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 SCHWENCER, A. Operating Reactors Branch 1

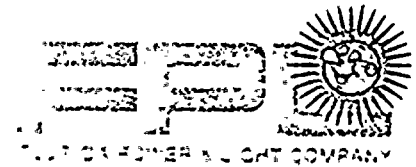
SUBJECT: Responds to 791119 ltr requesting addl info on condensate
 polishing demineralizers & steam generator repair.
 Installation of demineralizer sys does not require mod to
 Tech Specs.

DISTRIBUTION CODE: A001S COPIES RECEIVED: LTR 3 ENCL 3 SIZE: 13+8
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NOTES:

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	12 I&E	2 2	15 CORE PERF BR	1 1
	17 ENGR BR	1 1	18 REAC SFTY BR	1 1
	19 PLANT SYS BR	1 1	20 EEB	1 1
	21 EFLT TRT SYS	1 1	EP9-DUR	1 1
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EXTERNAL:	03 LPDR	1 1	04 NSIC	1 1
	23 ACRS	16 16		

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March 18, 1980
L-80-87

Office of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Schwencer:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 and 50-251
Steam Generator Repair

This letter is in response to your letter dated November 19, 1979 which requested additional information on the condensate polishing demineralizers and our planned steam generator repair. The responses to the questions enclosed with your letter are provided in Attachment 1.

The planned installation of a condensate polishing demineralizer system at Turkey Point Units 3 & 4 has been reviewed by the Turkey Point Plant Nuclear Safety Committee. They have concluded that the planned installation of the condensate polishing demineralizer system does not involve an unreviewed safety question or require a modification to the Facility Technical Specifications. A copy of our evaluation is attached as Attachment 2 in accordance with your request.

Please feel free to call me if you should have any additional questions about this matter.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/GDW/ah

Attachments

cc: J. P. O'Reilly, Region II
Harold F. Reis, Esquire

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A. Provide the following information regarding the full flow condensate polishing demineralizer system (contention 7).

QUESTION 1: Describe the composition of the demineralizer waste discharge and its concentration at point of release. Include regenerant ionic species as well as contaminants removed from the demineralizers.

ANSWER: The condensate polishers planned for installation at PTP 3 and 4 are of the Powdex type. Regenerant chemicals will not be utilized. FPL's current scheme for discharge of the polisher wastes includes a solids-water separation process, with high quality supernatant liquid being discharged into the closed cooling system, and solids held for land type burial.

QUESTION 2: Describe the ambient concentration of ionic species present in the waste.

ANSWER: A description of Powdex polisher waste is provided in the attached paper by Dr. Robert Kunin.

QUESTION 3: Estimate the volume of waste discharged per regeneration.

ANSWER: Condensate polishers planned for PTP 3 and 4 do not involve a regeneration process.

QUESTION 4: Estimate the frequency and duration of each regeneration discharge.

ANSWER: Same as #3.

QUESTION 5: Describe the dilution that will take place prior to release of the demineralizer waste.

ANSWER: Under the currently proposed scheme of waste disposal, only high quality supernatant liquid would be discharged into the facility's closed cooling water system. It does not appear that dilution of the supernatant liquid prior to discharge will be required.

QUESTION 6: Provide a description of the location of the demineralizer waste discharge.

ANSWER: The point of discharge is expected to be on the discharge side of the facility.

QUESTION 7: Describe the dilution that will take place due to mixing in the immediate area of the discharge.

ANSWER: Under FPL's current plans for handling condensate polisher wastes, only high quality supernatant liquid would be discharged into the facility cooling canal system. The discharge point would be at the facility's discharge basin. The discharge stream is not expected to exceed 150 gpm. Flow rate through the facility discharge basin due to forced pumping is approximately 1.8×10^6 gpm with all circulating water pumps running. Due to the high quality of the discharge, FPL has no minimum requirement for circulating flow during the discharge.

QUESTION 8: Describe treatment of the waste stream which will be performed prior to release.

ANSWER: FPL's current plan for the handling of condensate polisher waste is as follows:

Spent resins would be backwashed as a resin-water slurry (using condensate quality backwash water) into a backwash receiver tank. Powdex resin and other solids would then be separated from the slurry leaving a high quality supernatant liquid for discharge into the facility cooling canal system. We plan to dispose of the solid resins by land burial.

QUESTION 9: List the effluent parameters which will be monitored.

ANSWER: It is presently estimated that there will be no environmental degradation caused by the effluent release as a result of the operation of the full flow condensate polishing demineralizer system. The water quality of the polishing demineralizer system effluent discharge is expected to be superior to the water quality of the cooling canal system, Biscayne Bay, or Card Sound.

FPL has been issued a National Pollutant Discharge Elimination System (NPDES) permit for Turkey Point Plant, NPDES #FL001562

by the United States Environmental Protection Agency (EPA) on June 14, 1978. That permit authorizes discharges to the circulating water cooling canal system without limitations or monitoring requirements provided that there is no surface discharge to Biscayne Bay or Card Sound. The effluent discharge from the full flow condensate polishing demineralizer system will be consistent with the terms and conditions of this permit. The permit requires FPL to monitor the water quality of the circulating water cooling canal system. Grab samples must be taken quarterly at the outlet from Lake Warren and must include the following parameters: salinity; total suspended solids; and total zinc, iron and copper. Results are submitted in reports annually on January 31 of each year.

In the event of indications of primary to secondary leakage, samples will be collected from the backwash receiver tank and tested for radioactivity prior to disposal of the wastes. Liquid radioactive releases are controlled by Appendix A of the Turkey Point operating licenses (Technical Specifications, Section 3.9) as well as by written procedures. Both quantity and concentrations are controlled. The releases are required to and do meet the restrictions imposed by 10 CFR Part 20 and Part 50, Appendix I.

Disposal of any radioactively contaminated polisher wastes will be in accordance with applicable NRC regulations concerning the discharge and/or disposal of solid radioactive wastes and radioactive effluents.

QUESTION 10: Provide a list of organisms likely to be present in the receiving waters near the point of discharge.

ANSWER: Lists of organisms likely to be present in the cooling canal system have been compiled from published and unpublished sources. The lists of organisms are presented in the following tables, Table A-1 and Table A-2.

QUESTION 11: Evaluate the impact of discharge concentrations of contaminants present in the waste stream on the aquatic organisms found near the plant.

ANSWER: FPL's current plans call for discharging only high quality supernatant liquid to the facility cooling canal system. The supernatant will be of higher quality than the water in the cooling canal system. The supernatant will therefore

have no deleterious effect on the organisms living in the cooling canal system.

QUESTION 12: Describe the biological monitoring programs that will be conducted to assess the environmental impacts associated with operation of the demineralizer system.

ANSWER: The existing biological monitoring program (Environmental Technical Specification (ETS) for FPL Turkey Point Units 3 and 4) which is implemented for the Turkey Point Plant cooling canals will be used. Plankton (ETS Section 4.1.1.1.1), fish (ETS Section 4.1.1.1.2), and benthos (ETS Section 4.1.1.1.3) monitoring will provide enough information to assess the environmental impacts associated with operation of the demineralizer system.

QUESTION 13: Describe the status of all relevant permits required by other state, local and Federal agencies.

ANSWER: FPL has applied for and received all required relevant permits for the Turkey Point Plant from state, local or Federal agencies. Any new application or amendments required as a result of changes or additions to current operating practices will be made at the appropriate time.

QUESTION B: Provide the design details and exact location of the storage building (referred to in contentions 6* and 11d). Include the structural design details to the extent necessary for the staff to determine the adequacy of the building to withstand hurricanes and floods. Also include the weight and dimensions of the steam generator lower assemblies to be stored in the building.

Provide the details of the method of sealing the steam generator lower assemblies; weld design, weld material, cap material and dimensions, corrosion protection, and any related information that will be needed to evaluate the possibility of radioactive material leaking out of the stored assemblies.

*Contentions referred to in this request are to be taken as given in the Atomic Safety and Licensing Board's "Order Relative to Contentions and Discovery" dated September 25, 1979.

ANSWER: The conceptual design and nominal dimensions of the storage compound are shown on the attached figure. The final design might change depending on the outcome of ongoing engineering studies and evaluations. Each steam generator lower assembly with steel support saddles will rest on reinforced concrete

bearing pads. The compound will be designed and constructed in accordance with the South Florida Building Code, ACI 318, AWS D1.1 and AISC Manual of Steel Construction.

The approximate location of the storage compound in the laydown area is also shown on the attached figure. The current elevation of the laydown area ranges from +6 to +9 feet MLW. The approximate subsurface profile in the vicinity of the storage compound consists of 4 feet of limerock fill over 6 feet of muck underlain by Miami limestone. The existing fill and muck will be excavated to a minimum distance of 15 feet beyond the edge of the storage compound. The entire compound and lay down area will be backfilled or filled as required with compacted limerock fill to + 17' 6" MLW with perimeter slopes of 1-vertical on 3-horizontal. Heavy equipment transport, laydown storage, and heavy lift crane implacements in support of repair and storage operations will require a minimum of 65 feet around the storage compound.

The limerock fill will be compacted to a minimum dry density of 110 pounds per cubic foot which based on laboratory tests yields allowable bearing capacity of approximately 15 kips per square foot, strength of cohesion of approximately 3 kips per square foot, and an internal angle of friction of approximately 39.

A steam generator lower assembly is approximately 39 feet long and 127 inches in diameter except for the last 6 feet 4 inches where the diameter expands linearly from 127 inches to 166 inches. The volume is approximately 3620 cubic feet and the dry weight is approximately 205 tons which yields a total vessel density of about 113 pounds per cubic foot.

The top of the assembly (approximately 13' 10" diameter) and the two channel head nozzles (approximately 31" diameter) will be provided with 3" steel shield plates. The two blowdown nozzles (approximately 2" diameter), one shell drain (1" diameter), and one instrument nozzle (3/4" diameter) will be provided with 1" steel shield plates. The shield plate materials will be ASTM A36 or equivalent and will be welded to the lower assembly openings. Only carbon steel weld materials will be used and the weld throat will be 1" minimum. Since the storage compound will have a water tight roof the lower assemblies will be protected from industrial corrodent and salt spray deposition, hence special corrosion protection will not be required.

FPL is presently evaluating the effects of a postulated design basis hurricane upon the steam generator storage facility and its foundation. The results of this evaluation will be made available upon completion.

QUESTION C: Provide the costs involved in the additions of the demineralizers (referred to in contentions 7 and 11e).

ANSWER: The estimated costs for installing a condensate polishing demineralizer system for Turkey Point Units 3 and 4 is \$9.1 million.

QUESTION D: Provide the costs involved in the condenser retubing (referred to in contention 11e).

ANSWER: The cost involved in retubing the Turkey Point Units 3 and 4 condensers was approximately \$1 million per water box; or a total of \$8 million.

QUESTION E: Provide a cost update of the repair project from December 1977 to the present time (discussed in contention 11f).

ANSWER: The repair of the Turkey Point Units 3 and 4 steam generators is estimated to be \$119.3 million (1979 dollars).

TABLE A-1

ORGANISMS OCCURRING IN THE TURKEY POINT COOLING CANAL SYSTEM
(ANNUAL REPORTS, ABI 1974-1980)

ANNELIDA

Polychaeta

Amphicteis gunneri floridus
Autolytus brevicirrata
Capitella capitata
Caulleriella killariensis
Cirriformia filigera
Dorvillea sociabilis
Fabricia Sp.
Glycera americana
Haploscoloplos foliosus
Laonome salmicidis
Lumbrineris Sp.
Maldane sarsi
Marphysa sanguinea
Nereis succinea
Odontosyllis enopla
Paraonides lyra
Pista cristata
Platynereis dumerillii
Podarke obscura
Polydora ligni
Polyophtalmus pictus
Prionospio heterobranchia texana
Schistomeringos rudolphi
Scyphoproctus Sp.
Syllis Sp.
Terebellides stroemi
Trichobranchus glacialis
Typosyllis Sp.

MOLLUSCA

Gastropoda

Batillaria minima
Bulla striata
Bulla occidentale
Crepidula fornicata
Crepidula maculosa
Cyclostremiscus trilig
Cylichna cerina
Haminoea elegans
Hydrobia minuta

MOLLUSCA

Gastropoda (continued)

Prunum apicinum
Retusa eburnea

MOLLUSCA

Pelecypoda

Astarte nana
Chione cancellata
Chione grus
Diplodonta nucleiformis
Gouldia cerina
Lucina multilineata
Lyonsia floridana
Modulus carchedonius
Pitar albida
Pseudocyrene floridana
Tellina Sp.
Tellina alterata

ARTHROPODA

Pycnogonida

Anoplodactylus lentus

ARTHROPODA

Crustacea

Cylindroleberis mariae
Sarsiella americana
Harpacticoida
Oxyurostylis smithi
Leptochelia savignyi
Aegathoa oculata
Cymodoce faxoni
Erichsonella filiformis
Idotea metallica
Sphaeroma quadridentatum
Elasmopus levis
Erichthonius brasiliensis
Grandidierella bonnieroides
Hemiaegina minuta

TABLE A-1
(continued)
ORGANISMS OCCURRING IN THE TURKEY POINT COOLING CANAL SYSTEM
(ANNUAL REPORTS, ABI 1974-1980)

ARTHROPODA

Crustacea (continued)

Lysianopsis alba
Microdeutopus sp.
Mysis stenolepis
Taphromysis bowmani
Alpheus armillatus
Hippolyte pleuracantha
Palaemonetes pugio
Thor floridanus
Pinnixia sayana

ECHINODERMATA

Ophiuroidea

Amphipholis squamata

MISCELLANEOUS

Echiuroid worms
Priapulid worms
Sea squirts

SHELLFISHES

Callinectes sapidus
Penaeus spp.
Menippe mercenaria
Panulirus argus
Limulus polyphemus

FISHES

Floridichthys carpio
Cyprinodon variegatus
Poecilia latipinna
Lophogobius cyprinoides
Gerres cinereus
Eucinostomus gula
Belonesox belizanus
Eucinostomus argenteus
Lucania parva
Albula vulpes
Sphyræna barracuda
Opsanus beta
Fundulus confluentus
Lutjanus griseus
Lutjanus apodus

FISHES (continued)

Centropomus undecimalis
Fundulus grandis
Haemulon sciurus
Arius felis
Strongylura notata
Menidia beryllina
Diapterus plumieri
Lagodon rhomboides
Caranx hippos
Haemulon parrai
Atherinomorus stipes
Mugil cephalus
Elops saurus
Chaetodipterus faber
Syngnathus sp.
Gobionellus sp.
Selene vomer
Strongylura marina
Hippocampus erectus
Echeneis naucrates
Caranx crysos
Trachinotus falcatus
Menticirrhus littoralis
Archosargus probatocephalus
Dormitator maculatus
Microgobius microlepis
Sphoeroides testudineus
Megalops atlantica
Carcharhinus leucas

TABLE A-2

ORGANISMS OCCURRING IN THE TURKEY POINT COOLING CANAL SYSTEM
(FPL, 1975)

Blue Green Algae

Lyngbya sp.

Chroococcus planctonica

Oscillatoria sp.

Chroococcus gigantea

Schizothrix calcicola

Arthrospira sp.

Spirulina sp.

Oscillatoria minor

Merismopedia glauca

Johannesbaptisia sp.

Gomphospharia sp.

Merismopedia punctata

Anabaena sp.

Euglenophyceae

Astasia sp.

Eutreptia sp.

Volvocidae

Pyramidomonas grossi

" sp.

Cryptophysida

Silicoflagellida

Dictyocha fibula

Bacillariophyceae

Naviula sp.

Diatoms unid.

Cymatopleura solea

Amphora ovalis

Synedra ulna

Nitzschia sigmoidea

Synedra crystallina

Nitzschia acicularis

Suvirella sp.

Pleurosigma sp.

Synedra superba

Nitzschia longa

Condensate Polishing Demineralizer System

The new condensate polishing demineralizer system is planned for installation in the condensate/feedwater system at the discharge of the condensate pumps between the pumps and the No. 1 low pressure feedwater heater. The system's function is to purify the condensate by filtration and demineralization to assure high quality feedwater to the steam generators.

The condensate polishing demineralizer system control is independent from the existing condensate/feedwater system. When in use, the system treats full condensate flow from the condensate pumps. A full flow bypass system has been provided to assure continuous uninterrupted condensate/feedwater system operation.

Loss of normal feedwater flow due to pipe break, pump failures, valve malfunctions or loss of outside AC power, is discussed in Section 14.1.11 of FSAR, Chapter 14. Technical specification 3.8 discusses the steam and power conversion system.

The condensate/feedwater system is not a safety related system.

10 CFR 50.59 (a) (2) defines an unreviewed safety question as follows:

"A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question (1) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (2) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (3) if the margin of safety as defined in the basis for any technical specification is reduced."

A summary of the review of the planned addition of the demineralizer system against the foregoing definition of an "unreviewed safety question" follows.

With respect to the probability of occurrence of an accident previously evaluated in the FSAR: As discussed previously, a full flow bypass line is provided for the condensate polishing demineralizer system. The probability of a loss of feedwater (LOFW) accident due to a failure in the condensate polishing demineralizer system and a concurrent failure of the bypass control valve to open is extremely small. This probability is not significant when considered in light of the frequency of feedwater transients (2 to 3 per year) as documented in Section 3.1 of NUREG-0560 "Staff Report on the Generic Assessment of Feedwater Transients in PWR's designed by Babcock and Wilcox," May 9, 1979. Therefore, the probability of occurrence of this accident is not increased by the addition of this system.

With respect to the consequences of an accident previously evaluated in the FSAR: The addition of the condensate polishing demineralizer system has no effect on

the severity of any of the accidents discussed in Chapter 14 of the FSAR. The LOFW accident, which is the most severe accident for the feedwater system, has already been evaluated in the FSAR.

With respect to the probability of malfunction of equipment important to safety previously evaluated in the FSAR: The only system affected is the condensate/feedwater system, which is not required to mitigate the consequences of a LOFW accident. The addition of the condensate polishing demineralizer system will have no effect on the auxiliary feedwater system since the systems are totally independent of each other.

With respect to the consequences of the malfunction of the equipment important to safety previously evaluated in the FSAR: For the reason stated above, the addition of the condensate polishing demineralizer system will have no effect on the consequences of malfunction of equipment important to safety.

With respect to the probability of an accident of a different type than analyzed in the FSAR: As discussed earlier, the most severe accident for the condensate/feedwater system is the LOFW. This accident has already been evaluated in the FSAR. The addition of the condensate polishing demineralizer system does not create the possibility for a different type of accident.

With respect to the possibility of malfunction of a different type than any analyzed in the FSAR: For the reason discussed in 2.a above, the addition of condensate polishing demineralizer system would not create the possibility of a malfunction of a different type than considered in Chapter 14 of the FSAR.

With respect to the margin of safety as defined in the basis for any Technical Specification: The addition of the condensate polishing demineralizer system would not decrease any margin of safety discussed in the Facility Technical Specifications.

Conclusion

For the reasons discussed above, addition of the condensate polishing demineralizer system does not involve an "unreviewed safety question" as defined in 10 CFR 50.59 (a) (2). The planned addition of the condensate polishing demineralizer system has also been reviewed against the Facility Technical Specifications. The addition of the condensate polishing demineralizer system does not require a change to Facility Technical Specifications.