

POOR ORIGINAL

FILE: _____

DESCRIPTION:	ENCLOSURES:
Ltr re 10-17-74.....concerning the request that they submit an appl for amdt to the OL ...adv that at this time they do not feel that the referenced requirements apply to their Plant....and adv that should circumstances warrant they will submit such an amdt....trans the following.....	Reasons for determination concerning the subject License (tech spec) changes.....
PLANT NAME: Three Mile Island	ACKNOWLEDGED (1 cy encl rec'd) DO NOT

JB

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Regulatory Docket File

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NOV 28 1974

GGL 0516

Mr. Karl R. Goller
Assistant Director/Operating Reactors
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D.C. 20545



Dear Mr. Goller:

Three Mile Island Nuclear Station, Unit 1 (TMI 1)
Docket No. 50-289
Operating License DPR-50

In response to your letter of October 17, 1974--regarding Regulatory Guide 1.83 and your request that we submit an application for a license amendment to establish requirements for a program of steam generator tube inspection for TMI-1 -- the purpose of this letter is to state that we have determined that it is not necessary at this time for us to have to establish such a program; and we are not, therefore, submitting an application for a license amendment. Reasons for having made this determination are explained in more detail in the attached enclosure, and are based primarily on our conclusions that

- a. elimination of the coordinated phosphate treatment method of chemistry control will avoid accelerated caustic stress corrosion and tube wastage,
- b. strict water quality control measures will prevent poor quality water from reaching the steam generators, thus serve to reduce the buildup of concentrated caustics,
- c. the design of the OTSG's is such so as to minimize high stress regions, and also problems resulting from low flow and tube vibrations, and
- d. in light of a, b, and c above, the exposure of personnel to those known high radiation areas for the installation and removal of examination equipment is not warranted.

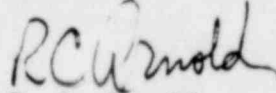
It should be noted, however, that we do intend to follow closely, the performance of once-through steam generators in our plant and other plants, and should operational or experimental evidence so warrant, we would, of course, establish a comprehensive inspection program.

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We trust that we have sufficiently addressed your concerns regarding an inservice steam generator tube inspection program for TMI-1; and should you have any questions regarding the content of this letter, please contact me.

Sincerely,



R. C. Arnold
Vice President

RCA:DNG:eg

Enclosure: Discussion of Inservice Inspection
Program for TMI-1 OTSG's

cc: Pennsylvania Electric Company
Vice President, Technical
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File 20.1.1/7.7.4.3.1.1

DISCUSSION OF INSERVICE INSPECTION PROGRAM FOR TMI 1 OTSG'S

As discussed in Regulatory Guide 1.83, the prime reason for steam generator tube degradation has been the secondary side chemical environment. The problems that have contributed to the adverse chemical environment have been seriously considered and the design of the unit incorporates several features which minimize the possibility of severe chemical upset conditions and the resultant tube degradation.

The chemistry used for the Three Mile Island Nuclear Station, Units 1 and 2 steam generators, is volatile in nature using hydrazine and ammonia solutions for oxygen and pH control. This is different from the coordinated phosphate treatment previously employed in U-tube steam generators and eliminates the introduction of unwanted solids in the form of sodium ions which would be free to form concentrated caustic. The inability to control the coordinated phosphate chemistry has been associated with the tube wastage experienced in U-tube steam generators. By eliminating this method of chemistry control, the accelerated caustic stress corrosion and tube wastage should not be experienced. The basic design and fabrication of the once-through steam generator including the complete vessel stress relief, eliminates the high stress regions found in the U-bend area and other portions of U-tube steam generators. The straight tube-straight shell design eliminates these highly stressed bends and significantly reduces the areas of the steam generators that will be susceptible to the various types of corrosion. The complete steam generator stress relief reduces the residual stresses in the once-through steam generator and produces a tubing microstructure apparently more resistant to stress corrosion cracking, especially under upset conditions. The use of volatile chemistry control also reduces the buildup of sludge and scale, particularly that formed from the insoluble phosphate compounds produced in the steam generators.

To prevent poor quality water from reaching the steam generator, continuous on-line monitoring is provided to assess the performance of the full flow condensate polishing unit and to detect in-leakage of air or circulating water. In the unlikely event that impurities, primarily in the form of sodium ions, silica and ferrous corrosion products, do enter the steam generators, several methods of removal are available. Operational procedures are established to reduce power or shutdown when impurities entering the generator approach the recommended maximum values established by the manufacturers. Emphasis has been placed on proper chemistry control during operator training, and proper actions have been detailed in operating procedures to minimize the duration of any chemical upset. The once-through design with superheated steam does not concentrate chemical impurities in the steam generator. The sodium and silica impurities are soluble in the superheated steam and consequently are carried out of the steam generator if inadvertently introduced. The superheat performance of the steam generator is monitored to determine the accumulation of impurities that are not soluble in superheated steam. When evidence of degraded superheated performance is obtained, chemical cleaning is performed.

The design of the OTSG has also included considerations in the areas of low flow and tube vibration. These have been detailed in B&W Topical Reports on the subject.

In summary, the factors which have contributed to tube degradation in the U-tube steam generators are not present in these units. Although methods are being developed to remotely examine the tubes during annual outages, the unnecessary exposure of personnel to those known high radiation areas for the installation and removal of the examination equipment is unwarranted.

The performance of once-through steam generators in other plants is being followed closely to determine if any degradation of integrity exists. A comprehensive inspection program will be developed at such a time that the operational or experimental evidence warrants further measures to insure steam generator tube integrity.