

## VISTA CHEMICAL COMPANY - ABERDEEN PLANT

## PROCESS SAFETY MANAGEMENT MANUAL

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PART G: PRE-STARTUP SAFETY REVIEW (PSSR)  
-----APPROVED BY: *W. Seymour*

PLANT MANAGER

DATE: 8/10/92

## 1.0 SCOPE

This policy establishes a Pre-Startup Safety Review (PSSR) procedure for the Aberdeen PVC Plant. A PSSR will be conducted for all new facilities installed and on modifications to existing facilities. Modifications to existing facilities are considered "changes" and are also subject to the provisions of Management of Change (see Aberdeen Plant Management of Change Procedure). Implementation of this policy will fulfill the requirements of OSHA 29 CFR 1910.119, paragraph (i).

## 2.0 PURPOSE

The purpose of this policy is to ensure that a thorough review of potential hazards has been conducted on new and modified facilities prior to introduction of chemicals into the process or start-up of equipment. The review also ensures documentation exists as required for other elements of OSHA Process Safety.

## 3.0 DEFINITIONS

Facility - A process unit and its associated equipment.

Modified Facility - A facility which has undergone modification which resulted in a change to the process safety information.

PSSR - Pre-Startup Safety Review

PSSR Team - A Team consisting of representatives from appropriate departments such as Safety, Operations, Process Engineering, Project Engineering, Maintenance, and others as needed which has been established to conduct the PSSR.

PSSR TEAM LEADER - The PSSR Team Leader will be designated by the Department Head over the "project" or "change". The Team Leader is responsible for providing the necessary documentation for review in the PSSR and for submitting the results of the PSSR to management.

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The Project Engineer will normally be designated as PSSR Team Leader for "projects".

## 4.0 APPLICATION

The PSSR policy applies to any new facilities or modifications to existing facilities. It applies to all chemical processes at the Aberdeen Plant (e.g. Compound is included). Modifications to existing facilities are "changes" and subject to the provisions of both Management of Change and PSSR. This includes both capital projects and work order changes.

## 5.0 PSSR TEAM

5.0.1 Prior to start-up, a PSSR Team shall be formed to conduct the PSSR. Representatives from Operations, Safety, Maintenance, and Engineering departments should be selected for participation on the PSSR Team as appropriate. The Team make-up should be appropriate for the size and complexity of the PSSR to be conducted. Initiators of the "change" or members of the PHA team for the "project" or "change" should be considered for participation on the PSSR Team. The Department Head over the "project" or "change" is responsible for defining which Departments need to be represented on the Team. The PSSR may be conducted by an individual on simple "projects" or "changes" with approval from the appropriate Department Head.

5.0.2 A PSSR Team Leader shall be designated for each PSSR by the Department Head over the "project" or "change". On "projects", the Project Engineer will normally be the PSSR Team Leader. The PSSR Team Leader will be responsible for contacting appropriate Department Heads and requesting other members for the PSSR Team. The PSSR Team Leader is responsible for ensuring all documentation (e.g. construction check sheets, etc.) is in-place and ready for review by the PSSR Team.

5.0.3 It is the responsibility of the PSSR Team to conduct the PSSR in accordance with this policy and present the PSSR results to the appropriate Department Superintendent.

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## 6.0 PSSR PROCEDURE

The documentation requirements listed in items 6.1 through 6.3 below apply to "projects" only. The required documentation for the PSSR for "changes" is filling out Attachment "B", the "PSSR FOR CHANGES CHECKLIST".

## 6.1 CONSTRUCTION REVIEW

The Team will review the construction check sheets to verify all work is complete. During construction and prior to the PSSR, the PSSR Team Leader will document the progress of the construction. Attachment "A" is a sample check sheet to aid in the documentation during construction. The PSSR Team Leader is responsible for adding to or deleting from the sheet as needed, so all critical information is provided to the PSSR Team.

## 6.2 PHYSICAL HAZARD REVIEW

The PSSR Team will identify physical hazards at the construction site. Physical hazards are items such as tripping hazards, sharp objects, head clearances, etc. Attachment "C" is a guideline to be used in this physical hazard review for "projects". The PSSR Team Leader is responsible for adding to or deleting from the list as necessary.

## 6.3 ADMINISTRATIVE CHECKLIST

Attachment "D", the "Administrative Checklist", should be filled out to document the following for "projects":

## 6.3.1 OPERATING, MAINTENANCE AND EMERGENCY PROCEDURES

The PSSR Team shall verify the following procedures are in place prior to startup of the facility:

6.3.1.1 Operating procedures as required in the Aberdeen Plant Operating Procedure Development and Control Policy.

6.3.1.2 Maintenance procedures including both preventative and routine maintenance as appropriate for equipment in the facility.

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6.3.1.4 Emergency response procedures as applicable.

6.3.2 PROCESS HAZARDS ANALYSIS AND MANAGEMENT OF CHANGE

The PSSR Team shall ensure that a Process Hazards Analysis (PHA) has been conducted and that all recommendations resulting from the PHA have been addressed. The Team shall also verify that the modifications have been made in accordance with Management of Change provisions.

6.3.3 TRAINING

The team shall verify that appropriate training has been conducted for operations personnel associated with the facility. Documentation of training shall be available which certifies that operations personnel understood the training received.

6.4 PSSR CHECKLIST FOR CHANGES

Attachment "B" is the "PSSR Checklist for Changes". The checklist shall be filled out for all "changes" as defined in the Aberdeen Plant Management of Change Procedure. This list encompasses the requirements listed in sections 6.1 through 6.3 above in an abbreviated format.

6.5 RECOMMENDATIONS

After completion of the PSSR, a list of recommended actions shall be generated by the PSSR Team. The list of recommendations shall be generated for all PSSRs ("projects" and "changes"). Each recommendation will be classified as either "critical" (C) or "non-critical" (N). All "critical" items must be corrected prior to start-up of the facility.

7.0 REPORTING

A PSSR Report shall be submitted to the appropriate Department Superintendent for approval upon completion of the PSSR. The report shall be filled out for all PSSRs ("projects and "changes") and should document that a PSSR has been completed for the facility

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in accordance with this policy. The PSSR Team Leader has the responsibility for writing and issuing the report. The report should include the following information:

7.1 A list of recommendations.

7.2 Assignment of priority (either "C" or "N") for each recommendation.

7.3 A reference to the appropriate code, policy, etc. (if applicable) for each recommendation.

7.4 Assignment of individual responsibilities for each recommendation.

7.5 Target completion dates for each "C" item and scheduled completion dates for all "N" items.

7.6 Non-critical items may be accepted without correction with written approval from the appropriate Department Superintendent.

The appropriate Department Superintendent and the Safety Director have the authority for approval of the PSSR report. Attachment "E" is an example PSSR Report form.

## 8.0 STARTUP AUTHORIZATION

Prior to startup, a Startup Authorization Statement shall be prepared by the PSSR Team Leader which certifies that all critical items have been corrected. **The Startup Authorization Statement shall be completed for all PSSRs ("projects" and "changes").** Approval for start-up will be authorized by the appropriate Department Superintendent. Attachment "F" is an example Startup Authorization Statement Form.

## 9.0 DOCUMENTATION

The approved PSSR Report and Startup Authorization Statement shall be maintained in the PSM files for the life of the facility. The PSSR Team Leader is responsible for filing this report in the PSM Files.

Pre-Startup  
Safety Review

Attachment "A"

Issue Date:  
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### CONSTRUCTION CHECKLIST

PROJECT TITLE: \_\_\_\_\_  
 AFE #: \_\_\_\_\_ WO#: \_\_\_\_\_  
 PROJECT ENGINEER: \_\_\_\_\_  
 PROCESS ENGINEER: \_\_\_\_\_

| TASK | DATE | PERFORMED BY: |
|------|------|---------------|
|------|------|---------------|

**MASTER P&ID'S UPDATED:**

|                  |       |       |
|------------------|-------|-------|
| PROJECT ENGINEER | _____ | _____ |
| PROCESS ENGINEER | _____ | _____ |

**PIPING SYSTEMS:**

LINE NUMBER: \_\_\_\_\_

**PRESSURE TEST PIPE:**

MEDIUM: \_\_\_\_\_  
 @ \_\_\_\_\_ FOR \_\_\_\_\_

NO. X-RAYS REQ'D: \_\_\_\_\_

(ATTACH RESULTS) \_\_\_\_\_

PIPE FLUSHED/TREATED: \_\_\_\_\_

TREATED WITH: \_\_\_\_\_

**UNDERGROUND PIPE JEEPED:**

|                               |       |       |
|-------------------------------|-------|-------|
| # CATHODES INSTALLED: _____ : | _____ | _____ |
| INSULATING FLANGES INSTALLED: | _____ | _____ |

**SERVICE TEST STEAM TRACING:**

MEDIUM: \_\_\_\_\_  
 @ \_\_\_\_\_ FOR \_\_\_\_\_

**VINYL UNIT ONLY:** ANY BLEEDER INSTALLED ON A LINE OR VESSEL  
 CONTAINING VCM WILL BE REPORTED TO THE  
 ABERDEEN ENVIRONMENTAL COORDINATOR FOR NESHAPS  
 LIST.

NO. OF VALVES REPORTED: \_\_\_\_\_

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**ATMOSPHERIC AND PRESSURE VESSELS :**

| EQUIPMENT | DATE | PERFORMED BY: |
|-----------|------|---------------|
|-----------|------|---------------|

EQUIPMENT NUMBER \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_

SHOP VESSEL INSPECTION REQ'D:  
YES/NO/NA \_\_\_\_\_

VESSEL DOCUMENTATION: (BY MANUF.) \_\_\_\_\_  
AVAILABLE FOR REVIEW IN EQUIPMENT FILES:

|                                |           |
|--------------------------------|-----------|
| CALCULATIONS                   | YES/NO/NA |
| WELDER QUALIFICATION VERIFIED  | YES/NO    |
| CERTIFIED DWGS                 | YES/NO/NA |
| ASME FORM (U, R, OR A)         | YES/NO/NA |
| X-RAYS PROVIDED PER CODE       | YES/NO/NA |
| MTL DATA SHEETS                | YES/NO/NA |
| LINING OR PAINT SPECIFICATIONS | YES/NO/NA |
| STRESS RELIEVING               | YES/NO/NA |

IF NO TO ANY ABOVE, WHY? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MARK ITEM TESTED:**

(EXCHANGER SHELL SIDE, VESSEL)

PRESSURE TEST:

MEDIUM: \_\_\_\_\_

@ \_\_\_\_\_ FOR \_\_\_\_\_

FLUSHED/TREATED: \_\_\_\_\_

(EXCHANGER TUBE SIDE, VESSEL JACKET)

PRESSURE TEST:

MEDIUM: \_\_\_\_\_

@ \_\_\_\_\_ FOR \_\_\_\_\_

VESSEL FLUSHED/TREATED: \_\_\_\_\_

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**SAFETY SYSTEMS:**

**RELIEF VALVE:**

EQUIPMENT NUMBER \_\_\_\_\_ SET PRESSURE \_\_\_\_\_  
RELIEF COLOR CODED FOR PM: 1992 (1997) GREEN  
(CIRCLE ONE USED) 1993 (1998) YELLOW  
1994 (1999) RED  
1995 (2000) ORANGE  
1996 (2001) BLUE

DOCUMENTATION ON FILE-AVAILABLE FOR REVIEW IN EQUIPMENT FILE.

**RUPTURE DISC BURST PRESSURE:** \_\_\_\_\_

LOT NUMBER: \_\_\_\_\_

| UNIT PROTECTED | DATE | PERFORMED BY: |
|----------------|------|---------------|
|----------------|------|---------------|

ALARM SYSTEM TESTED:

\_\_\_\_\_

FIRE PROTECTION SYSTEM TESTED:

TYPE: \_\_\_\_\_

\_\_\_\_\_

TEST DESCRIPTION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

APPROVALS AND WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Attachment "A"

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**MECHANICAL EQUIPMENT:**

| EQUIPMENT | DATE | PERFORMED BY: |
|-----------|------|---------------|
|-----------|------|---------------|

EQUIPMENT NUMBER: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

ALIGNMENT: \_\_\_\_\_

LUBRICATION USED: \_\_\_\_\_

CORRECT ROTATION: \_\_\_\_\_

SEAL FLUID USED: \_\_\_\_\_

VIBRATION CHECK: \_\_\_\_\_

BUILDING PRESSURIZATION CHECK: \_\_\_\_\_

(ATTACH TEST WITH WITNESSES)

**OVERHEAD CRANE HOIST:**

ATTACH CERTIFICATION AND IDENTIFY FOR MONTHLY TESTING WITH  
TOOL ROOM MECHANIC. ATTACH COPY OF CERTIFICATION AND TOOL  
ROOM IDENTIFICATION NUMBER FOR FUTURE REFERENCE. YES/NO/NA

**CIVIL/STRUCTURAL:**

ATTACH REFERENCE FOR SOIL TESTS PERFORMED YES/NO/NA  
(FILED WITH CONTRACT SUPERVISOR)

UNDERGROUND DRAWINGS UPDATED YES/NO/NA

DESIGN OF CONCRETE/STEEL IN PROJECT FILE YES/NO/NA

MONORAILS ARE TO BE ENTERED INTO VMS SYSTEM AND  
CALCULATIONS FILED IN DRAWING ROOM. YES/NO/NA

**BUILDINGS:**

DOORS AND WINDOWS HUNG TO AVOID PROJECTING INTO YES/NO/NA  
OR BLOCKING WALKWAYS OR EXITS

ELEVATORS EQUIPPED WITH SHAFT-WAY DOOR INTERLOCKS  
YES/NO/NA

AND CAR GATES CONTACTS

**ELECTRICAL:**

POSITIVE ELECTRICAL POWER DISCONNECTS INSTALLED AND YES/NO/NA  
CHECKED FOR LOCKOUT PURPOSES

RED CONCRETE FOR UNDERGROUND ELECTRICAL YES/NO/NA

ELECTRICAL CLASSIFICATION OF UNIT UNDER CONSTRUCTION \_\_\_\_\_

MOTORS: \_\_\_\_\_

INSTRUMENTATION: \_\_\_\_\_

OTHER: \_\_\_\_\_

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INSTRUMENTATION CALIBRATION, CHECK OUT AND OTHER ACTIVITIES THAT APPLY TO CONSTRUCTION, INSTALLATION AND PRE-START UP CHECKS WILL BE RECORDED ON THE LOOP DIAGRAM SHEET. STAMPS WILL BE AVAILABLE IN THE DESIGN DEPARTMENT SIGNALLING NECESSARY CHECKS. THE PARTY RESPONSIBLE FOR CONSTRUCTION WILL GENERATE THE LOOP DIAGRAM LIST. AFFECTED IN ANY WAY BY THE CHANGE. THE PSSR TEAM WILL VERIFY LOOP CHECK OUT SIGNATURES ON LOOP DRAWINGS FOR COMPLETENESS. ELECTRIC TRACING WILL BE CHECKED IN THE SAME MANNER PRIOR TO INSULATION.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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Attachment "B"

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PSSR CHECKLIST FOR CHANGES

- |                                                                                                 |           |
|-------------------------------------------------------------------------------------------------|-----------|
| 1. Is the equipment installed properly?                                                         | YES/NO/NA |
| 2. Is the area of the change free of physical hazards (e.g. head clearance, sharp edges, etc.)? | YES/NO/NA |
| 3. Has a Process Hazard Analysis been performed and all identified hazards addressed?           | YES/NO/NA |
| 4. Has a MOCA form been filled out and all the requirements of the MOCA met?                    | YES/NO/NA |
| 5. Are operating, maintenance, and emergency procedures in place?                               | YES/NO/NA |
| 6. Is operator training complete and documented for the change?                                 | YES/NO/NA |

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Attachment "C"

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### PHYSICAL HAZARD REVIEW SAMPLE GUIDELINE

#### A. Project Documentation

1. Is construction document provided by Project Engineer (PSSR Team Leader) complete?
2. Do project P&ID's show actual construction (in arrangement and pipe specifications)?
3. DCS documentation complete?

#### B. Project Site Location

1. Is there adequate access for emergency vehicles?
2. Can access roads be blocked by railroads or road congestion?

#### C. Buildings and Structures

1. Are sufficient general exit and escape routes available?  
Are means of escape from roofs provided?
2. Is adequate lighting provided?
3. Is structural steel grounded?
4. Are structural steel bases grouted?
5. Grating fastened or welded down?
6. Toe Boards in place? Handrails per Vista standard?

#### D. Operating Areas

1. Are equipment, steam, water, air, and electric outlets arranged to keep aisles and operating floor areas clear of hoses, and cables?
2. Utility station properly labeled? Correct utility hose connections?
3. Is ventilation furnished for hazardous fumes, vapors, dust, and excessive heat?

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**PHYSICAL HAZARD REVIEW SAMPLE GUIDELINE (cont.)**

4. Are pressure relief discharges routed properly? Is there a 1/4" drain hole for pipe discharges to atmosphere?
5. Do platforms provide adequate clearance for safe maintenance of equipment? Forklifts, jibs, etc.
6. Do ladders/steps meet Vista specification?
7. Are nozzles and manholes sized and located for safe clean out, maintenance operations, and emergency removal of people from vessels?
8. Is protection provided to protect against contact with hot surfaces? Is insulation completed properly with sharp edges trimmed, wires removed and metal strips in place? Does pipe insulation seam run on bottom of horizontal pipe?
9. Is head clearance adequate in walkway and working areas?
10. Is power driven equipment adequately guarded?
11. Are manually operated valves, switches, and other controls accessible to the operator from a safe location?
12. Pinch points of valve handle and pipe, handrail, structure or other? Do valve stems extend into walkway or work area?
13. Are vents and drains located so they discharge safely?
14. Are hoists equipped with safety hooks?
15. Are monorails labeled for maximum load and equipped with safety stops?
16. Are emergency showers and eye baths provided and functional?
17. Is hearing protection required? Are additional signs needed?

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**PHYSICAL HAZARD REVIEW SAMPLE GUIDELINE (cont.)**

18. Has a safe storage and dispensing location for flammable liquid drums been provided?
19. Are additional fire extinguishers needed? Are extinguishers marked?
20. Are additional SCBA's needed? Are SCBA's clearly marked?
21. Are there at least two exits from hazardous work?
22. Is there safe exit from manufacturing offices or laboratories?
23. Are exits marked?
24. Can electrical equipment be locked out?
25. Is equipment grounded?
26. Conduit poured and sealed? Junction boxes closed and conduits plugged?
27. Verify maximum allowable working pressure for vessels are not exceeded by relief valve/rupture disc set pressure.
28. Are start-up strainers in place?
29. Are brass identification tags on equipment? Do location tags match P&ID drawings?
30. Vinyl bleeders plugged and painted?
31. Does system have fire protection system in place?
32. Area drainage adequate? Proper curbing? Tripping hazards painted safety yellow?
33. Do drains run to correct sewer (storm vs. process)?

**E. YARD**

1. Are flammable liquid tank car and truck loading and unloading docks grounded?
2. Are safe means provided for access to work areas of tank cars and trucks?

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**PHYSICAL HAZARD REVIEW SAMPLE GUIDELINE (cont.)**

3. Is protection against falling furnished for employees who work on tops of rail cars and trucks?
4. Is safe access provided to tops of storage tanks on which persons go for contents measurement and vent maintenance?
5. Derail flags installed? Other safety devices in place?

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Attachment "D"

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**ADMINISTRATIVE CHECKLIST**

1. Have MOC provisions (MOCA Section B) been met? YES/NO/NA
2. Has a PHA been performed and all identified hazards addressed? YES/NO/NA
3. Are operating procedures updated and in-place? YES/NO/NA
4. Are maintenance procedures updated and in-place? YES/NO/NA
5. Is operator training complete and documented? YES/NO/NA
6. Are emergency response procedures updated (as required) in-place? YES/NO/NA

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Attachment "E"

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PRE -STARTUP SAFETY REVIEW REPORT

FACILITY \_\_\_\_\_

DATE \_\_\_\_\_

TEAM MEMBERS \_\_\_\_\_

| NO. | RECOMMENDATION | PRIORITY | SCH. COMP. | RESP | REF. |
|-----|----------------|----------|------------|------|------|
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |
|     |                |          |            |      |      |

RECOMMENDED: (PSSR TEAM) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

APPROVAL:

\_\_\_\_\_  
Department Supt.

\_\_\_\_\_  
Safety Director

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**START-UP AUTHORIZATION FORM**

Project: \_\_\_\_\_

Date: \_\_\_\_\_ MOCA No. \_\_\_\_\_

I certify that all "critical" items identified in the Pre-Startup Safety Review (attach list of PSSR items to this form) have been completed and the facility is ready for start-up:

Recommended: \_\_\_\_\_  
PSSR Team Leader

\_\_\_\_\_  
Title

Approved: \_\_\_\_\_  
Department Superintendent

\_\_\_\_\_  
Title