

ABERDEEN CHEMICAL PLANT
SAFETY SYSTEMS REVIEW
SEPTEMBER 1, 1987

Terry
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Review Item	Concerns	Action	Date	Resp
Propane System-Tanks and Vaporizers	1) Electrical equipment not explosion proof & instrument revisions needed.	1) Project 85% complete. Existing sequencer obsolete so ordering new one.	12/31/87	TFL
	2) Material of construction of transfer pumps.	2) Transfer pumps are ductile iron which are acceptable.	02/03/87	TFL
	3) Remote shutdown capabilities.	3) AFE approved June 11. Nov. 15, 1987 startup time.	11/15/87	TFL
	4) Full port sight glass in unloading system.	4) Eliminated sight glass but retained flow indication. (Gate with external lever which rotates with the gate).	02/03/87	JME
	5) Absence of leak detection system in sphere and boiler area.	5) Project complete and operational.	08/12/87	TFL
	6) Use of the direct fired vaporizers as backup. The direct fired vaporizers are for emergency use only and appropriate safety revisions must be made before use.	6) Having another natural gas supplier will eliminate the need for the direct fired vaporizers.	/ /	JWW
	7) Guardposts protecting the unloading station and pump pad.	7) Project complete and operational.	08/12/87	TFL
Catalyst Freezers	1) Instrumentation PM needed.	1) Up to date except will start yearly control system PM and calibration (I-E supv.). To be done during August and October shutdowns.	/ /	TFL
	2) Backup temperature indication.	2) Installed and operational in little freezers.	02/03/87	DWH
	3) Monitoring by operations.	3) A-operator logsheets have been revised and are being used.	08/20/87	DWH
	4) Emergency plan does not exist for freezer failures.	4) P. Engineering will investigate.	09/30/87	MLN
	5) Extended power outage.	5) Project complete and operational.	08/12/87	TFL
Bleeder Valve Program	1) Program not up to date.	1) Program is up to date but the surveys are not. Plan and surveys up to date by 9/87.	09/28/87	MLN
Emergency/Disaster Plan	1) Plant preparedness.	1) Plant emergency plan revision is complete. Community awareness Plan in progress.	12/31/87	KLF
Emergency/Disaster Plan	2) Community Awareness	2) Community awareness plan is in progress.	12/31/87	KLF
Power Failure Procedures	1) PM of AMS system valves and instrumentation.	1) PM determined adequate. See attached PM sheet from 01/29/87 meeting.	01/29/87	TFL

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VCM Sphere/Unloading Area	2) Emergency generator PM.	2) Same as number one.	01/29/87	TFL
	3) Reactor T/P chart drives not on emergency power.	3) Installed - will be operational with new module shutdown in September.	12/31/87	SKG
	4) Fire pump run lights.	4) Installed and operational.	02/03/87	REP
	5) Instrument air pressure indicators not on emergency power.	5) Have requested funding for additional 120V supply. No spare 110V available.	12/31/87	REP
	6) Reactor mechanical seal integrity.	6) Bladders in both reactor modules are installed and operational.	02/03/87	JME
	7) Emergency equipment - diesel supply.	7) Estimate complete by 8-31.	08/31/87	REP
	8) Operator training on reactor mechanical seal power failure procedures.	8) Training is complete.	02/03/87	JME
	1) Need to "mothball" bullets.	1) Vapor phase corrosion inhibitor has been injected to complete mothball plans.	02/03/87	TFL
	2) PM on unloading compressor shutdown instrumentation (temperature & pressure switches).	2) Annual PM and documentation of pressure and temperature switches is planned. See attached PM sheet from 01/29/87 meeting.	/ /	TFL
	3) Compressor belt drive PM.	3) A monthly check of belt tightness will be made and documented. See attached PM sheet from 01/29/87 meeting.	/ /	TFL
	4) Development of effective railcar chock.	4) Completed and implemented.	02/03/87	TFL
	5) Grounding system upgrade.	5) Grounding bolts in plant to be installed as 2nd quarter 1987 maintenance budget item. Project to be complete 9-87.	09/30/87	DAM
	6) Routine inspection of sphere transfer pumps and of the tandem seals required.	6) On chief operators checklist (once/shift).	02/03/87	DWH
	7) Sphere pump cavitation problem may cause pump failure.	7) Under evaluation by process engineering. To be complete 8-87.	08/30/87	MLN
	8) Remote operated valve installation and instrumentation.	8) This project is part of the other Remote Operated Valve Project. Waiting for VCM sphere shutdown. Installed & operational by 9-87.	09/30/87	FGJ
	9) Firewater supply to railcars may be inadequate.	9) Determined inadequate. 4th fiscal quarter 1987 budget item.	/ /	JGC

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	10) Redundant level & pressure alarms for the sphere should be pursued.	10) Part of remote operated valve project. Installed by 9/87.	09/28/87	TFL
	11) Drain valve on dike area left cracked.	11) Under evaluation by EBB. Project complete by 9/87.	09/28/87	MLN
	12) Eliminate bullseyes in unloading lines.	12) Process Engineering investigating. A trial device has been purchased. Estimated project completion 12-87.	12/31/87	MLN
Fire Training	1) Maintenance involvement.	1) Personnel have been trained and instructed on their role in a fire.	02/03/87	KLF
Mechanical Seal Systems	1) Reactor seal failures prevalent.	1) Program to reduce seal failures ongoing. Status report of 7/17/86 latest update. JME following up.	08/13/87	JME
	2) Training on reactor seals.	2) Complete.	02/03/87	JME
	3) Routine inspection of mechanical seals in VCM service may be inadequate.	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. (J6C & JME)	02/03/87	J6C
Reactor Relief Valve PM	1) Need maintenance procedures for relief valves.	1) Issued maintenance PM program.	02/03/87	TFL
	2) Relief valve PM program implementation and the relief valve project.	2) The relief valve project has been completed on the 10 reactors.	08/13/87	TFL
Non-Reactor Relief Valve PM	1) Need non-reactor relief valve program.	1) Non-reactor relief valves in both reactor modules were serviced during the 8/86 & 9/86 shutdowns. Plans are underway to routinely service all non-reactor relief valves. To be complete 12/87.	12/31/87	DAM
Fixed Point Monitors	1) Line pluggage/leakage may give erroneous results.	1) Plans to check all 40 points once/year. See attached sheet from 01/29/87 PM meeting.	/ /	TFL
P-1 PA Tank	1) Tank may be unsafe due to tank condition and/or support.	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) PA fluff from tank -exposure and enviromental problem.	2) Class "A" design (revised) is complete & issued. (3rd Fiscal Qtr.budget item).	/ /	TFL

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Safety Systems PM (attached)	1) Are listed items still being completed.	1) Process Engineering will monitor program and establish the routines. EBB is in the process of putting the information in the computer for easier access and documentation.	09/12/87	EBB
Gas Detectors in the Dryer Area	1) Dryer detectors not operational.	1) Detectors have been installed. Mechanical will talk to operations to decide when to make operational.	/ /	REP
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.)	/ /	TFL
Ammonia System	1) Annual inspection and relief valve check.	1) Annual inspection will be started in 1987. R.V. will be on a five year program. See attached sheet from 01/29/87 PM meeting.	/ /	TFL
	2) Written safety program for unloading trucks.	2) The new unloading procedure is still under review. Utility supv. will take care of unloading.	/ /	TFL
	3) Leak patrol.	3) A detection technique and survey procedure are being investigated See attached sheet from 10/30/86 PM meeting.	/ /	TFL
Remote Operated Valve Project	1) Project Completion.	1) Systems to be complete by 9-87.	09/30/87	TFL
Sulfuric Acid Systems	1) Procedure on unloading.	1) Unloading procedure was issued 11/13/86.	11/13/86	DWH
	2) Training on unloading procedures.	2) Training has been completed.	02/03/87	DWH
Chlorine Cylinders	1) Training on use of leak repair kit.	1) Training has been completed.	02/03/87	TFL
	2) Operator training on cylinder handling.	2) Training has been completed.	09/01/87	MHW
Valve Indications	1) Compliance plan limit switches.	1) Project installed and operational.	02/03/87	TFL
	2) 1986 limit switch project.	2) 46 of 46 limit switches are installed and operational which completes this project.	02/03/87	TFL
	3) 1987 limit switch project.	3) Class "A" design completed. Sent to mechanical. (2nd Qtr. 1988 budget project).	/ /	TFL
Portable Gas Detectors	1) Quality of repair inconsistent.	1) 2 training sessions have enhanced the repair quality.	02/03/87	TFL

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VCM Piping	2) Water condensation on the detection head.	2) Solved using ambient temperature charging cabinet.	02/03/87	TFL
	3) Test procedure.	3) Operations has been provided with HNU test procedure to complete this item.	02/03/87	TFL
	4) PM is done weekly.	4) Process engineering will be getting report to check.	09/12/87	EBB
	1) Gaurdposts to protect VCM piping concrete west side of road passing with curb.	1) Complete.	02/03/87	TFL
I & E Alarm and Shutdown Interlock PM Program	2) Protection against overturned railcar.	2) 3rd and 4th rail required/ planned. Funded in maintenance budget. Installed 9/1/87.	09/01/87	DAM
	1) Boilers-complete once/year	1) Up to date.	02/03/87	TFL
	2) Incinerators- complete twice/year	2) Will start a semi-annual inspection (April and October) and document it.	01/01/01	DAM
	3) Emergency kill system twice/year.	3) See attached sheet from 01/29/87 PM meeting.	/ /	TFL
	4) Catalyst freezers-annually.	4) See attached sheet from 01/29/87 review meeting.	/ /	TFL
	5) Vinyl dryers (rotary and fluid bed) once per year.	5) Burner management systems will be done annually and documented. (I&E Supervisor)	/ /	TFL
	6) Propane vaporizers once/year.	6) Will be documented. PM done currently.	/ /	TFL
	7) Inert gas generator once/year.	7) PM sheet will be generated and PM will be done every spring and documented.	/ /	TFL
Incinerators	8) Reactor instrumentation.	8) Pressure alarms checked once per year and when reactors opened. Temperature system will be checked once/year during shutdown & will be calibrated and documented.	/ /	TFL
	1) PM program to check internals of liquid seal flame arrestor.	1) See attached sheet from 01/29/87 PM meeting.	/ /	TFL
	2) Refresher training program.	2) Complete by	/ /	TFL
VCM Recovery Systems	3) Revise and update incinerator logsheets.	3) Complete.	02/03/87	TFL
	1) VCM recovery compressor casings and rotors are being damaged (severely) by corrosion and/or erosion.	1) Process/mechanical/operations investigating the problem.	/ /	TFL

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

Review Item	Existing PM	Action Completed/Planned	Resp
CATALYST FREEZERS			
1) Big Freezers	1) Refrigeration system checked weekly. Controllers checked only if W.O. written.	1) Will start yearly control system PM and calibration, and document	TFL
2) Chest Freezers	2) Checked on shutdown basis only.	2) No action needed.	TFL
POWER FAILURE PROCEDURES			
1) AMS Kill System.	1) Annual PM of entire system during module shutdowns. Operations checks pot alarms when any reactor shutdown. Operations also checks the valves weekly	1) No further action is planned.	TFL
2) Emergency Generators	2) Large generator is run weekly by operations. Maintenance does monthly PM and instrumentation PM.	2) No further action is planned.	TFL
VCM SPHERE/UNLOADING AREA			
1) Unloading compressor	1) No up to date documented PM.	1) Annual PM and documentation of all pressure and temperature switches is planned.	TFL
2) T-201 Pressure switch.	2) Done annually, not documented.	2) Will be documented.	TFL
3) Compressor belt drive PM.	3) None	3) A monthly check will be made for belt tightness, and it will be documented.	TFL
FIXED POINT MONITORS			
1) 40 Fixed Point Monitors	1) Only checked if a problem is discovered.	1) Will check all 40 points once/year and document (1 GC/quarter).	TFL
AMMONIA SYSTEM			
1) Annual Inspection.	1) None	1) Annual inspection plan is being determined.	TFL
2) Relief Valve	2) None	2) Relief valve will be put on five year program.	TFL
3) Leak Survey	3) None	3) A detection technique and survey procedure are being investigated.	TFL
INCINERATORS			
1) Liquid Seal Flame Arrestor.	1) None	1) Check and document baffle integrity once/year.	TFL