TRANSCO INC.

TEST REPORT NO. TTR-25N

TEST REPORT

ON

EMERGENCY SPRAY SYSTEMS TESTS USING

TRANSCO THERMA-WRAP

TESTS PERFORMED AT STREATOR, ILLINOIS, JULY 27, 1982

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1. INTRODUCTION

The purpose of conducting these tests is to determine if Transco's Therma-Wrap insulation would interfere with the operation of the pumps, strainers, and the emergency spray system in the event of an accident.

2. TEST APPARATUS

A rectangular open top tank was built, 30" x 40" x 27" deep. At one end of the tank, an electric motor driven centrifugal pump was mounted. The suction line of the pump went down into the tank to 1-1/2" from the bottom. The pump outlet was piped to two (2) nuclear containment emergency spray nozzles, mounted 18" above the tank top, and about 12" apart. There was a gate valve and a pressure gage installed on the pipe just before the spray nozzles.

The suction line was 1-/2" nominal diameter pipe, 1-1/2" from the bottom of the tank and had no strainer or any other protective device.

The spray nozzles were Sprayco, Inc. No. 1713 Ramp Noz 1" F316SS.
Product No. 17-0714-1707, identical to those used in nuclear safety spray systems.
Nozzle opening is 3/8" diameter.
The pump was Peabody-Barnes 1-1/2 Self-priming centrifugal pump, Model GCCE, electric motor drive, 3 hp, 3 phase, 3450 rpm.

3. PROCEDURE

About 50 gallons of tap water was placed in the tank. A support rack of wire mesh was placed in the tank at about the water level. There were five (5) tests performed.

1. In the first test, a 4-inch thick Therma-Wrap blanket was placed on the wire screen, which completely covered the tank. The blanket was 30" x 40", the same size as the tank. The pump and spray were turned on, and ran for 30 minutes. There was no water build-up above the blanket since the water easily went through the blanket. There was no change in line pressure; it remained at 30 psi both before and after the blanket was installed. Also there was no evidence of loose fibers, and no effect on the pump.

2. The 4" thick blanket was removed, and a 2" thick blanket installed instead. This blanket also completely covered the tank. The same test was performed as in (1) above. Again, there was no change in line pressure, no effect on the pump, and no evidence of loose fibers.

3. The 2-inch thick blanket was then slashed completely through the full length of the blanket, and also slashed transversely at various points. The spray was turned on, and ran for 30 minutes. There was no change in line pressure, no interference with the pump, and no evidence of loose fibers.

4. The wire mesh was removed, and the above slashed blanket was dropped into the tank, where it settled on about the bottom of the tank. The mutilated blanket was quite irregular in shape and parts of it was above the water line, while other parts rested on the bottom of the tank. The spray was turned on for 30 minutes. There was no change in line pressure and no interference with the nozzles. Additionally, there was no apparent movement of the blanket, or any pieces of it that was drawn to the suction line of the pump.

5. The slashed blanket was removed from the tank and cut into various size pieces. These pieces were dropped into the tank. Many of the pieces were hand fed into the suction line of the pump where they were shredded into small pieces. These pieces could be seen coming out of the spray nozzles. This test was run for about 4 hours, and during that time there was no change in line pressure, or flow rate.

4. CONCLUSIONS

Transco's Therma-Wrap blankets will not interfere with water flowing through the sumps or drains in containment areas, even if the strainer faces were completely covered with blankets, since water travels easily through the blankets with no change in line pressure.

Blankets would not be damaged by the containment spray system, whether they are intact or damaged with rips and tears, and they would not be drawn into the suction lines of the spray system pumps. Even if the blankets were shredded during a DBA, the pieces would be passed through the pumps and nozzles with no interference to the system. The pump that was used in these tests is not nearly as powerful or as sophisticated as the actual pumps used in the containment areas, so that these tests were more severe than the conditions encountered during a DBA.

The spray nozzles used were duplicates of those used in nuclear safety spray systems, and there was no clogging or interference with their operation in any of the above tests.