STEAM GENERATOR REPAIR PROGRAM

FOR

TURKEY POINT UNIT 3

RADIOLOGICAL PROGRESS REPORT - NO. 4

FOR THE PERIOD

DECEMBER 31, 1981 THROUGH MARCH 3, 1982

DOCKET NO. 50-250

LICENSE NO. DPR-31

FLORIDA POWER AND LIGHT COMPANY

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TABLES

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1.0 INTRODUCTION

Radiological Progress Report No. 4 contains information pertaining to the radiological aspects of the Unit 3 Steam Generator Repair Program (SGRP) for the period December 31 through March 3. This information includes the following:

a. An assessment and summary of the occupational exposure and labor expended for each reporting period (throughout the project).

b. An evaluation of the effectiveness of dose reduction techniques (ALARA principles).

c. An estimate of the radioactivity released in liquid and airborne effluents.

d. An estimate of the solid radioactive waste generated including volume and radioactive content.

Significant project tasks performed during this reporting period included:

1. Inspection and close-out of steam generators in preparation for testing.

2. Installation of miscellaneous steel.

3. Installation of reactor coolant pump motors.

4. Installation of emergency containment coolers, control rod drive mechanism, coolers and fans.

5. Installation of insulation on steam generators.

6. Reactor preparation for hot functional testing.

7. Cleanup activities (removal of scaffolding and support equipment, removal of temporary shielding, etc.).

8. Welding of S/G divider plates.

9. Installation of miscellaneous piping in S/G cubicles.

Several on-going activities also performed during this period included: maintenance of temporary scaffolding, cleanup and decontamination, maintenance of temporary electrical power and lighting services, health physics support and project supervision.

2.0 OCCUPATIONAL RADIATION EXPOSURE

2.1 General

As indicated in previous progress reports , occupational exposure to radiation may be considered the major radiological impact of the SGRP. The program developed to collect exposure information and provide accurate assessments of tasks performed is discussed in detail in Section 2.1 - 2.3 of Radiological Progress Report No. I. This program was utilized throughout this reporting period. A description of the thirteen (13) major tasks is indicated in Table 1.

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2.2 Description and Format of Exposure Data

Table 2 presents a summary of the occupational radiation exposure expended in person-rem and the labor expended in the radiation field in person-hours through this reporting period (i.e., from project commencement on 24 June 1981 to 3 March, 1982).* Also included are the original estimated expenditures. The following comments are provided for clarification and should be considered when reviewing the data presented in Table 2.

a. Several activities performed during the repair effort which were not described in Table 1 have been appropriately placed into one of the major task categories in Table 2 and accordingly accounted for.

b. Exposures received by certain pre-identified personnel (e.g., health physics, QC/QA, etc.) performing functions not directly attributable to any one task are listed separately in Item 7.

c. Information detailing exposures reported for specific activities within a major task is contained in the data base. This information is utilized to "track" exposure for the time period of interest.

A detailed summary of the personnel exposure expended through this reporting period for preparatory, removal, installation and post-installation activities are presented in Tables 3A, 3B, 3C and 3D respectively. This summary includes both the labor and exposure expenditures and the original estimated expenditures. These tables list a more detailed breakdown of specific job activities which have been incorporated into the appropriate major task descriptions listed in table 2. Table 4 presents a general summary of both labor and personnel exposure expended for each phase of the repair project with the original estimated expenditures. The following comments are provided for clarification and should be considered when reviewing the data presented in Tables 3A, 3B, 3C, 3D and 4.

a. Activity status indications are given to allow comparison of actual versus estimated person-rem expenditures.

b. Activities indicated as in progress may require additional exposure prior to completion of the activity; therefore a valid comparison at this time is not justified.

c. For completed activities it should be noted that small amounts of additional exposure and labor may appear sometime after completion is indicated, as a result of such factors as: field changes to procedures, work involving activity related to support equipment, localized work area cleanup, etc.

*Self-reading pocket dosimeter (SRPD) results are used to report person-rem since exposure information is immediately available upon exit from the RCA and accordingly recorded in the computer data base. Since thermoluminescent dosimeters (TLD's) are processed primarily on a monthly basis this information could not be readily incorporated into the exposure expended for each specific activity. Historically, SRPD results are higher than TLD results primarily due to drift (caused by factors such as heat and humidity, and initial charging). Therefore, the accumulated dose reported may be considered as conservative.

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2.3 Discussion of Exposure Results

A review of the data presented in Table 2 shows that the total occupational radiation exposure recorded for all major tasks is approximately 98% of the original total estimate. These exposures are recorded by computer acquisition as discussed in Progress Report No. 1. Table 2 includes all exposure expended through March 3, 1982 and will continue to be used for accumulation of all personnel exposures through project completion.The exposure expended to date for activities performed during the preparatory, removal, installation and post-installation phases is summarized in tables 3A, 3B, 3C and 3D respectively.

As discussed in Progress Report No. 3, tables 3A and 3B show that the total actual exposure expended for preparatory and removal phase activities was approximatley 40% less than the total estimated exposure for those activities.

Table 3C shows that the total occupational exposure accumulated for installation phase activities was approximately 865 person-rem as compared to the original exposure estimate of 644 person-rem. The exposure attributed to steam generator lower assembly installation (approximately 451 person-rem) was significantly higher than the estimate of 190 person-rem (items 2 and 3 of table 3C). The exposure attributed to welding the steam generator divider plates (approximately 120 person-rem) was also significantly higher than the estimate of 15 person-rem (item 6 of table 3C).

Table 3D shows that the total occupational exposure accumulated for post-installation phase activities in progress is approximately 375 person-rem as compared to the original exposure estimate of 141 person-rem.

Table 3D indicates that several post-installation activities resulted in significant exposure above the estimated exposure for those activities. These activities included:

1. Installation of miscellaneous piping and steel (items 2 and 4)

2. Removal of scaffolding and contaminated materials (items 10 and 11).

3. Miscellaneous activities - Q.C. inspections, project supervision, etc. (item 14).

The above activities resulted in an expended exposure of approximately 277 person-rem as compared to the total estimate of 95 person-rem for those activities. Table 3D also indicates that a few activities resulted in significant exposure that were not included in the original estimate. These activities included:

1. Installation of reactor coolant pump motors (item 5).

2. Reactor preparation for hot functional testing (item 12).

3. S/G tube cleaning/inspection A, B & C S/G's (item 13).

These activities resulted in an expended exposure of approximately 66 person-rem.

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The information for all phase activities in progress or completed (as detailed in Tables 3A, 3B, 3C and 3D) is summarized in Table 4. The total exposure expended during this reporting period was approximately 592 person-rem.

3.0 APPLICATION OF DOSE REDUCTION TECHNIQUES (ALARA PRINCIPLES)

3.1 General

This section discusses the techniques and practices which have been effective in providing dose reductions to personnel during the reporting period. Where available data permits, the following evaluations include a quantitative assessment of the person-rem savings which can be attributed to the techniques used.

3.2 Contamination Control Envelopes and Ventilation

Enclosures for contamination control and a filtered ventilation system were utilized during installation of the steam generator divider plates. Welding and divider plate preparation operations resulted in low-level airborne radioactivity which was effectively controlled with the filtered ventilation system. At times, during divider plate installation, it was necessary to install the filtered exhaust ductwork in the channel head with the work crews to assure adequate ventilation in the work area. Contamination control enclosures were modified as needed to maximize channel head accessibility. These modifications assured positive personnel access control as well as controlling the spread of relatively higher levels of contamination to surrounding areas.

3.3 Welding of Steam Generator Divider Plates

Exposure reduction techniques similar to those techniques utilized for steam generator channel head remnant weld preparation and steam generator lower assembly (SGLA) installation (discussed in previous reports) were employed during welding of the steam generator divider plates. These techniques included:

a) Controlling access/egress to S/G work platforms from outside the biological shield wall where dose rates are typically ten times less than dose rates inside the shield wall.

b) Using contamination enclosures on the work platforms to minimize airborne radioactivity and the spread of contamination to adjacent areas.

c) Utilizing filtered ventilation ducting to exhaust low level airborne radioactivity from the work area.

d) Utilizing channel head shielding whenever practical to reduce exposure rates during divider plate welding and repair operations.

The exposure expended for installation of the steam generator divider plates was approximately 120 person-rem. Dose rates in the channel head without any shielding were approximately 1,000 mR/hr. With channel head shielding installed, area dose rates were on the order of 200-400 mR/hr. Without the benefit of channel head shielding, the exposure expended would be approximately 400 person-rem. Thus, a conservative savings of approximately 280 person-rem was realized.

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The exposure expended for all SGLA installation activities was approximately 600 person-rem. Without the benefit of head shielding and decontamination of the S/G channel heads, the exposure expended would have been approximately 5,000 person-rem. Thus a conservative exposure savings of approximately 4,400 person-rem was realized. A discussion of exposure expended for SGLA installation activities is discussed in sections 3.6, 3.4 and 3.3 of Radiological Progress Reports No.'s 2, 3 and 4 respectively.

3.4 Reactor Head Preparation for Hot Functional Testing

Lead shielding was installed on the reactor head to reduce exposure rates for those activities performed to prepare for hot functional testing and removal of the reactor head after hot functional testing. The following activities will have the benefit of reactor head shielding:

1. Installation and removal of instrument port conoseals.

2. Detensioning and tensioning of the reactor head.

3. Installation and removal of reactor head studs.

The exposure expended to date for the above activities is approximately 30 person-rem. Without the benefit of head shielding, the exposure expended would have been approximately 60 person-rem. An update on the exposure savings realized as a result of reactor head shielding will be discussed in a future report since all activities associated with the hot functional testing were not completed during this report period.

3.5 General Techniques and Practices

In addition to the assessment of dose reduction techniques described above, it is important to note some of the more general techniques and practices employed to maintain adequate control of personnel radiation exposure. These practices include the following:

a) A comprehensive health physics program which includes an extensive training and radiological surveillance program.

b) Use of repair project process sheets.

c) Utilization of "in-containment" low-level radiation waiting areas.

d) Use of portable area radiation monitors to provide workers on the spot continuous exposure rate information.

e) Ongoing decontamination and periodic work clean-up program.

f) Use of continuous air samplers in addition to periodic grab samples.

g) Use of in-containment tool cribs and weld rod rooms. A detailed description of these techniques and practices are discussed in Progress Report No. 1.

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h) Use of a cooler system in the Reactor Containment Building (RCB) to improve worker comfort. Although this system was not designed to cool the entire RCB, it should significantly improve worker comfort especially on the 58' elevation where a large majority of the work is scheduled.

i) A communications system used by health physics and located in the vicinity of each S/G enclosure to allow direct communication with the Health Physics Shift Supervisor. This system enables the health physics technician to maintain continuous communication with the shift supervisor thereby minimizing delays (and person-rem expended) on the job.

j) Multi-badging for evaluation of personnel exposure for those tasks performed in relatively complex radiation fields.

k) Use of temporary lead shielding in high occupancy/traffic areas.

Experience has shown that the practices and techniques discussed in this section have contributed significantly to an effective overall dose reduction (ALARA) program for the repair project.

4.0 RADIOACTIVE EFFLUENTS AND SOLID WASTE

4.1 General

Radioactive effluents, compromised of liquid and airborne releases, and low-level solid radioactive waste produced during this reporting period and throughout the repair project to date are summarized in Tables 5 and 6 respectively.

4.2 Liquid Releases

Laundry operations continue to be the major source of liquid releases for the Unit 3 repair project . As shown in Table 5 the composition of radioactive isotopes detected remain relatively unchanged from those detected during the previous period. Approximately 80% of the total activity released to date was in the form of relatively long-lived corrosion products. The remaining 20% was in the form of fission products (which include Cs-134 and Cs-137) and activation products. The total activity released to date is approximately 21% of the total estimated activity to be released during the repair project on Unit 3.

4.3 Airborne Releases

Airborne releases for this reporting period originated primarily from continuous ventilation of the containment during repair activities. A summary of airborne releases is shown in Table 5 as well. As indicated in previous progress reports the particulates detected were typical of radionuclides expected as a result of an extended shutdown. The total activity released through this reporting period is less than 1%[a] of the total estimated activity projected to be released.

4.4 Solid Radioactive Waste

A summary of solid low-level radioactive waste generated and shipped to date as a result of Unit 3 steam generator repair activities is provided in Table 6. The low-level waste shipments during this reporting period were made to both the

(a) This value was incorrectly reported in Radiological Progress Report No. 3 as 26%. The correct value should have been 1%.

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Barnwell, South Carolina and-Richland, Washington Low-Level Waste Disposal Facilities. The total volume of solid low-level radioactive waste generated due to repair project activities through this reporting period (excluding the steam generator lower assemblies) is approximately 28% greater than the volume estimated in the Gould Affidavit dated June 12, 1981. It should be noted that the final volume of waste shipped may be less than the accumulated volume of waste generated. This can be primarily attributed to additional volume reduction techniques used prior to shipment, which are not accounted for when initially generated. The total quantity of radioactivity shipped to date (for the volume of repair project waste generated) is approximately 15% of the activity estimated in the SGRR.

5.0 CONCLUSIONS AND OBSERVATIONS

The following general conclusions and observations are based upon information contained in this report:

a) The actual exposure expended for installation phase activities is approximately 865 person-rem as compared to the original estimate of 644 person-rem. Approximately 65% (570 person-rem) of the actual exposure expended for the installation phase was attributed to steam generator channel head interior weld repairs, lower assembly installation activities and welding of S/G divider plates. The estimated exposure for these activities was approximately 204 person-rem. As discussed in Radiological Progress Report No.3, this higher expended exposure is attributed to personnel working in radiation fields higher than originally estimated and performing repairs that required more time in the higher radiation fields.

   The actual exposure expended for post-installation phase activities through this reporting period is approximately 375 person-rem as compared to the estimate of 141 person-rem. As discussed in section 2.3 of this report, several post-installation activities resulted in the actual exposure exceeding that estimated for the activity or significant exposure accumulated for an activity that was not included in the original estimate. For those post-installation activities estimated, the increased exposure can be attributed to the fact that more time was required in radiation fields to complete the work than originally estimated. The exposure expended for post-installation activities not included in the original estimate are a result of uncertainties in predicting the entire scope of work for the repair project - channel head cut method.

   Table 4 shows that the actual labor expended to date for the installation and post-installation phase (approximately 128,000 person-hours and 82,000 person-hours respectively) is considerably higher than the estimated labor for those phases (approximately 82,000 person-hours and 21,000 person-hours respectively). Table 4 also indicates that the actual labor (approximately 303,000 person-hours) expended for the entire project to date is significantly greater than the entire project estimate of approximately 208,000 person-hours. The significant increase in actual person-hours expended versus estimated person-hours demonstrate the uncertainties in predicting the total labor expenditure for the repair project. A discussion of the uncertainties in predicting labor expenditures for the repair project is included in section 3.3.7.2 of the Steam Generator Repair Report (SGRR).

With the repair project nearing completion, the total exposure projected for the entire project has been re-estimated at 2,200 person-rem. This value is well within the range predicted for the repair project (i.e. between 1730 and 2480 person-rem).

b) Radioactive liquid effluents continue to remain within the total release estimate presented in Table 5.2-7 of the repair report. The calculated activity is less than 21% of the estimated total activity in the Steam Generator Repair Report (SGRR).

c) Airborne releases of radioactivity remain below the estimate indicated in the SGRR. No radioiodine or gaseous activity was detected. Airborne activity discharged throughout the Unit 3 repair project is not expected to exceed the estimate indicated in the SGRR.

d) Solid low-level radioactive waste generated to date (excluding the steam generator lower assemblies) is approximately 28% greater than the estimate provided in the Gould Affidavit dated June 12, 1981. The total quantity of radioactivity for repair project waste shipped to date remains significantly below the activity estimated in the SGRR.

Progress Report Number 5 will contain information from March 4, 1982 through project completion (early April, 1982). This final report will also contain a summary for those tasks where the actual person-rem expended is significantly greater than the estimated values. This summary will include a discussion for the higher expended exposure and the additional ALARA techniques planned for utilization in the Unit 4 SGRP as a result of the experience gained from the Unit 3 SGRP.

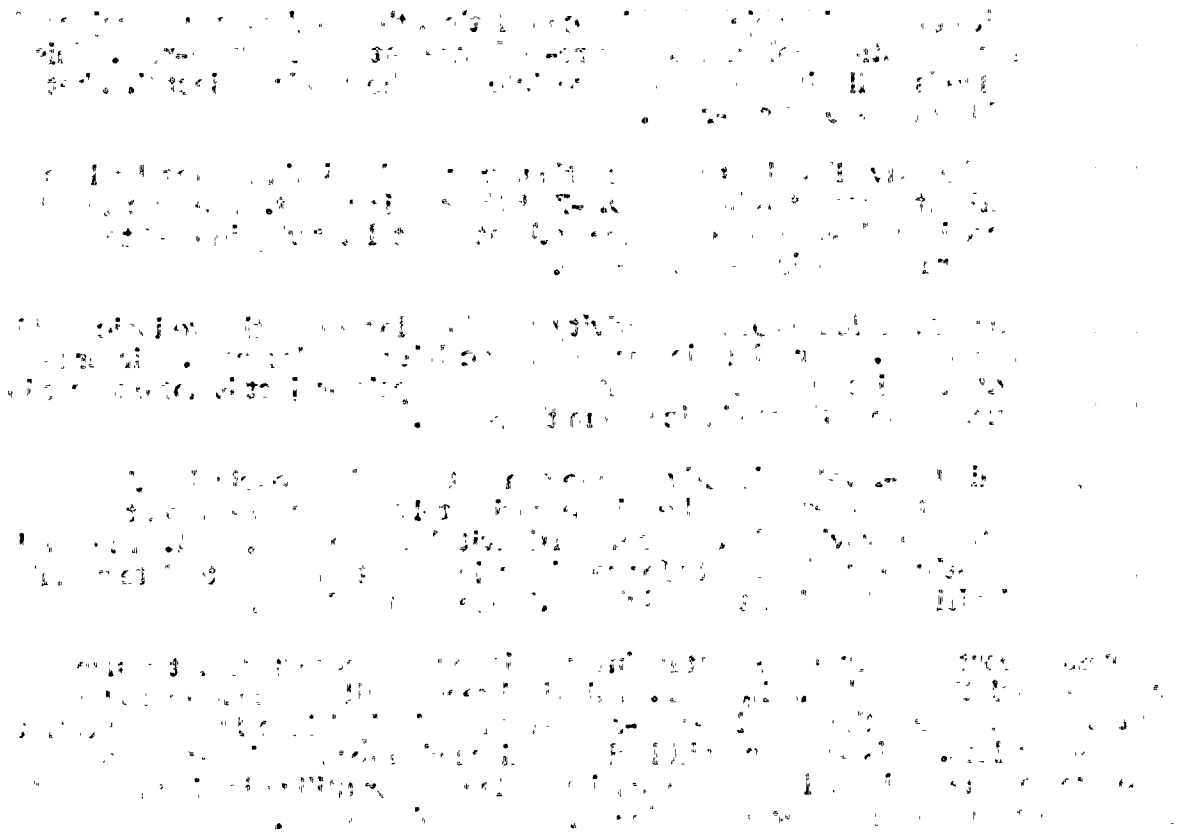

TABLE 1

DESCRIPTION OF MAJOR TASKS

TASK	TASK DESCRIPTION
1. Concrete and structural steel removal and placement.	1. This task includes all work associated with removal/replacement of concrete and structural steel. Removal items include: Erection of scaffolding to remove piping and electrical components, cut/removal of the concrete shield wall above EL 58' and the floor slab at EL 58', the concrete shield wall below EL 58', and removal of structural steel. Replacement items include: Installation of rebar and cadweld splices, erection of form work and shoring, concrete placement, and installation of structural steel.
2. Construction of pedestal cranes, preparation of polar crane, miscellaneous cribbing platforms, S/G transfer bridge.	2. This task includes installation/removal of the pedestal crane foundations, assembly and erection of cranes and the polar crane trolley, and disassembly and removal of cranes and the polar crane trolley.
3. Removal, modification and reinstallation of S/G upper assemblies and major piping.	3. Items included in this task are: Erection/ removal of scaffolding from El 58' to El 93', removal/installation of insulation and piping, upper assembly girth cut, cutting internal pipe and structural members inside the S/G, upper assembly modifications, and the upper assembly girth weld.
4. Construction of temporary facilities and support services.	4. The major exposure items in this task are: Routing of welding leads, installation of temporary power for small tools and lighting in the area near the S/G (most will be inside the secondary shield wall between El 14' and El 30'6"), and maintenance of temporary power and lighting for the entire outage.
5. General decontamination and disposal of contaminated materials/cleanup.	5. This task includes general area decontamination of the containment prior to commencement of major work, continuous containment decontamination for the entire outage, and removal and disposal of contaminated material for the entire outage.

TABLE 1 (continued)

DESCRIPTION OF MAJOR TASKS

TASK		TASK DESCRIPTION	
6.	Removal and reinstallation of miscellaneous piping, equipment and insulation.	6.	This task includes removal of insulation from the steam generator and main steam and feedwater piping, installation of insulation on the new steam generators, and removal/installation of miscellaneous items.
7.	Non-manuals (e.g., QC, Engineers, HPs).	7.	The non-manual category includes health physics, quality control, and engineering personnel, visitors, and Bechtel personnel required for the entire outage.
8.	Decontamination of the channel head.	8.	Included in this task are mechanical grit blast decontamination of the channel head, and installation of inflatable plugs in the reactor coolant piping.
9.	Cut channel head and remove old S/G lower assembly.	9.	This task includes installation of tenting and temporary shielding, cutting the transition cone, and channel head, and rigging and removal of the lower assembly to the containment equipment hatch.
10.	Weld shield cover on lower assembly; a. At channel head b. At transition end	10.	The only item in this task is welding of steel plates at each end of the steam generator to provide shielding and to prevent leakage.
11.	Cut and remove old divider plate, weld new divider plate.	11.	The divider plate was detached from the tubesheet as part of Task 9. Removal and placement of the divider plate to the channel head is included in this task.
12.	Install new S/G, weld channel head.	12.	This task includes erection/removal of scaffolding, rigging and moving the new steam generator, installation/removal of hydroplugs, channel head welding and grinding, and removal of the inflatable plugs in the reactor coolant pipes.
13.	Placement of steam generator in storage.	13.	This task includes transporting of the S/G from the containment equipment hatch into the storage compound and construction of a roof once the S/G's are in the compound.

TABLE 2

PERSONNEL EXPOSURE SUMMARY - PER TASK

REPORTING PERIOD 24 JUNE 1981 TO 3 MARCH 1982

TURKEY POINT - UNIT 3

	TASK DESCRIPTION	LABOR EXPENDED IN RADIATION FIELD (PERSON HOURS) ESTIMATED	LABOR EXPENDED IN RADIATION FIELD (PERSON HOURS) ACTUAL	PERSONNEL EXPOSURE[a] (PERSON-REM) ESTIMATED	PERSONNEL EXPOSURE[a] (PERSON-REM) ACTUAL
1.	Concrete and structural steel removal and replacement.	13,660	21,767	88	86.76
2.	Construction of pedestal cranes, preparation of polar crane, miscellaneous cribbing platforms, and steam generator transfer bridge.	10,280	10,024	32	31.60
3.	Removal, modification and reinstallation of steam generator upper assemblies and major piping.	24,600	71,820	256	289.71
4.	Construction of temporary facilities and support services	19,120	18,925	215	96.29
5.	General decontamination and disposal of contaminated materials/cleanup.	42,310	23,165	201	165.96
6.	Removal and reinstallation of miscellaneous piping equipment and insulation.	8,850	39,854	125	181.68
7.	Non-manuals (e.g. QC, Engineers, Health Physics).	68,540	54,500	436	274.29
8.	Decontamination of the channel head.	1,840	6,503	214	155.12
9.	Cut channel head and remove old steam generator lower assembly.	3,240	9,714	166	109.74
10.	Weld shield cover on lower assembly:				
	a. at channel head	760	526	40	10.10
	b. at transition end	530	978	53	16.49

TABLE 2 (continued)

PERSONNEL EXPOSURE SUMMARY - PER TASK

REPORTING PERIOD 24 JUNE 1981 TO 3 MARCH 1982

TURKEY POINT - UNIT 3

	TASK DESCRIPTION	LABOR EXPENDED IN RADIATION FIELD (PERSON HOURS) ESTIMATED	ACTUAL	PERSONNEL EXPOSURE[a] (PERSON-REM) ESTIMATED	ACTUAL
11.	Cut and remove old divider plate, weld new divider plate.	2,640	6,079	29	141.86
12.	Install new steam generator weld channel head.	11,000	39,011	204	450.82
13	Placement of steam generator in storage.	225	331	25	30.18
	TOTAL	207,595	303,197	2,084	2,040.60
	Estimated Range			1730-2480	

[a] Actual exposures are estimated by self-reading pocket dosimeter totals.

TABLE 3A
SUMMARY OF PREPARATORY ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

	ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
1.	Initial Containment Decontamination	6,020	2,108	45.00	0.00	27.07	C
2.	Reactor Cavity Decontamination and Inspection	0	373	0	0.00	5.58	C
3.	Install Steam Generator Transfer Bridge	960	1,473	1.21	0.00	7.80	C
4.	Remove Emergency Containment Coolers, Control Rod Drive Mechanism Coolers and Fans, Manipulator Crane, and Rerate Polar Crane and Load Test	6,860	5,157	11.83	0.00	7.80	C
5.	Install Cherry Pickers	2,430	2,990	7.15	0.00	17.88	C
6.	Remove Reactor Coolant Pump Motors	0	386	0	0.00	2.43	C
7.	Disconnect/ Remove Permanent Electrical Equipment and Cables	430	281	3.31	0.00	2.50	C
8.	Install Temporary Power, Lighting and Electrical Cables	1,148	2,962	49.48	0.00	11.68	C
9.	Remove Miscellaneous Steel	580	1,702	1.25	0.00	7.05	C
10.	Install Temporary Containments and/or Ventilation Systems	245	1,740	4.29	0.00	12.62	C

TABLE 3A (Continued)
SUMMARY OF PREPARATORY ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT UNIT 3

	ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
11.	Install Temporary Shielding	120	1,388	2.58	0.00	31.05	C
12.	Install Scaffolding All Levels	1,440	1,895	13.27	0.00	9.95	C
13.	Cut and Remove Concrete	5,334	3,913	58.00	0.00	45.49	C
14.	Miscellaneous Activities	9,425	5,419	85.63	0.00	59.04	C
	TOTAL - PHASE I	34,992	31,787	283.00	0.00	247.94	C

TABLE 3B
SUMMARY OF REMOVAL ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

	ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
1.	Remove insulation from A, B & C steam generator	3,850	7,669	77.00	0.00	70.80	C
2.	Remove Feedwater Piping A, B & C steam generator	147	2,473	1.50	0.00	9.95	C
3.	Cut A, B & C S/G Upper Assembly (U.A.) and remove and modify U.A. internals	6,318	13,379	126.40	0.00	60.02	C
4.	Install tube bundle shield covers A, B & C S/G	530	978	53.00	0.00	16.49	C
5.	Cut divider plate & channel head A, B & C S/G - Rig to 58' elevation	1,722	5,087	97.14	0.00	72.07	C
6.	Rig/lift A, B & C S/G Lower Assembly (L.A.) to cut/remove seismic ring	84	142	6.60	0.00	0.72	C
7.	Install tube sheet shield cover A, B & C S/G	760	527	40.00	0.00	10.10	C
8.	Lift A, B & C S/G U.A., invert and place in rack	525	2,143	6.75	0.00	11.79	C
9.	Remove main steam piping A, B & C S/G	126	499	0.61	0.00	2.84	C
10.	Install laydown cribbing for A, B & C S/G 58' elevation	252	199	2.65	0.00	0.49	C

TABLE 3B (Continued)
SUMMARY OF REMOVAL ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

	ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
11.	Conduct channel head decontamination A, B & C S/G	1,840	6,503	214.00	0.00	155.12	C
12.	Remove miscellaneous piping from A, B & C S/G cubicles	1,410	6,050	17.62	0.00	29.79	C
13.	Remove A. B & C S/G L.A. from RCB and transfer to storage compound	225	322	25.00	0.00	30.18	C
14.	Maintain temporary power lighting and electrical cables	2,100	1,578	55.00	0.00	4.70	C
15.	Maintain/erect/remove scaffolding	840	5,686	8.40	0.00	29.85	C
16.	Ongoing decon activities/remove and dispose contaminated materials	14,500	2,914	62.40	0.00	16.57	C
17.	Miscellaneous Activities	33,900	5,103	221.93	0.00	31.00	C
TOTAL PHASE II		69,129	61,252	1016.00	0.00	552.48	C

TABLE 3C
SUMMARY OF INSTALLATION ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

	ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
1.	Installation of A, B & C S/G Upper Assemblies	17,540	6,534	73.70	0.12	9.81	C
2.	Weld Preparation of A, B & C S/G Channel Head Remnants	840	4,552	7.71	0.00	69.09	C
3.	Installation and Welding of A, B & C S/G Lower Assemblies	8,360	35,359	182.00	11.13	381.74	C
4.	Installation of A, B & C S/G Main Steam Piping	1,250	2,065	5.50	3.47	4.16	C
5.	Installation of A, B & C S/G Feedwater Piping	1,680	4,884	6.80	8.68	15.71	C
6.	Welding of A, B & C S/G Divider Plates	1,554	5,478	15.10	118.57	119.86	C
7.	Install Insulation A, B & C Steam Generators	3,486	18,427	29.40	52.05	52.05	C
8.	Maintain Temporary Power, Lighting and Electrical Cables	2,850	6,301	65.00	0.00	13.99	C
9.	Maintain/Erect/Remove Scaffolding	2,840	9,794	21.80	0.00	31.81	C
10.	Ongoing Decon Activities/ Remove/Dispose Contaminated Materials	14,500	12,280	62.40	25.18	66.19	C

TABLE 3C (Continued)
SUMMARY OF INSTALLATION ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
11. Miscellaneous Activities	27,190	22,699	174.59	34.24	100.60	C
TOTAL PHASE III	82,000	128,373	644.00	253.44	865.01	C

TABLE 3D
SUMMARY OF POST-INSTALLATION ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

	ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
1.	Installation of concrete stop logs, concrete forms, rebar and pouring of new concrete 30'6" and 58' elevation	5,490	3,190	22.00	4.11	7.36	C
2.	Installation of miscellaneous piping in S/G cubicles	350	11,100	8.00	31.05	52.35	C
3.	Installation of emergency containment coolers, control rod drive mechanism cooler and fans	310	57	3.00	0.22	0.22	C
4.	Installation of miscellaneous steel	600	12,962	2.00	26.20	26.87	I
5.	Installation of A, B & C reactor coolant pump motors	0	864	0.00	3.17	3.17	C
6.	Removal of steam generator transfer bridge	500	663	1.00	0.00	1.19	C
7.	Installation of permanent electrical cables, equipment.	580	2,020	6.00	7.51	7.51	I
8.	Removal of temporary containments and ventilation systems	970	2,707	12.00	5.17	5.17	C
9.	Removal of temporary shielding	84	782	2.00	11.12	11.12	C

TABLE 3D (Continued)
SUMMARY OF POST-INSTALLATION ACTIVITY EXPOSURES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

ACTIVITY DESCRIPTION	ESTIMATED LABOR (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO DATE (PERSON-HOURS)	ESTIMATED EXPOSURE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTIVITY STATUS (C-COMPLETE) (I-IN PROGRESS)
10. Removal of scaffolding all levels	830	9,537	8.00	35.17	35.17	I
11. Ongoing decon activities/removal/ disposal contaminated materials	3,630	11,242	15.00	60.68	60.68	I
12. Reactor preparation/hot functional testing	0	952	0.00	38.89	38.89	I
13. Tube cleaning/inspection A, B & C S/Gs	0	1,283	0.00	23.83	23.83	C
14. Miscellaneous Activities	8,130	24,426	62.00	91.28	101.64	I
PHASE ACTIVITY TOTALS	21,474	81,785	141.00	338.40	375.17	
TOTAL PHASE IV (Completed Tasks Only)	7,704	20,646	48.00	78.67	104.41	

TABLE 4
PERSONNEL EXPOSURE SUMMARY PER PHASE
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

PHASE DESCRIPTION	ESTIMATED LABOR EXPENDED TO-DATE (PERSON-HOURS)	ACTUAL LABOR EXPENDED TO-DATE (PERSON-HOURS)	TOTAL ESTIMATED EXPOSURE (PERSON-REM)	ESTIMATED EXPOSURE EXPENDED TO-DATE (PERSON-REM)	ACTUAL EXPOSURE FOR REPORTING PERIOD (PERSON-REM)	ACTUAL EXPOSURE EXPENDED TO-DATE (PERSON-REM)	PHASE STATUS (C-COMPLETE) (I-IN PROGRESS) (NS-NOT STARTED)
Preparation	34,992	31,787	283	283	0.00	247.94	C
Removal	69,129	61,252	1,016	1,016	0.00	552.48	C
Installation	82,000	128,373	644	644	253.44	865.01	C
Miscellaneous[a]	21,474	81,785	141	141	338.40	375.17	I
Project totals	207,595	303,197	2,084	2,084	591.84	2,040.60	NA
(Completed Phases Only)	186,121	221,412	1,943	1,943	N/A	1,665.43	NA

[a]Miscellaneous (post-installation) - includes cleanup, storage and miscellaneous preparations prior to start-up.

[b]NA - not applicable at this time.

TABLE 5
SUMMARY OF RADIOACTIVE EFFLUENT RELEASES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

1982

I. LIQUID EFFLUENT RELEASES	RADIOACTIVITY RELEASED IN LIQUID EFFLUENTS (CURIES)			
ISOTOPE	JANUARY 12/31-2/3	FEBRUARY 2/4-3/3	TOTAL ACTIVITY RELEASED THIS REPORTING PERIOD	TOTAL RELEASED DURING S/G REPAIR TO DATE
Co-57	9.30E-05	3.20E-05	1.25E-04	1.33E-04
Co-58	2.32E-02	5.96E-03	2.92E-02	5.06E-02
Co-60	1.98E-02	8.74E-03	2.85E-02	3.93E-02
Cs-134	1.40E-05	*	1.40E-05	1.85E-03
Cs-137	2.36E-04	1.14E-04	3.50E-04	3.61E-03
Fe-59	*	*	*	4.33E-04
Mn-54	1.20E-03	1.79E-04	1.38E-03	2.14E-03
Zn-65	*	*	*	*
I-131	*	*	*	*
Nb-95	*	*	*	3.50E-04
Sb-124	2.40E-04	2.15E-03	2.39E-03	3.93E-03
Sb-125	6.68E-04	3.49E-03	4.16E-03	7.72E-03
Ag-110m	2.13E-03	3.08E-04	2.44E-03	3.08E-03
Zr-95	3.68E-04	*	3.68E-04	8.33E-04
TOTAL	4.79E-02	2.10E-02	6.89E-02	1.14E-01
Liquid Effluent Volume Released (Liters)	1.39E+06	6.90E+06	VOLUME RELEASED THIS REPORTING PERIOD 2.08E+06	VOLUME RELEASED DURING S/G REPAIR TO DATE 9.21E+06

*Not detectable

TABLE 5 (Continued)
SUMMARY OF RADIOACTIVE EFFLUENT RELEASES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

1982

I. AIRBORNE RELEASES	RADIOACTIVITY RELEASED IN AIRBORNE EFFLUENTS (CURIES)			
A. NOBLE GASES ISOTOPE	JANUARY 12/31-2/3	FEBRUARY 2/4-3/3	TOTAL ACTIVITY RELEASED THIS REPORTING PERIOD	TOTAL RELEASED DURING S/G REPAIR TO DATE
Kr-87	*	*	*	*
Kr-88	*	*	*	*
Xe-133	*	*	*	*
Xe-133m	*	*	*	*
Xe-135	*	*	*	*
Xe-138	*	*	*	*
TOTAL	*	*	*	*
B. HALOGENS				
I-131	*	*	*	*
I-133	*	*	*	*
TOTAL	*	*	*	*

*Not Detectable

TABLE 5 (Continued)
SUMMARY OF RADIOACTIVE EFFLUENT RELEASES
REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982
TURKEY POINT - UNIT 3

1982

I. AIRBORNE RELEASES	RADIOACTIVITY RELEASED IN AIRBORNE EFFLUENTS (CURIES)			
C. PARTICULATES ISOTOPE	JANUARY 12/31-2/3	FEBRUARY 2/4-3/3	TOTAL ACTIVITY RELEASED THIS REPORTING PERIOD	TOTAL RELEASED DURING S/G REPAIR TO DATE
Ce-141	*	*	*	*
Ce-144	*	*	*	*
Co-58	1.2E-07	8.0E-08	2.00E-07	2.34E-05
Co-60	8.1E-06	3.7E-06	1.18E-05	1.79E-04
Cs-134	*	3.3E-08	3.30E-08	1.87E-06
Cs-137	3.7E-07	1.8E-07	5.50E-07	8.38E-06
Fe-59	*	*	*	*
Mn-54	2.6E-08	*	2.60E-08	7.63E-07
Zn-65	*	*	*	*
Nb-95	*	*	*	1.15E-07
TOTAL	8.62E-06	3.99E-06	1.26E-05	2.14E-04

*Not Detectable

TABLE 6

SUMMARY OF SOLID LOW-LEVEL RADIOACTIVE WASTE

REPORTING PERIOD 31 DECEMBER 1981 TO 3 MARCH 1982

TURKEY POINT - UNIT 3

I. SOLID LOW-LEVEL RADIOACTIVE WASTE GENERATED FROM U-3 S/G REPAIR

WASTE FORM	VOLUME LLW[a] IN CU-FT FOR REPORTING PERIOD	VOLUME LLW IN CU-FT TO DATE
Compacted Dry Active Waste	7,980	18,585
Non-Compacted Dry Active Waste	825	4,855
Resin and Filter Media	595	1,615
Channel Head Decontamination Waste	0	717.5
Miscellaneous	0	2,775
Totals	9,400	28,547.5

II. SOLID LOW-LEVEL REPAIR ACTIVITY WASTE SHIPPED

REPORTING PERIOD DATES	VOLUME LLW[a] SHIPPED IN CU-FT	ESTIMATED ACTIVITY[b] CURIES
24 June 81 - 22 August 81	3,945	1.48
23 August 81 - 3 November 81	6,700	22.62
4 November 81 - 30 December 81	6,430	5.43
31 December 81 - 3 March 82	9,450	10.00
Totals	26,525	39.53

[a] LLW Low-level (radioactive) waste.

[b] Predominant isotopes ^{137}Cs, ^{60}Co, ^{58}Co.