

TENNECO CHEMICALS, INC.

TO C. G. Thompson AT Piscataway DATE June 30, 1977

FROM W. Miringoff, P. Scheiner AT COPY TO D. C. Coldiron
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SUBJECT BURLINGTON PLANT
STEAM CAPACITY STUDY

CONCLUSION:

New boiler capacity will be required at Burlington to accommodate the EPA and Rhone Poulenc projects. No additional boiler capacity will be required if only one of the above projects is built.

SUMMARY:

The two projects require a net steam supply of 17,000 #/hr. The net available margin (7,000 #/hr.) plus the 10,000 #/hr. gain expected from the energy conservation program and the 1600 #/hr. from discontinuation of steam jets leave a margin of roughly 2,000 #/hr. during the winter months (see attached data).

RECOMMENDATION:

Replace the #3 boiler (20,000 #/hr.) with a new unit capable of generating at least 45,000 #/hr.

DISCUSSION:

The data of the study indicate that the installed boiler capacity is mathematically adequate for the projected steam usage for the site as it will exist in 1979. The key factor in the mathematics is a net gain of 10,000 #/hr. of steam from a sustained effective energy conservation program. Practical judgment for a plant operation would require a steam generating capability margin of at least 10% to accommodate unexpected leaks and trap failures during the most severe winter conditions.

Prior to the EPA and Rhone Poulenc projects, the lowest operating margin was 7,000 #/hr. or 6.7% of the maximum steam generating capacity. With the two projects and the energy conservation program, the projected margin will drop to 1.5%. It is the opinion of the writers that this margin is too low and will result in reduced production for the site. Therefore, we recommend the replacement of boiler #3 with a new unit capable of generating at least 45,000 #/hr. The increased capacity should leave enough steam available for a number of moderate users in the future.

BURLINGTON STEAM CAPACITY STUDY

Nominal Boiler Rates:	#1	45,000 #/hr.
	#2	45,000 #/hr.
	#3	<u>20,700</u> #/hr.
Total		110,700 #/hr.

Maximum Boiler Rate for Extended Peaks (based on 600⁰ F. flue gas temperature)

#1	43,000 (By Plant test)
#2	42,000 (By Plant test)
#3	<u>18,000</u> (est'd)
	103,000 #/hr.

Second Worst Extended Peak for 1976 - 91,500#/hr.

(Worst extended peak for 1976 - 95,500#/hr.

Second Worst Extended Peak for 1977 - 94,000#/hr. (Est'd)

Greatest Extended Peak Measured for 1977 - 95,000#/hr. (1/13/77)

Maximum Available Steam - 7,000 #/hr.

TOTAL STEAM BALANCE

Maximum Available Steam	+ 7,000 #/hr.
EPA Requirements	- 8,000 #/hr.
Rhone Poulenc Requirement	- 9,000 #/hr.
Energy Savings Program	+ 10,000 #/hr.
Ejectors (Discontinued)	+ 1,600 #/hr.
Net Steam Margin After Projects	+ 1,600 #/hr.

RHONE POULENC STEAM USAGE

Additional Building Heat	3,000 #/hr.
EPA Compliance	3,500 #/hr.
Batch Heat-up	2,000 #/hr.
Miscellaneous	<u>500 #/hr.</u>
	9,000 #/hr.*

* No credit taken for reduced operation of dryers.

BURLINGTON EPA STEAM USAGE

Water Stripper	1,000 #/hr.
Reactor Opening	3,000 #/hr.
Tracing	1,000 #/hr.
Building Heat	<u>3,000 #/hr.</u>
	8,000 #/hr.

STEAM SAVINGS

<u>Item</u>	<u>DuPont Report</u>	<u>Expected at Winter Conditions</u>
Economizers	2,700 #/hr. (Ave.)	1,000 #/hr.
Insulation of Bare Steam Lines	5,300 #/hr. (Ave.)	4,000 #/hr.
Condensate Return & Flash Steam Use	2,000 #/hr. (Ave.)	4,000 #/hr.
Replace Defective Traps	3,000 #/hr.	1,000 #/hr.
Steam Leaks	<u>6,700 #/hr. (Est.)</u>	<u>Already Inc.</u>
Totals	19,700 #/hr.	10,000 #/hr.
Estimated Ejector Steam (Strippers Only)		<u>1,600 #/hr.</u>
Total Steam Gain		11,600 #/hr.

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