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SUBJECT: Special rept:on 880125,underground fire mains ruptured during excavation to install storm drains & catch basins.

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MARCH 3 1988

L-88-108

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Special Report: Ruptured Fire Mains

In accordance with Technical Specification 3.14 the attached Special Report is provided for your information. The revised submittal date of this report has been discussed and agreed to by your NRC Region II Staff.

If there should be any questions on this report, please contact us.

Very truly yours,

W. F. Conway
Senior Vice President - Nuclear

WFC/SDF/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

SDF/003.FPS

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# SPECIAL REPORT

Turkey Point Units 3 and 4
March 2, 1988

## RUPTURED FIRE MAINS

### PURPOSE:

Technical Specification (TS) 3.14 requires the submission of a special report if the fire suppression water system is unavailable for a reason other than the inoperability of a water pump or a water supply. During this event, a portion of the fire suppression system was inoperable due to ruptured fire mains. This report is therefore being submitted in accordance with the requirements of TS 3.14.

### EVENT:

On January 25, 1988, excavation in order to install storm drains and catch basins was in progress in the vicinity of the Nuclear Maintenance Building. During excavation, at approximately 1015, the underground fire main was bumped with a backhoe, causing it to crack and leak. The breach in the main was isolated by closing Post Indicator Valve (PIV) 33. PIV's 34 and 35 were also closed to prevent header drain down through the leak, and to facilitate repair. The Nuclear Administration Building, Health Physics administrative offices and storage, Construction warehouse, and the Training Building suffered loss of fire protection as a result of the break. A backup fire suppression water system, in accordance with TS 3.14.2.c, consisting of a 3000 gallon water tank truck and a portable fire pump was dispatched to the area to remain in standby.

Upon completion of repairs, PIV's 33, 34, and 35 were opened. The high flow rate as the drained lines were being filled resulted in low line pressure, which in turn initiated the auto-start of the diesel driven fire pump. Following the start of the diesel driven fire pump, at approximately 0105 on January 26, the fire main separated just downstream of PIV-20, at the Unit 4 Main Transformer Deluge Station. PIV-20 was isolated, taking the Main, Auxiliary, and Startup Transformer Deluge Systems along with the Hydrogen Seal Oil Deluge System out of service. Backup fire suppression was quickly established.

The pipe separation occurred at an elbow above grade at a point where the fire main begins a horizontal run after a short riser section. The elbow was restrained by tie rods, however the tie rods were cut.

The fire line was repaired and new tie rods were installed. Upon completion of the repairs, the backup fire suppression was discontinued and the fire main returned to service at approximately 1700 on January 26.

CAUSE OF THE EVENT:

The cause of the initial break was improper work controls, in that the fire main was not accurately located prior to excavation. As the fire main was not expected to be encountered at the point of excavation, precautionary hand digging instead of mechanical excavation was not performed.

The cause of the subsequent break was personnel error. The tie rods were found to be cut near ground level. No documentation of the cut, nor documentation justifying the acceptability of this configuration was found. Once the rods were cut, only friction within the elbow's mechanical joint prevented the elbow from separating from the attached riser. The internal pressure of the operating system, coupled with the sudden pressure increase upon the start of the diesel driven fire pump, resulted in forces sufficient to overcome the mechanical joint's friction force.

CORRECTIVE ACTIONS:

1) The initial break was quickly isolated. Backup fire suppression was established, and fire watches established in the affected areas during the time when these areas were expected to be unoccupied. Contingency plans upon discovery of a fire were also established.

2) The initial break was repaired.

3) The second break was quickly isolated. Backup fire suppression was established, and fire watches established in the affected areas.

4) The second break was repaired.

5) An inspection of above ground fire mains was conducted in order to identify any other deficient tie rods. As a result of this inspection, four locations with deficiencies were identified. The deficient tie rods will be either repaired or replaced, as required.

6) Known major underground obstructions in the proximity of any planned excavations will be physically located and identified prior to the initiation of major mechanical excavation.