

ABERDEEN CHEMICAL PLANT

SAFETY SYSTEMS REVIEW

1/29/87

Review Item	Concerns	Action Completed/Planned
Propane System - Tanks & Vaporizers	✓ 1) Electrical equipment not explosion proof & instr. revisions needed. 2) Material of construction of transfer pumps. ✓ 3) Remote S/D capabilities ✓ 4) Full port sight glass in unloading system. ✓ 5) Absence of leak detection system in sphere and boiler area. 6) Use of direct fired vaporizers as backup The direct fired vaporizers are for emergency use only and appropriate safety revisions must be made before use. ✓ 7) Guardposts protecting unloading station & pump pad.	1) AFE written & approved. Estimated project completion is 5/1/87. (TFL) 2) Transfer pumps are ductile iron which are acceptable. 3) Class "A" design complete, to be AFE'd in 3rd Quarter Fiscal 1987 AFE Proj. 4) Eliminated sight glass but retained flow indication. (Gate w/external lever which rotates with gate.) (JME). 5) Design complete. Installed and operational by 2/27/87 in sphere & boiler area. (TFL) 6) Having another natural gas supplier will eliminate the need for the direct fired vaporizers. 7) Included in Class "A" design (Item 3). Will be installed by 2/15/87. (TFL)
Catalyst Freezers	1) Instrumentation PM needed 2) Back-up temp. indication. 3) Monitoring by operations. 4) Emergency plan does not exist for freezer failures. ✓ 5) Extended power outage.	1) Up to date except will start yearly control system P.M. & calibration (I-E supv). 2) Installed & operational in little freezers. (DWH) 3) A-operator log sheets have been revised and are being typed. 1/30/87. (DWH) 4) P. Engineering will investigate. Complete by 4/87 (MLN). 5) AFE approved. Started mechanical design in October, 1986. Installed & operational by 2/27/87. (REP)

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Bleeder Valve Program	1) Program not up-to-date	1) Program is up-to-date but the surveys are not. Plan & surveys up-to date by 3/87. (MLN)
Emergency/Disaster Plan	1) Plant Preparedness 2) Community Awareness	1 & 2) Plant emergency plan Revision is complete. Community Awareness plan in progress. (JVU)
Power Failure Procedures	OK 1) PM of AMS system valves and instrumentation 2) Emergency generator PM 3) Reactor T/P chart drives not on emergency power. 4) Fire pump run lights. 5) Instrument air pressure indicators not on emergency power 6) Reactor mechanical seal integrity 7) Emergency Equipment - Diesel supply. 8) Operator training on reactor mechanical seal power failure procedures.	1) PM determined adequate. See attached Preventive Maintenance sheet from 10/30/86 meeting. 2) Same as Number 1. 3) Estimated project completion (installed and operational) is 2/15/87. 4) Installed & operational. 5) Estimated project completion is 2/15/87. 6) Bladders in both reactor modules are installed and operational. 7) Class "A" design was issued in Sept. Installed & oper. by 4/87 (JGC). 8) Training is complete. (JME)
VCM Sphere/Unloading Area	✓ 1) Need to "mothball" bullets 2) PM on unloading compressor shutdown instrumentation (temp & pressure switches). 3) Compressor belt drive PM ✓ 4) Development of effective railcar chock	1) Vapor phase corrosion inhibitor has been injected to complete mothball plans. (TFL) 2) Annual PM and documentation of pressure and temp. switches is planned. See attached P.M. sheet from 10/30/86 meeting. 3) A monthly check of belt tightness will be made and documented. See attached P.M. sheet from 10/30/86 meeting. 4) Completed and implemented.

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Review Item	Concerns	Action Completed/Planned
VCM Sphere/Unloading Area (Continued)	5) Grounding system upgrade 6) Routine inspection of sphere transfer pumps and of the tandem seals required. 7) Sphere transfer pump cavitation problem may cause pump failure. ✓ 8) Remote operated valve installation and instrumentation. ✓ 9) Firewater supply to railcars may be inadequate. ✓ 10) Redundant level & pressure alarms for sphere should be pursued. 11) Drain valve on dike area left cracked.	5) Grounding bolts in plant/to be installed as 2nd Qtr. 1987 maintenance budget item. (DAM) 6) On chief operators checklist (Once/shift). (DWH) 7) Under evaluation by Process Engineering. Will be complete by 4/87. (MLN). 8) This project is part of other Remote Operated Valve project. Waiting for VCM sphere shutdown. Installed & operational by 4/87. (FGJ) 9) Determined inadequate. 4th Fiscal Qtr 1987 Budget Item. (JGC) 10) Part of remote operated valve project Installed by 4/87. (FGJ). 11) Under evaluation by EBB. Project complete by 3/87.
Fire Training	1) Maintenance involvement	1) Personnel have been trained and instructed in their role in a fire. (AHS).
Mechanical Seal Systems	✓ 1) Reactor seal failures prevalent 2) Training on reactor seals 3) Routine inspection of mechanical seals in VCM service may be inadequate	1) Program to reduce seal failures ongoing. Status reports being issued. Status report of 7/17/86 latest update. JME following up. 2) Complete 3) The "A" operator check list has been revised to include routine inspection of mechanical seals in VCM service due to Subpart V of the new EPA regulations. (JGC & JME)

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Review Item	Concerns	Action Completed/Planned
Relief Valve PM Reactors ✓	1) Need maintenance procedures for relief valves 2) Relief Valve PM Program implementation and the relief valve project.	1) Issued Maintenance PM program. (TFL) 2) The relief valve project has been completed on 4 of the 10 reactors. Minor changes to complete the project on the other 6 reactors will be complete by 2/87. (TFL)
Relief Valve PM-Non Reactor	1) Need Non-Reactor Program	1) Non-reactor relief valves in both reactor modules were serviced during the August and October shutdown. Plans underway to routinely service all non-reactor relief valves. Plans will be complete by 12/87. (DAM).
Fixed Point Monitor	1) Line pluggage/leakage may give erroneous results.	1) Plans to check all 40 points once/year. See attached sheet from 10/30/86 P.M. Meeting.
P-1 PA Tank	1) Tank may be unsafe due to tank condition and/or support. 2) PA fluff from tank exposure and environmental problem.	1) Preliminary thickness testing on the vessel was favorable. Further testing will be incorporated in the Pthalic Anhydride Fluff Containment project (3rd Fiscal Qtr. budget item). (TFL) 2) Class "A" design (revised) is complete & issued. 3rd Qtr. 1987 Cap. Budget item.
Safety Systems PM (attached)	1) Are listed items still being completed.	1) Process Engineering will monitor program and establish the routines.
Gas Detectors in Dryer Area ✓	1) Dryer Detectors not operational.	1) Have been installed. Will be operational by end of 2/15/87. (SKG).
Infrared Surveys of Electrical Equipment	1) Yearly survey	1) Documentation is up to date. Cover letter of each survey to be sent to Process Engineering. (I & E Supv.)

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Review Item	Concerns	Action Completed/Planned
Ammonia System ✓	1) Annual inspection and RV check 2) Written Safety program for unloading trucks. 3) Leak patrol	1) Annual inspection will be started in 1987. R.V. will be on 5 year program. See attached sheet from 10/30/86 P.M. Meeting. 2) The new unloading procedure is still under review. Utility supv. will take care of unloading. (TFL) 3) Will find a detection technique and survey procedure by 3/1/87. See attached sheet from 10/30/86 P.M. Meeting. (TFL)
Remote Operated Valve Project	1) Project Completion	1) Old module valve installation 70% complete. System to be completed Jan, 1987. New module valve installation is 70% complete. Systems to be completed by April 4, 1987. (FGJ)
Sulfuric Acid System	1) Procedure on unloading 2) Training on unloading procedures.	1) Unloading procedure was issued 11/13/86. (DWH) 2) Training has been completed. (DWH)
Chlorine Cylinders	✓ 1) Training on use of leak repair kit. ✓ 2) Operator training on cylinder handling.	1) Training has been completed. 2) Training complete on all utility operators except for one new hire. New hire will be trained by April 1, 1987. (MHL)
Indications	✓ 1) Compliance plan limit switches 2) 1986 limit switch project 3) 1987 limit switch project	1) Project installed & operational. 2) 46 of 46 limit switches are installed and operational which completes the project. (FGJ). 3) Class "A" design completed. Sent to Mechanical. (4th Qtr. 1987 Cap. Budget project.) (FGJ).

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Review Item	Concerns	Action Completed/Planned
Portable Gas Detectors	1) Quality of repair inconsistent 2) Water condensation on detection head. 3) Test procedure. 4) PM is done weekly.	1) 2 training sessions have enhanced repair quality. 2) Solved using ambient temp. charging cabinet. 3) Operations has been provided w/HNU test procedure. (TFL) 4) Process Engineer will get weekly HNU PM report.
VCM Piping	✓ 1) Guardposts to Protect VCM Piping; concrete west side of road passing w/curb. 2) Protection against overturned railcar.	1) Complete 2) 3rd & 4th rail required/planned. Funded in maintenance budget. Installed in May, 1987. (DAM)
I & E Alarm and Shutdown Interlock PM Program ✓	1) Boilers - complete once/year 2) Incinerators - complete twice/year 3) Emergency kill system twice/year 4) Catalyst freezers annually 5) Vinyl dryers once/year. (rotary & fluid bed) 6) Propane vaporizers once/year 7) Inert gas generator once/year 8) Reactor instrumentation	1) Up to date. 2) Will start a semi-annual inspection. (April & October) and document it. (I & E supv.). 3) See attached sheet of 10/30/86 PM meeting. 4) See attached sheet of 10/30/86 PM meeting. 5) Burner management systems will be done annually & documented. (I & E Supv.) 6) Will be documented. P.M. done currently. 7) P.M. sheet will be generated & P.M. will be done every spring and documented. (TFL) 8) Pressure alarms checked once/year and when reactors opened. Temperature system will be checked once/year during shutdown & will be calibrated and documented.

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Review Item	Concerns	Action Completed/Planned
Incinerators	1) PM program to check internals of liquid seal flame arrestor. 2) Refresher training program. 3) Revise and update incinerator log sheet.	1) See attached sheet from 10/30/86 P.M. Meeting. 2) Complete by 4/87. 3) Complete.

PREVENTIVE MAINTENANCE CONCERNS
AND SOLUTIONS FROM 1/29/87 MEETING

Review Item	Existing P.M.	Action Completed/Planned
<u>CATALYST FREEZERS</u>		
1) Big Freezers	1) Refrigeration system checked weekly. Controllers checked only if W.O. written.	1) Will start yearly control system P.M. and calibration, and document. (TFL)
2) Chest Freezers	2) Checked on shutdown basis only.	2) No action needed.
<u>POWER FAILURES</u>		
1) AMS Kill System	1) Annual P.M. of entire system during module shutdowns. Operations checks pot alarms when any reactor is shut down. Operations also checks the valves weekly.	1) No further action is planned.
2) Emergency Generators	2) Large generator is run weekly by operations. Maintenance does monthly PM & instrumenta- tion P.M.	2) No further action us planned.
<u>VCM SPHERE/UNLOADING AREA</u>		
1) Unloading Compressor	1) No up to date documented P.M.	1) Annual P.M. and documentation on all pressure & temperature switches is planned. (I & E Supv.)
2) T-201 Pressure Switch	2) Done annually, not documented.	2) Will be documented.
3) Compressor Belt Drive P.M.	3) None -	3) A monthly check will be made for belt tightness, and it will be documented. (TFL).
<u>FIXED POINT MONITORS</u>		
1) 40 Fixed Point Monitors	1) Only checked if a problem is discovered.	1) Will check all 40 once/year and document (1 GC/quarter). (TFL)

PREVENTIVE MAINTENANCE CONCERNS
AND SOLUTIONS FROM 1/29/87 MEETING

Review Item	Existing P.M.	Action Completed/Planned
<u>AMMONIA SYSTEM</u>		
1) Annual inspection.	1) None-	1) Annual inspection will be generated by 1/1/87. (TFL)
2) R.V.	2) None-	2) R.V. will be put on 5 year program.
3) Leak Survey	3) None-	3) Will find a detection technique and survey procedure by 3/1/87. (TFL)
<u>INCINERATORS</u>		
1) Liquid Seal Flame Arrestor	1) None-	1) Check and document baffle integrity once/year. (TFL)