



Air Products and Chemicals
INC.

ESCAMBIA PLANT
INTEROFFICE MEMORANDUM

To: M. R. Chmura

Date: 29 August 1980

From: R. B. Chandler

Copies: W. R. Bone

M. B. Cobb

R. L. Duggan

D. C. Fec

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J. W. Gentile

K. D. Greene

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W. T. Johnson/J. W. Moody

A. K. McMillan

T. J. Regan

F. C. Rydzewski

Re: Process Hazards Reviews

Preparations for the scheduled Process Hazards Reviews for units in my area include updating P&I drawings. This is estimated to cost \$203,000 broken down as follows:

Nitric Acid	\$ 48,000
Ammonia	60,000
Utilities	45,000
Methanol	<u>50,000</u>
Total	\$203,000

At the present time these costs are unbudgeted and will have an adverse impact on production costs in FY81 in the amount shown above. These costs will appear in the Outside Services element on the E schedule. Drafting will begin September 8 unless I receive instructions otherwise prior to that date.

R.B. Chandler /TJR
R. B. Chandler

RBC:bg

AP00036335



Air Products and Chemicals
INC.

ESCAMBIA PLANT

INTEROFFICE MEMORANDUM

To: Distribution

Date: 11 September 1980

From: B. A. Gebbia

Copies: R. B. Chandler
R. L. Duggan
L. S. Forester
T. J. Regan

Re: Ammonia/Methanol
Process Hazards Committee Meeting

Please plan to attend a meeting of the Process Hazards Committee for NH_3/MeOH area at 9:00 a.m. on Monday, 15 September 1980, in B. Gebbia's office to review the plant Change Log entries.

B. A. Gebbia
B. A. Gebbia

BAG:dl

Distribution:

E. A. Barnes
C. Blackledge
B. Cooley
D. Henn
C. Simpson
R. Scott

AP00036336



ESCAMBIA PLANT
INTEROFFICE MEMORANDUM

To: T. J. Regan

Date: 28 October 1980

From: D. W. Henn*

Copies: C. T. Blackledge*

L. Gilley*

R. B. Chandler*

W. T. Johnson

M. R. Chmura

~~R. E. Jones~~

G. D. Cooper*

G. Kalwaitis*

R. L. Duggan

J. Kent/W. Baker

L. S. Forester

J. A. Marts*

B. A. Gebbia*

F. E. Sommer

Re: Process Hazards Review
of Compressor Boiler Project

* Those in attendance .

A Process Hazards Review was done for the Compressor Boiler project on 24 October, 1980. The tabulation of the potential occurrences, consequences, and recommendations, and a copy of the P&I diagram, revised according to the committee's recommendations, are attached.

D. W. Henn

D. W. Henn

DWH:dl

Attach:

RECEIVED

OCT 30 1980

R. E. JONES

AP00036337

PROCESS HAZARDS REVIEW

Location: Escambia Plant

Date: 24 October 1980

PROJECT: Compressor Engine Exhaust Heat Recovery

"WHAT-IF "	CONSEQUENCE	CONCLUSION/RECOMMENDATIONS/COMMENTS
1. Boiler Feed Water pressure control valve fails open.	1. Boiler Feed Water and economizer systems exposed to 800 psi pressure.	1. Project had provided for one relief valve in BFW line between control valve and downstream block valves. This would be sufficient to prevent overpressure rupture, but the team recommended that two relief valves be installed with a three-way valve to provide for annual checks. Once the system is started, it is unlikely that all five boilers would be down simultaneously. Estimated incremental cost of two additional relief valves and three-way valves was \$18,000. (NOTE: The team recommended that all relief valves be sized for steam service. Since all of the water in the system is above 212°F, some flashing would occur if the relief valve opened. Also, all relief valves are to discharge into drain stacks for personnel protection.)
2. Boiler/Economizer is blocked in while engine is running.	2. Water heated in confined piping.	2. The boiler and economizer sections each have a relief valve between the inlet and outlet block valves. Since individual engines come down often enough to allow annual relief valve inspections, the single relief valve in each location was deemed adequate. No further recommendations.
3. Pressure control valve in BFW line fails closed.	3. Steam drum could be emptied. In the extreme case, the boiler tubes could run dry.	3. No real hazard. There is a low level alarm on the steam drum. The consequences listed would occur only if the operator cannot take remedial action when this happens.

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"WHAT-IF"	CONSEQUENCE	CONCLUSION/RECOMMENDATIONS/COMMENTS
		The steam drum has been ordered with a specification for full vacuum design. These are not fired boilers; the typical gas inlet temperature is 825°F, so that tube damage due to operating dry is unlikely. This has been confirmed by the heat exchanger manufacturer. Also, because of the by-pass valve arrangement in the exhaust line, the hot gas can be diverted from the boilers without shutting an engine down and losing production. This same arrangement also allows the boilers to be restarted with no equipment damage after the feed water malfunction is corrected.
4. A boiler or economizer tube develops a small leak.	4. If undetected, water could back up into turbo-charger, causing equipment damage. Personnel in vicinity could be injured by casing fragments.	4. The presence of steam in the exhaust stack should alert operator to this condition. As a double check on tube leaks, the team recommended that the heat exchanger boxes be provided with drains, and that these drains be left open to allow detection of leakage. This will be done. If leakage occurs, boiler will be by-passed.
5. A tube breaks completely.	5. Water would probably get back to the turbocharger before action could be taken. Same consequences as above.	5. Possible hazard, but probability of this occurrence was deemed very low. Most tubing failures occur at return bends and circumferential welds, and these are outside of the heat exchanger box. Tubing is to be certified by manufacturer. No recommendations.

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"WHAT-IF"	CONSEQUENCE	CONCLUSION/RECOMMENDATIONS/COMMENT
6. A fire occurs in the turbocharger.	6. Finned boiler tubes could be damaged.	6. It was recommended that temperature switches which would trip the engines when the exhaust temperature got too high be installed in the five exhaust ducts involved. Estimated total cost was \$15,000.
7. A general power failure occurred.	7. Forced circulation through the boilers would cease. If engines continued to run and boilers were not by-passed, tubes could run dry.	7. No hazard. As noted in Item 3 above, boilers can run dry with no damage.
8. A general instrument air failure occurred.	8. BFW feed and five BFW flow control valves fail closed. Other valves fail open to relieve localized pressures. Engines go down.	8. No hazard.