cease, until work is re-authorized.

4.0 Definitions

- 4.1 **Water Cleaning below 5000 psi** – Low-pressure water cleaning performed at pressures less than 5000 psig (34 MPa). This is also called “power washing” or “pressure washing”.
- 4.2 **Hand Tool Cleaning** – Hand tool cleaning is a method of preparing steel or coated surfaces by the use of non-power hand tools. Hand tools may consist of putty knife, wire-brush or sand paper.
- 4.3 **Power Tool Cleaning** – Power tool cleaning is a method of preparing steel or coated surfaces by the use of power assisted hand tools. Power tools could consist of grinders, needle-guns, bristle blaster and pneumatic sanders.
- 4.4 **Abrasive Blast Cleaning** – Abrasive blast cleaning is a method of cleaning and roughening of a surface produced by the high-velocity impact of an abrasive that is propelled by the discharge of pressurized fluid from a blast nozzle.

5.0 References

- 5.1 GBR-HESS-ENV-39 Abrasives Blasting Management
- 5.2 GBR-HESS-ENV-44 Paint Waste Management
- 5.3 GBR-HESS-ENV-38 Spent Parts Washing Fluids Management

6.0 Attachments

None

Blanchard Refining Company LLC	Galveston Bay Refinery	
Title: PR-33 Surface Preparation for Process or Utility Piping and Equipment in Service	Doc Number: RSW-000063-GB	Rev No: 0

7.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original issue. New integrated site procedure replaces GBR-HESS-PR-33 under MOC 82140.	A. Wilson	S. R. Levy	10/13/2020	11/12/2020