

TERA



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APRIL 7 1980

Docket No. 50-293

Mr. G. Carl Andognini
Boston Edison Company
M/C NUCLEAR
800 Boylston Street
Boston, Massachusetts 02199

Dear Mr. Andognini:

During our continuing review of the Pilgrim Unit 1 GE turbine inspection findings, we have found it necessary to request that the following information be supplied on a schedule that will provide for review prior to startup from the current refueling outage.

1. Description of the turbine disc inspection procedure
2. Inspection results
3. Justification for returning to power with UT indications (i.e. water cutting)
4. Responses to the enclosed questions.

Some of this information may have been supplied in a GE submittal dated March 27, 1980. To the extent that it is applicable to Pilgrim Unit 1, the GE document may be referenced.

Since the basic NRC concern about turbine disc cracking is the potential for interaction with safety related systems and components in case of a turbine failure, it would be prudent to perform an assessment of the potential for turbine missile damage at the Pilgrim Unit 1 facility. Accordingly, please provide a schedule for your planned submittal of an analysis of strike and damage probabilities with your response to this request for information. (See Question VI in enclosure.)

Sincerely,

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosure:
Request for Information
Related to Turbine Discs

cc w/encl:
See next page

P

8004280 027

Mr. G. Carl Andognini
Boston Edison Company

- 2 -

cc:

Mr. Paul J. McGuire
Pilgrim Station Acting Manager
Boston Edison Company
RFD #1, Rocky Hill Road
Plymouth, Massachusetts 02360

Henry Herrmann, Esquire
Massachusetts Wildlife Federation
151 Tremont Street
Boston, Massachusetts 02111

Plymouth Public Library
North Street
Plymouth, Massachusetts 02360

REQUEST FOR INFORMATION RELATED TO TURBINE DISCS

SITE SPECIFIC GENERAL QUESTIONS - To Be Completed in 30 Days

- I. Provide the following information for each LP turbine:
 - A. Turbine type
 - B. Number of hours of operation for each LP turbine at time of last turbine inspection or if not inspected, postulated to turbine inspection
 - C. Number of turbine trips and overspeeds
 - D. For each disc: (With UT indications)
 1. type of material including material specifications
 2. tensile properties data
 3. toughness properties data including Fracture Appearance Transition Temperature and Charpy upper steel energy and temperature
 4. keyway temperatures
 5. critical crack size and basis for the calculation
 6. calculated bore and keyway stress at operating design overspeed
 7. calculated K_{Ic} data
 8. minimum yield strength specified for each disc
- II. Provide details of the results of any completed inservice inspection of LP turbine rotors, including areas examined, since issuance of an operating license. For each indication detected, provide details of the location of the indication, its orientation, size, and postulated cause.
- III. Provide the nominal water chemistry conditions for each LP turbine and describe any condenser inleakages or other significant changes in water chemistry to this point in its operating life.
- IV. If your plant has not been inspected, describe your proposed schedule and approach to ensure that turbine cracking does not exist in your turbine.
- V. If your plant has been inspected and plans to return or has returned to power with cracks or other defects, provide your proposed schedule for the next turbine inspection and the basis for this inspection schedule, including postulated defect growth rate.
- VI. Indicate whether an analysis and evaluation regarding turbine missiles have been performed for your plant and provided to the staff. If such an analysis and evaluation has been performed and reported, please provide appropriate references to the available documentation. In the event that such studies have not been made, consideration should be given to scheduling such an action.

POOR ORIGINAL

GENERIC QUESTIONS - To Be Completed in 30 Days

- I. Describe what quality control and inspection procedures are used for the disc bore and keyway areas.
- II. Provide details of the General Electric repair/replacement procedures for faulty discs.
- III. What immediate and long term actions are being taken by General Electric to minimize future "water cutting" problems with turbine discs? What actions are being recommended to utilities to minimize "water cutting" of discs?
- IV. Describe fabrication and heat treatment sequence for discs, including thermal exposure during shrinking operations.

POOR ORIGINAL