Air Products and Chemicals INC.

ESCAMBIA PLANT

INTEROFFICE MEMORANDUM

To: M. R. Chmura

Date: 3 December 1980

Copies: R. L. Duggan
R. E. Jones
T. J. Regan

From: R. E. Davis

Re: Monthly Status - November
Area "B" Hazards Review

The formal and final report was issued in November on the hazards review conducted in Area "B" in October 1980. A CE for all modifications, except relocating the Wet Bay control room, has been submitted for Management signatures and approval. The estimate for relocating the Wet Bay control room will take approximately one more month to complete.

R. E. Davis

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PROCESS HAZARDS REVIEW

ESCAMBIA AREA B

AP00036295

SUMMARY

A Process Hazards Review of the Escambia Area B plant was completed. The plant was divided into five main areas and the major hazards were identified. The review group used the fault tree analysis and the failure mode and effect analysis to evaluate the hazards. A total of 52 hazards were identified and 45 recommendations for corrections and control measures were made. There were 27 recommendations made for equipment changes, 12 for inspection, PM and process/procedure changes and 6 recommendations for studies to be made.

The following table lists the 5 areas of the plant, the hazards considered and the number of hazards identified in each.

AREA	HAZARD	NUMBER OF HAZARDS IDENTIFIED
AN	Ammonia Release	20
	Material Exposure	3
	Vessel Rupture	7
	Supply Failure	3
	Decomp. of AN	1
Urea	Ammonia Release	2
	Vessel Rupture	3
Solutions	Ammonia Release	4
Prills	NH_3 Release	2
	Decomp. of AN	1
	Material Exposure	4
General	General	2
	Total	52

A complete list of the hazards identified and recommendations made are contained in the following pages of this report.

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PROCESS HAZARDS REVIEW
ESCAMBIA AREA B

I. INTRODUCTION

A process hazards review was completed during the week of October 13-17, 1980. The review studied the Escambia Area B plant to identify potential hazards and recommend appropriate corrective or control measures.

II. SCOPE

The review included four production areas: Ammonium Nitrate, Urea, Solutions and Prills. The bulk and bag warehouses were also included in the study. Along with the boundry limits set above, consideration was also given to steam, CO_2, Nitric Acid, Ammonia and electricity.

The scope of the review included these items:

1. Systematic analysis of each segment of the process with respect to the effects of equipment failure, instrument failure, utility failure, and operator error.
2. Consideration of potential handling or processing problems with respect to raw materials, intermediates and final products.
3. Consideration of the adequacy of materials of construction.
4. Consideration of the adequacy of existing process control and alarm systems.
5. Recommendation of corrective or control measures.

III. PROCESS DESCRIPTION

Area B is divided into four interrelated production units: Urea, Ammonium Nitrate (AN), AN Prills and Urea-AN-Ammonia Solutions.

Urea is produced by the reaction of carbon dioxide and ammonia at high pressure and moderate temperature. Carbon dioxide gas is supplied to the urea autoclave at 2900 psig. Ammonia liquid is supplied from the "A" Area ammonia plant storage spheres at 280 psig and is pumped to 2900 psig by a four stage reciprocating compressor in Area B. Ammonia is fed to the urea autoclave in a stoichemetric excess to carbon dioxide. The reaction of ammonia and carbon dioxide consists of two steps. The first reaction is the formation of ammonium carbamate and essentially goes to completion. The second is the hydrolysis of ammonium carbamate to urea and water and is only partially completed. The net reaction is exothermic and heat is removed by condensate in the autoclave tube bundle.

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The reactants leave the autoclave and go to the flash separator at 50 psig where the unreacted ammonia is flashed off to the urea off gas header at 25 psig. The bottoms from the flash separator go to the decomposer heater where the unreacted ammonium carbamate is decomposed back to ammonia and carbon dioxide. The products then go to the decomposer separator where the ammonia, carbon dioxide and water vapor are flashed off and enter the urea off-gas header. The urea product, 92% urea solution, goes out the bottom to the urea-ammonium nitrate mixer and to UAN storage or to the urea masar solution storage tank. Urea production capacity is approximately 60 TPD.

Ammonium nitrate is produced by the reaction of 56% nitric acid and ammonia gas. Nitric acid is received from the nitric acid plant and is stored in two day tanks. From the day tanks it is pumped to a nitric acid preheater and on to the No. 1 and/or No. 2 neutralizer. Ammonia liquid is received from the ammonia plant storage spheres at 280 psig. The ammonia is vaporized using cooling tower return water in a vaporizer and superheated using steam in the superheater. The ammonia is fed to the No. 1 and/or No. 2 neutralizers with or without urea off-gas. Conversely, urea off-gas can be fed to the No. 1 and/or No. 2 neutralizer with or without ammonia gas. A weak AN solution from the AN prill plant reclaim system is also fed to the neutralizers. The reaction of ammonia and nitric acid is exothermic and heat is removed by the vaporization of water in the reaction mass to produce process steam. The No. 1 neutralizer operates at 0 to 10 psig and some of the process steam is used to preheat the nitric acid feed to both neutralizers. The No. 2 neutralizer operates at atmospheric pressure. From the neutralizers the 83% AN product overflows to the 83% AN surge tank where it is pumped to storage, to the low concentrator, to the UAN mixer or to the solutions plant.

AN prills are produced by prilling a 99.8% molten AN solution. 83% AN is pumped from storage or production to the low concentrator, where the concentration is increased to approximately 95%. The low concentrator consists of a thermosyphon reboiler, a vapor disengagement tank and a barometric condensor, which is supplied by cooling tower water. The low concentrator operates at approximately one-half atmosphere, and the product overflows to the 95% AN seal tank. From the seal tank the 95% AN is pumped to storage, to the UAN mixer, to the solutions plant or to the high concentrator. The high concentrator consists of a falling film evaporator, an air preheater, and a 99.8% AN surge tank. The falling film evaporator uses steam on the shell side and hot air from the air preheater on the tube (process) side to strip the water from the AN melt. Permalene, a patented prill hardening additive, is added to the 95% AN solution on the distribution tray in the falling film evaporator. The 99.8% AN solution melt gravity flows from the evaporator to the 99.8% AN surge tank from where it is pumped through a concentric pipe-condensate flash cooler and into the 99.8% AN head tank at the top of the prill tower. From the head tank the 99.8% AN either flows to a single prill plate where it is prilled in the prill tower, or overflows to the 95% AN seal tank. Air is pulled into the prill tower counter-current to the falling prills by one centrifugal and eight bifucator fans. The centrifugal fan pulls 'primary' air through the CFCA shroud and then through the Heil, high differential pressure venturi scrubber. Air exhaust from the high concentrator is also pulled through the Heil scrubber along with the prill tower shroud exhaust. The eight bifucator fans by-pass the CFCA shroud. The solid prills are collected at the tower base by a pebble collector belt and are transferred via conveyor belts and bucket elevator through an oversize classifying screen,

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a rotatry drum pre-dryer, dryer and cooling drum, an undersize classifying screen and a clay coating drum where kaolin clay is added to coat the prilled product. From the coating drum the finished prills are carried via conveyor belt and bucket elevator to the bagging hoppers or to bulk storage.

The solutions plant presently only blends four primary products. They are: ammonium nitrate (AN) solutions, urea-ammonium nitrate (UAN) solutions, ammonium nitrate-ammonia (Bay-Sol) solutions and ammonia-water (Aqua) solutions. UAN solution is blending continuously from urea production and adjustments are made to meet specifications in the No. 2 and No. 3 mix tanks. Bay-Sol solutions can be blended batchwise in the No. 3 and No. 4 mix tanks. Aqua solutions are blended batchwise in the Aqua solution mix tank.

IV. REVIEW TEAM

The Review Team consisted of:

1. H. J. Smith - Chemicals Group Safety
2. Lee J. Howard - Process Engineering - Industrial Chemicals
3. R. J. Shaw - Industrial Chemical Technology
4. R. E. Davis - Production Superintendent - Area B - Escambia
5. Dave Elliott - Production Engineer - Area B - Escambia
6. Bill Rockwell - Production Supervisor - Area B - Escambia
7. Ralph Scott - Process Engineer - Escambia
8. Lorn Paxton - Maintenance Engineer - Escambia

V. METHOD

The Area B plant was divided into five general areas for review. They were: Ammonium Nitrate, Urea, Solutions, Prills and General. A discussion was held to determine what hazards existed and which ones would be considered. Listed below are 13 hazards or concerns which were identified and the priority in which consideration was given to them. Listed beside each hazzrd are the areas of the plant where it was felt the hazard could occur.

Hazard	Area of Plant Affected
1) Ammonia Release	AN, Urea, Solutions, Prills
2) Decomposition of AN (Fire, Explosion)	AN, Prills in Process, Prills Storage
3) Nitric Acid Exposure	AN
4) Equipment Rupture	Urea, Solutions, Prills
5) Hot AN Exposure	Urea, Solutions, Prills
6) Loading (Spill Exposure)	Solutions
7) Dust Exposure	Prills, Storage
8) Hot Urea Exposure	
9) CO_2 Exposure	
10) Permalene Products Exposure	Prills
11) Storage	AN, Urea
12) External Fire	AN
13) Supply Failure	

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____ 1, 19___

Action Items from Hazard Review						General			Action Status			
Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
50.	Wet Bay Control Room health and safety hazard (people can get trapped there)	H	H	1	A	Davis	50. Relocate control room to west side ground level of wet bay			10/82	Being estimated - Cost may be $500M to $1.5MM	
51.	Confined AN in old 83% AN Tank	H	L		A	Elliott	51. Remove old 83% AN Tank	15,000		6/81		
52.	Gas Exposure in elevator	M	H		A	Elliott	52. Install air bottle with 10 min. air supply in elevator.	1000		3/81		

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____ 1, 19___

Action Items from Hazard Review Material Exposure									Action Status			
Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
48.	Nuisance Dust Exposure in Dry Bay and Storage	L	H	2	A	Elliott/ H. J. *Smith*	48. Initial Dust Monitoring to determine personnel exposure levels.			12/80		
49.	Formaldahyde exposure						49. Change procedure for use to make safe					

[redacted]

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Category: [ ] Equipment Changes [ ] Procedural Changes, Inspection & PM Items [ ] Eng Studies [ ] Rejected

Action Items from Hazard Review							Material Exposure		Action Status			
Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
44.	Overflow of 83% AN Storage Tank	L	M	3	A	Elliott	44. Investigate installation of high level alarm on 83% AN Tank-not safety item but equipment insulation loss	5000		3/81		
45.	NO_x emissions from Nitric Acid Tanks	L	H	2	A	Elliott	45. Vent tanks to Heil Scrubber	5000		1/81		
46.	Leaks in nitric acid line pumps and piping	H	H	1	A	Rockwell	46. a) Replace NA line flanges with heavy duty flanges b) Purchase 2 acid suits c) Purchase 2 pumps	10000		3/81		
47.	Leaks in Permalene handling system	L	M	3	A	Rockwell	47. Install eye wash near Permalene mixing area for Sulfuric Acid	2000		3/81		

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____ 1, 19___

Action Items from Hazard Review Supply Failure									Action Status			
Item No	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
39.	Overflow Nitric Acid Supply Tank	H	M	1	A	Elliott	39.a) Install 2 position high level alarm on NA tank	10,000		3/81		
							b) Relocate 2" shut off valve to tank	1,000				
40.	Vessel Rupture due to high steam supply pressure						40. Same as #24 and 25	2000				
41.	Overflow of NA Tanks due to power failure in Area "B" only	H	L	2		Elliott	41. Add to emergency procedures provision to block in nitric acid tanks			3/81		

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ategory: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected Status as of _____ 1, 19___

Action Items from Hazard Review Decomposition of AN								Action Status			
Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
Excessive Heat Input of High Pressure Steam					Scott	42. Evaluate 350# Steam to limit pressure			3/81		
Sensiization of AN by contamination	L	H	2	A	Rockwell	43.a)Install catch pans for oil and grease on trunnion rollers of drying drums	2000		3/81		
					Scott/ Elliott	b)Install separator in NH_3 line to Permalene to remove oil.	2000		3/81		

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____, 19___

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Action Items from Hazard Review								Action Status			
Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Est. Cost	Initial Completion Date	Forecast Completion Date	Remarks (Including Estimated Costs)	Management Action Needed
37.	Release of NH_3 from atmos. vent from surge tank or sparging in surge tank with low level	L	M	3	A	Rockwell	37. a) Operator training b) Install low level alarm on level transmitters at surge tank	1000		3/81		
38.	Release of NH_3 during mixing of Permalene	L	M	3	A	Rockwell	38. Install exhaust fan from mix tank	2000		6/81		

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected , Status as of _____ 1, 19___

Action Items from Hazard Review					Ammonia Release - Solutions			Action Status			
Item No.	Hazard	Severity	Probability	Priority Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
3.	Operation of R.V.	H	M	1	Rockwell	33. Install tail pipes to get gas up in air	1500		1/81		
4.	Leak in piping and equipment					34. Same as #17					
5.	Spills due to loading mishaps	H	M	1		35. Enforce existing procedure and retrain and continue routine equipment inspection					
6.	Liq. NH_3 backs up into #3 Mixer	H	L	2	Rockwell	36. Install check valves and tag blind	2000		1/81		

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ategory: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

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Action Items from Hazard Review Vessel Rupture - Urea Plant

	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Initial Completion Date	Forecast Completion Date	(Costs)	Management Action Needed
1.	Rupture of Autoclave	H	L	2			30. Continue annual PM check and daily inspections				
.	Rupture of K.O. Drum and Decomposer Separator	H	L	2			31. PM on valves BPCV 9 and RV				
.	Rupture of Flash Separator	H	L	2			32. PM on valve PC-7 PCV-4 and PSV 31508				

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Category: [ ] Equipment Changes [ ] Procedural Changes, Inspection & PM Items [ ] Eng Studies [ ] Rejected , Status as of _____ 1, 19___

Action Items from Hazard Review Ammonia Release - Urea							Action Status			
Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
28.	Operation of Relief Valves	H	M	1			28. Same as #20 b				
29.	Leaks in Equip. & Piping	H	M	1			29. Same as #17				

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ategory: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____ 1, 19___

Action Items from Hazard Review Vessel Rupture - AN

	Hazard	Severity	Probability	Priority	Action	Responsibility		Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Estimated Costs)	Management Action Needed
.	Rupture of Clay Feed Hopper	L	L	3	A	Elliott	26.	Install redundant pressure switch to shut down compressor	1000		6/81		
/.	Rupture of Condensate Tank	L	L	3			27.	No action					

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____, 19___

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Action Items from Hazard Review — Vessel Rupture - AN

Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Estimated Costs)	Management Action Needed
21.	Rupture from Thermal Expansion #1 Neutralizer of piping that can be blocked in	H	-	-	B	Scott	21. Study-determine if materials are subject to thermal expansion			6/81		
22.	Rupture of #1 Neutralizer	L	L	3	A	Elliott	22. Inspect rupture discs annually Verify if R.D. is adequate size					
23.	Rupture of vaporizor, super heater on bypass heater	H	L	2	A	Elliott	23. Install relief devices	5000		6/81		
24.	Rupture of high concentrator	H	L	2	A	Elliott	24. Install relief valve on steam line	2000		6/81		
25.	Rupture of storage heaters 83% Nitric-Acid AN	H	L	2	A	Elliott	25. Install relief valves on two heaters 83% AN Lower "D" heater to 150# steam Investigate lowering steam header relief pressure	4000		6/81		

Action Status

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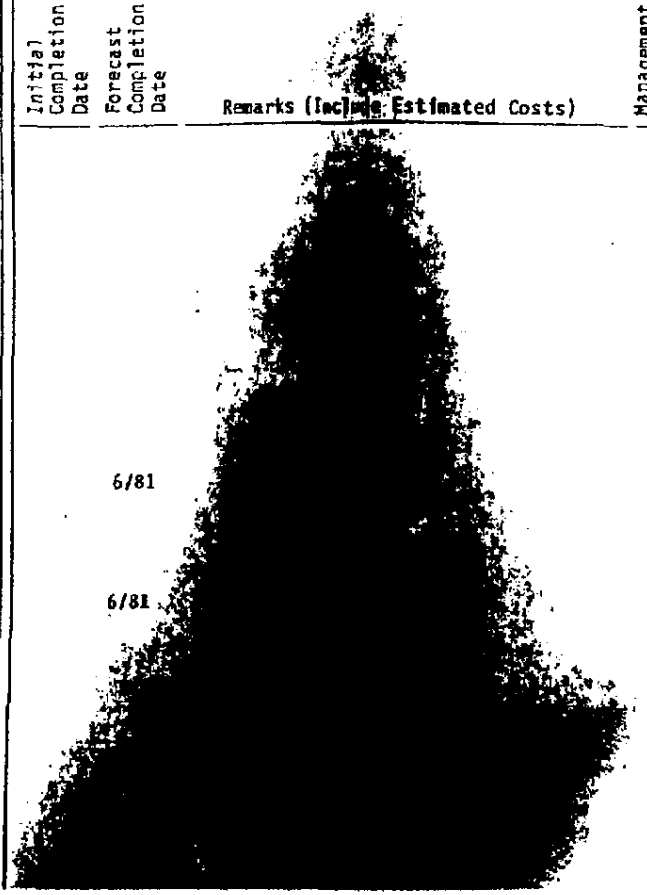
Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____ 1, 19___

Action Items from Hazard Review Ammonia Relase (AN Plant)

Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Remarks (Include Estimated Costs)	Management Action Needed
10.	Auto clave let down valve fails open	L	L	3			10. No action.					
11.	Flash separator flow control fails open	L	L	3			11. No action.					
12.	Ammonia flow set high and pH control fails	L	L	3			12. P.M. (See Hazard 3)					
13.	Excess NH_3 due to controller failure on vaporizer	L	L	3			13. No action					
14.	Steam supply loss to super heater	L	L	3	A	Elliott	14. Install low temp. alarm on exit of NH_3 in super-heater	2000		6/81		
15.	Failure of control valve TRC 50-7 to super heater	L	L	3			15. Same as 14					
16.	NH_3 flow set too high to process	L	M	3			16. Install high and low alarm on NH_3 flow	2000		6/81		



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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

Status as of _____, 19___

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Action Items from Hazard Review Ammonia Release - AN Plant

Item No.	Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Action Status: Initial Completion Date	Forecast Completion Date	Remarks (Estimated Costs)	Management Action Needed
7.	Leaks in equipment and piping						17.					
	a) Flanges	H	M	1			a) No action					
	b) Welds	H	M	1			b) No action					
	c) Metal failure	H	M	1			c) No action					
	d) Valve packing	H	M	1			d) No action					
	e) Pump seal failure	H	M	1			e) No action					
8.	Failure of tubes due to corrosion in super heater allowing NH_3 into condensate	L	M	3			18. No action required					
9.	Water vaporizer tube failure allowing NH_3 in CTW Return	L	M	3			19. No action					
10.	Release of NH_3 from relief valves to NH_3 weigh tank	H	M	1		Elliott	20. (a) Install orifice plate on NH_3 line to weigh tank	500.00		3/81		
						Rockwell	(b) Install tail pipes on relief valves to get gas away	500.00		3/81		

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Category: ☐ Equipment Changes ☐ Procedural Changes, Inspection & PM Items ☐ Eng Studies ☐ Rejected

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Pages

Action Items from Hazard Review Ammonia Release (AN Plant)

	Atmospheric Hazard	Severity	Probability	Priority	Action	Responsibility	Recommendations	Cost Est.	Initial Completion Date	Forecast Completion Date	Actual Completion Date	Management Action Needed
.	Manual Valve Leak or open in error on 83% Surge Tank	Low	Med	3			1. No action required-operator training					
.	Manual Valve Leak or open in error on Ammonia Vent Stack	Low	High	2	A	Rockwell	2. Raise stack to height of 10'	500		1/81		
.	pH controller fails on Neutralizer and Surge Tank Vent	Low	High	2			3. P.M.					
.	Nitric Acid Pump Failure	Low	Med	3			4. P.M.					
.	Manual Valve Closed on Nitric Acid Line	Low	Low	3			5. No action required.					
.	Nitric Acid Flow Control Valve Fails Closed	Low	Med	3			6. No action required.					
.	Low Level in Nitric Acid Storage Tank	Low	Med	3			7. No action required.					
.	Line Failure-Corrosion Leaks on Nitric Acid Line	Low	Med	3			8. No action required.					
.	Line Pluggage	Low	Low	3			9. No action required.					

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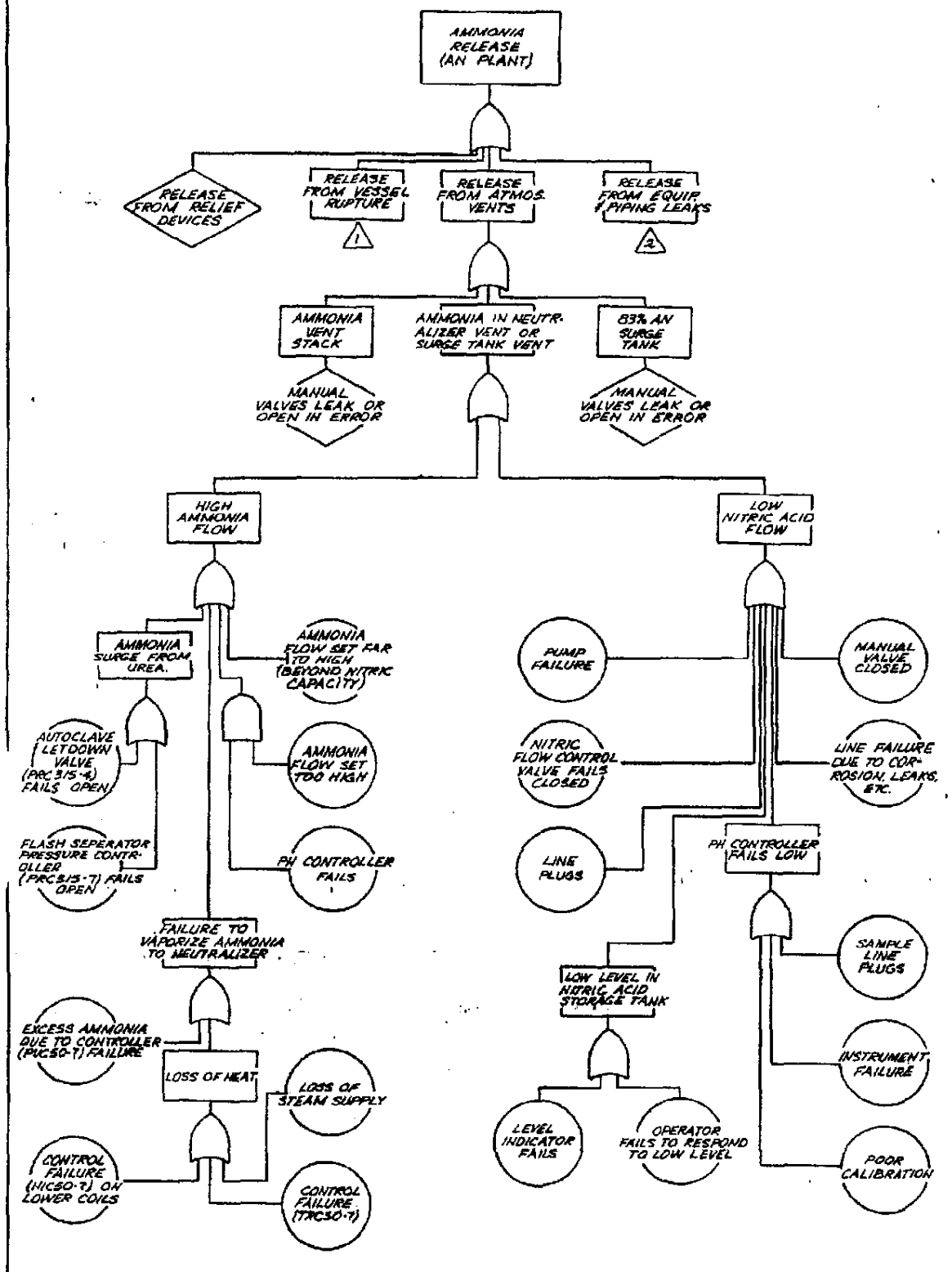

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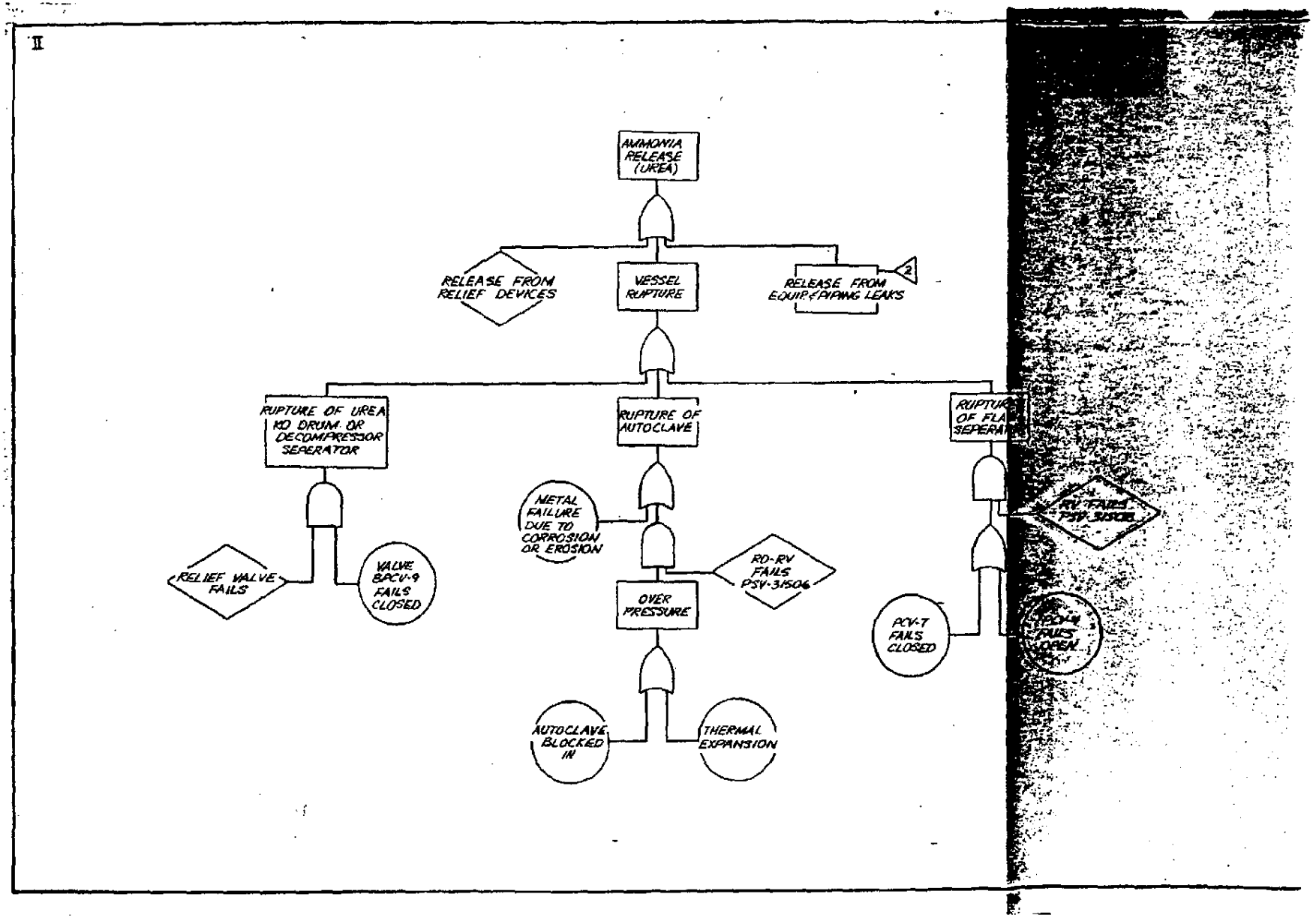
II
AMMONIA RELEASE (UREA)
RELEASE FROM RELIEF DEVICES
VESSEL RUPTURE
RELEASE FROM EQUIP & PIPING LEAKS
2
RUPTURE OF UREA HD DRUM OR DECOMPRESSOR SEPERATOR
RUPTURE OF AUTOCLAVE
RELIEF VALVE FAILS
VALVE BACV-9 FAILS CLOSED
METAL FAILURE DUE TO CORROSION OR EROSION
OVER PRESSURE
RD-RV FAILS PSV-3/506
AUTOCLAVE BLOCKED IN
THERMAL EXPANSION
PCV-7 FAILS CLOSED

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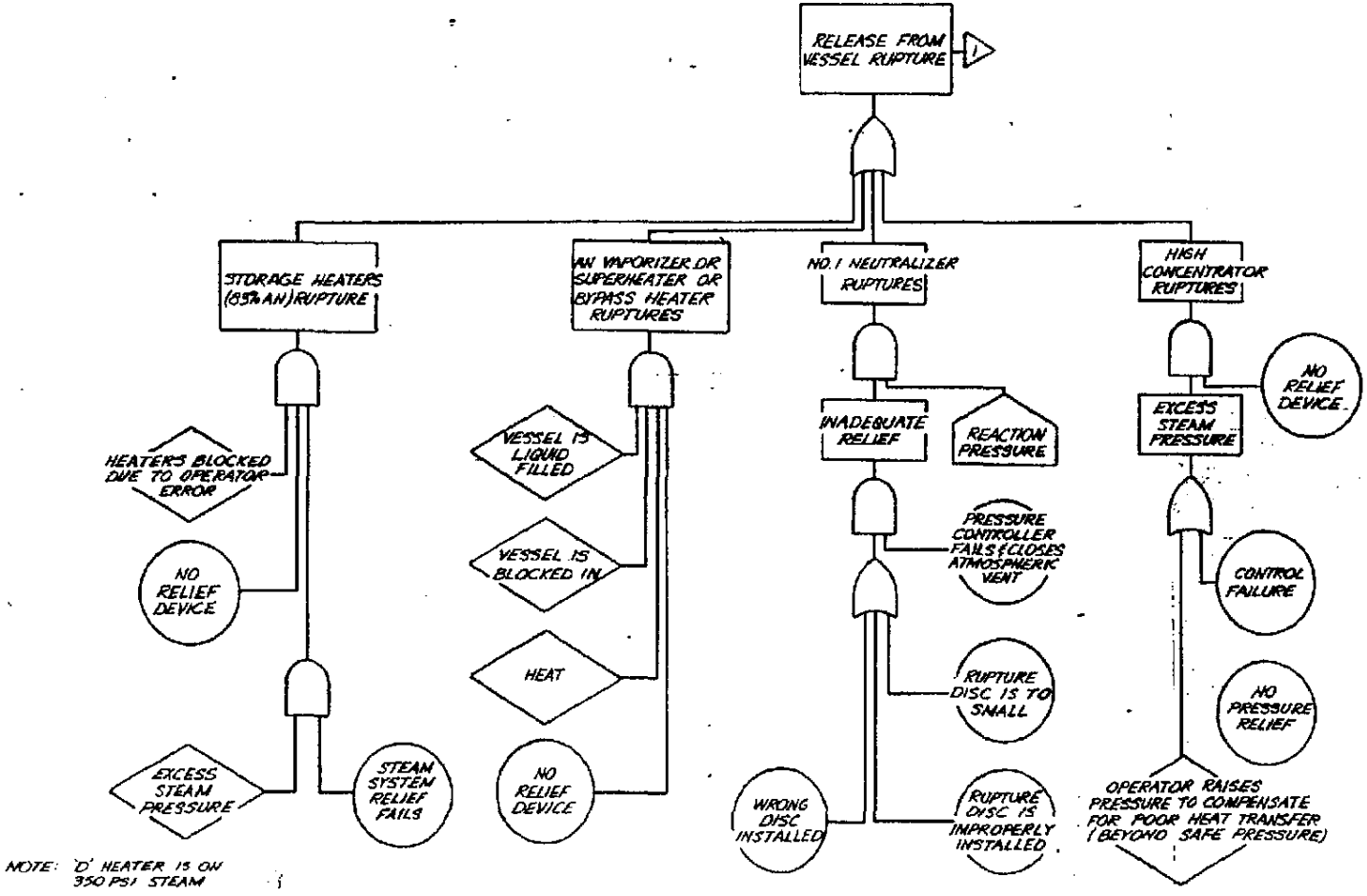
RELEASE FROM VESSEL RUPTURE
STORAGE HEATERS (85% AN) RUPTURE
AN VAPORIZER OR SUPERHEATER OR BYPASS HEATER RUPTURES
NO. 1 NEUTRALIZER RUPTURES
HIGH CONCENTRATOR RUPTURES
HEATERS BLOCKED DUE TO OPERATOR ERROR
NO RELIEF DEVICE
EXCESS STEAM PRESSURE
STEAM SYSTEM RELIEF FAILS
VESSEL IS LIQUID FILLED
VESSEL IS BLOCKED IN
HEAT
NO RELIEF DEVICE
INADEQUATE RELIEF
REACTION PRESSURE
PRESSURE CONTROLLER FAILS & CLOSES ATMOSPHERIC VENT
RUPTURE DISC IS TO SMALL
WRONG DISC INSTALLED
RUPTURE DISC IS IMPROPERLY INSTALLED
NO RELIEF DEVICE
EXCESS STEAM PRESSURE
CONTROL FAILURE
NO PRESSURE RELIEF
OPERATOR RAISES PRESSURE TO COMPENSATE FOR POOR HEAT TRANSFER (BEYOND SAFE PRESSURE)
NOTE: 'D' HEATER IS ON 350 PSI STEAM

Air Products

INTEROFFICE MEMORANDUM

Date 25 September 1980

Subject Schedule-Process Hazard Reviews and Formal Plant Safety and Industrial Hygiene Audits

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The attached two schedules show dates for Process Hazards Reviews (PHR's) and formal Plant Safety and Industrial Hygiene Audits scheduled for Fiscal 1981. A total of twenty three (23) PHR's have been scheduled. Each facility will receive at least one formal Safety and Industrial Hygiene Audit in Fiscal 1981. These formal audits will monitor safety performance and identify areas where improvements are indicated. Informal audits will also be conducted where needed.

Martin R. Chmura

MRC:bkl

Attachments: 1. Schedule for Process Hazard Reviews.
2. Schedule for Formal Safety and Industrial Hygiene Audits.

(320)

AP00036317

SCHEDULE FOR FORMAL SAFETY AND INDUSTRIAL HYGIENE AUDITS
CHEMICALS GROUP-25 SEPT. 80

Location	Employee Safety	Industrial Hygiene	Engineering Safety
Calvert City	6-10 Oct. 80 WJS	25-29 Aug. 80 JWG/HJS (complete-report issued)	6-10 Oct. 80 MRC
Paulsboro	10-14 Nov. 80 JWG/HJS	10-14 Nov. 80 JWG/HJS	10-14 Nov. 80 JWG/HJS
City Of Industry	8-12 Dec. 80 JWG	8-12 Dec. 80 JWG	8-12 Dec. 80 JWG
Middlesex	12-16 Jan. 81 HJS	12-16 Jan. 81 HJS	12-16 Jan. 81 HJS
St. Gabriel	19-23 Jan. 81 WJS	19-23 Jan. 81 JWG	19-23 Jan. 81 MRC
Pasadena	9-13 Feb. 81 WJS	9-13 Feb. 81 HJS	9-13 Feb. 81 MRC
Escambia	9-13 Mar. 81 WJS	9-13 Mar. 81 JWG	9-13 Mar. 81 MRC
Cleveland	11-15 May 81 WJS	11-15 May 81 JWG	11-15 May 81 JWG/WJS
Elkton	8-12 June 81 WJS	8-12 June 81 JWG	8-12 June 81 JWG/WJS
S. Brunswick	13-17 July 81 WJS	13-17 July 81 HJS	13-17 July 81 WJS/HJS

Key to Auditors

WJS - Bill Stueben
JWG - Joe Gentile
HJS - Joe Smith
MRC - M. R. Chmura

AP00036318

Facility/Process/Product	Dates Scheduled	
Calvert City - Catalyst Plant	7 - 11 Sept. 81	
Escambia - Methylamines	7 - 11 Sept. 81	Joe Gill or David Kaye.
City of Industry - Total Plant	14 - 18 Sept. 81	

On Hold:

Calvert City - PVC

Escambia - PVC

Notes: (1) Use common team members
(2) Use common team members

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