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SUBJECT: Summarizes performance of facilities, per SALP Repts
 50-250/90-26 & 50-251/90-26 for period which ended 900731.

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JUN 26 1991

L-91-157

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

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Plant Performance Since July 31, 1990

Gentlemen:

The purpose of this letter is to summarize the performance of Turkey Point Units 3 and 4 since the last NRC Systematic Assessment of Licensee Performance (SALP) evaluation period, which ended on July 31, 1990. The SALP report covering that period (Inspection Report 50-250/90-26 and 50-251/90-26) noted that Turkey Point's performance has continued to improve since the prior assessment period.

FPL's efforts have been directed toward maintaining improvements in performance noted in the last two SALP reports. FPL has emphasized continued improvement in performance from its staff and has maintained an aggressive self assessment program at Turkey Point. Some major areas in which significant internal or outside assessments have taken place are Emergency Power System Enhancement Project, Emergency Plan implementation, simulator certification and configuration management. Based upon the plants' operating history since July 1990, performance indicators, self assessment, and the results of NRC evaluations of Turkey Point during this SALP period, I believe that our improvement efforts have been successful. Performance highlights include:

- Operations. Although the units have been shut down for the Dual Unit Outage during 1991, the 1990 Unit 3 and Unit 4 equivalent availabilities were 58.9% and 75.6% respectively. The units had a record 102 day combined run ending with the Unit 4 shut down for the Dual Unit Outage. Operations has undertaken a concerted effort to reduce personnel errors. As a result the number of events triggering non-voluntary Licensee Event Reports has declined from 34 during the last SALP period to 11 the first ten months of the current SALP period. Finally, increased staffing has allowed Operations to significantly reduce overtime, form six operations shifts, and transfer experienced licensed operators to the Training Department.

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- Radiological Controls. FPL has met the challenge of the Dual Unit Outage with Turkey Point personnel exposure through July 1991 projected to be only 25 man-Rem/unit above the previous 12 month SALP period. The resistance temperature detector (RTD) manifold elimination has already been completed with the lowest exposure to date in the United States for this type of modification. We anticipate that this modification will result in a savings of approximately 50 man-Rem for each future refueling outage. Another example of significant exposure reduction involves spent resin transfers from the spent resin storage tank to the disposal container. The May 1990 transfer resulted in a total exposure of 1065 millirem whereas subsequent transfers resulted in a total exposure of only 50 millirem, a reduction by a factor of 21.
- Maintenance/Surveillance. The systematic material condition upgrade program is continuing at Turkey Point. The overhaul and upgrade of all five Blackstart Diesels has been completed, a major containment painting effort is in progress, and a comprehensive Motor Operated Valve maintenance program is being implemented during the outage. In addition to having an INPO Assistance visit (requested by the plant) in the fall of 1990, the plant has initiated a self assessment program to monitor the effectiveness of the maintenance program enhancements and provide input for further improvements.
- Emergency Preparedness. On November 8, 1990, FPL successfully performed an emergency exercise which involved the Turkey Point emergency organization, partial participation by Dade and Monroe County officials, and a limited response by the State of Florida. During this SALP period, we have upgraded our Emergency Preparedness procedures, enhanced the training programs, continued further improvement of off-site interfaces, implemented some enhancements to the emergency response facilities and implemented a more aggressive drill program.
- Security. FPL is making excellent progress on the security system upgrade project. In September 1990, the Security Department moved into new quarters, consolidating the department into one location. In July 1991, the new security system access control system will be placed in service, 65% of the new perimeter system will be activated and the fossil units will be separated from the nuclear units' protected area. Security turnover, overtime and loggable events have all improved during this SALP period.
- Engineering/Technical Support. Engineering met its major challenge of recent years by completing 97% of the greater than 280 design change packages for the Dual Unit Outage 60 or more days prior to the start of the outage. The Procurement Engineering backlog has been reduced from 3422 requests at the start of this SALP period to 1088 as of June 1, 1991, a reduction of over 68%. The drawing update backlog, which included over 28,000 drawing discrepancies in February 1989 and was approximately 22,000 on July 31, 1990, was reduced to approximately 8,000 by February 1991. System Engineers are

heavily involved in all aspects of the Dual Unit Outage, especially regarding restart and configuration control activities. Also, System Engineers have continued their focus on reducing Limiting Condition for Operation (LCO) hours. The twelve month rolling average of LCO Hours per Hour of Operation has been lowered from approximately 1.4 in early 1989 to .43 in December 1990 for Unit 3 and from 1.2 to .61 for the same period for Unit 4.


- Training. Examination results during this SALP period demonstrate that Turkey Point operator requalification training has significantly improved and that operator licensing training remains strong. During the February-March 1991 annual requalification exam series, the pass rate was 93.5% (44 of 47). The SRO initial license rate for the October 1990 and January 1991 exams was 100%. Other significant training activities at Turkey Point included re-accreditation of all Operator Training Programs and submittal of the simulator certification letter to the NRC in January.
- Safety Assessment/Quality Verification. Self assessments continue to be an important part of our program. Using internal expertise with some outside assistance, self assessments have been made in such areas as the Emergency Power System upgrades, Emergency Plan implementation, Simulator Certification and configuration management. The activity level of Quality Assurance (QA) during this SALP period is evidenced by four non-cited violations credited to QA through May 1, 1991 (90-34-01, 90-36-01, 91-08-02, 91-08-07).

More specific information on Turkey Point's performance in each of the SALP categories is provided in Attachment A to this letter.

In summary, overall performance at Turkey Point has continued to improve. We realize, however, that these improvement efforts must be sustained and additional areas for improvement must be actively pursued. Several initiatives in progress or planned for the very near future are described in Attachment A. We believe that our ongoing efforts will continue to foster sustained improvement.

Please call me should you wish to discuss any of these matters.

Very truly yours,



T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/OIH/RRJ

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

ATTACHMENT A

This Attachment summarizes the performance of FPL's Turkey Point Units 3 and 4 since the last NRC Systematic Assessment of Licensee Performance (SALP) evaluation period, which ended on July 31, 1990. The performance of Turkey Point is described for each functional area that was evaluated in the NRC SALP report issued on September 25, 1990 (Inspection Report Nos. 50/250/90-26 and 50/251/90-26). Unless otherwise noted, any page references in this Attachment are to that report. The descriptions in this Attachment of actions being taken or to be taken are based upon FPL's current plans and activities; some of these may change depending on future circumstances.

I PLANT OPERATIONS

The units operated well during the latter half of the previous SALP period and this SALP period prior to the dual unit outage (DUO). Improved performance is indicated by the combined record run of 102 days (which ended with the scheduled shutdown of Unit 4 for the dual unit outage on November 24, 1990), and the one automatic trip (0.17 trips/1000 critical hours) compared to four trips during the last SALP period (0.31 trips/1000 critical hours). For calendar year 1990, Units 3 and 4 had equivalent availabilities of 58.9% and 75.6% respectively. This is especially significant for Unit 3 since it underwent a 119 day refueling outage in the spring of 1990 and shut down for the dual unit outage on December 12, 1990. It is also noteworthy that this was the first time in several years when a Turkey Point unit (Unit 4) had the highest equivalent availability among the FPL nuclear units. When problems did occur, Operations personnel had the knowledge and procedures needed to restore the plant in a manner required to assure public and plant safety. An excellent example in this area was the lockout of the start-up transformer on March 13, 1991. In NRC Inspection Report Nos. 50-250/91-11 and 50-251/91-11, the NRC concluded that "A strength was noted during this period concerning the lockout of the start-up transformer. Preplanning for an event of this type was very good. Procedures and equipment were in place to ensure Spent Fuel Pool Cooling requirements were met. Personnel reacted to this occurrence in a professional and expeditious manner." For this event, FPL took extensive corrective action as detailed in LER 251-91-001. In summary, performance of the units indicates that FPL's operational improvements, maintenance efforts and reliability programs continue to result in improvement.

Actions taken to address concerns noted in the September 25, 1990 SALP and to further improve performance in operations include:

o Increased Operations Staffing

The licensing of Group 13 provided 22 new SRO licenses for Operations; another 16 personnel are in licensed operator training and scheduled for the NRC examination in October 1991. On-shift non-licensed operator staffing has increased by 10 and currently there are 16 non-licensed operators in training. This staffing increase has allowed Operations to make the following improvements:

- Reduce overtime requirements from the 25 to 30% range frequently experienced in previous years to the current range of 5 to 10%.
- Transferred 3 experienced licensed operators to the Training Department which will assist both Training and Operations in achieving higher standards of performance. This will be discussed further in the training section.
- Formation of 6 operations shifts which in turn supports the following activities:
 - 6-shift rotation, replacing the previous 5-shift rotation.
 - The off-shift crew provides plant operators for procedure reviews, Technical Specification change reviews, training material reviews, Operations event evaluations, and other projects (ie; valve tagging, equipment labelling).
 - The off-shift crew also provides a pool of personnel to support major evolutions and personnel vacancies. This will aid in maintaining reduced overtime requirements.

o Shift Command and Control

The increased staffing discussed above and the installation of an improved radio system have enhanced shift command and control abilities as follows:

- Additional personnel are available to help coordinate Operations outage activities or other special evolutions, allowing the Plant Supervisor-Nuclear (PSN) more time to fulfill his other responsibilities.
- The radio system has improved communications within Operations and with other disciplines which allows the Plant Supervisor-Nuclear to better monitor on-going activities. This gives the PSN closer contact with

critical tasks and improves his command and control ability during both normal and emergency situations. The NRC identified the radio system as a strength during the 1990 NRC evaluated emergency preparedness exercise.

o **Operations and Training Initiatives**

Operations has worked with and is supporting Training in developing and implementing the following training improvements and initiatives:

- New Equipment and Plant Modifications - This training was designed to provide instruction on how the new equipment works, how it is to be operated, and how it interfaces with existing systems. To facilitate the training, the simulator was upgraded to the new configuration so the normal and emergency operation of the equipment could be practiced prior to the equipment turnover for operation.
- Self-checking - This training was geared to provide the operator with the steps needed to help reduce the probability of error.
- Field Walkdowns - Training and Operations are working together on field walkdowns to demonstrate procedures, identify procedure problems so they can be resolved before implementation, identify equipment problems for correction, and perform in the field training where appropriate.

o **Operations Outage Planning**

Both for the dual unit outage and future outages, additional efforts have been developed for outage planning. These include:

- Pre-review by Operations of work requests to reduce conflicts and potential problems.
- Verifying equipment/system readiness prior to unit restart. System readiness addresses numerous items to prevent errors. These items include:
 - Clearances
 - Lineups
 - Training
 - Marking/Labeling deficiencies
 - Surveillances/Maintenance testing
 - Technical Specification Requirements

- Procedures
- Outstanding work orders
- Drawing update requirements
- Start-up Reports
- Fire protection requirements
- Non-conformance reviews
- Audit completions

o Daily Schedule

The Plan of the Day (POD) has been expanded to a 5 day look ahead for all departments. This has given the entire plant a standard 5 day rolling schedule enabling departments requiring support to cross check and ensure supporting departments have the job scheduled at the proper time.

A quarterly schedule is currently being developed to be implemented by January 1, 1992. Emphasis will be on insuring all upcoming maintenance and testing activities potentially affecting Limiting Conditions for Operation are identified and planned for well in advance of the actual date. This should allow all required maintenance and testing to be performed while minimizing equipment out of service time.

The effectiveness of the POD schedule is defined as the percent of jobs started and worked as scheduled compared to the total number of jobs scheduled on the POD. From July 1990 to December 1990, with both units on line, the POD effectiveness had risen to a weekly average effectiveness of 87% (with many peaks exceeding 90%) from the previous year's average of 80%. It is specially significant that during the 5 weeks prior to the start of the dual unit outage the weekly average never fell below 90% and averaged over 92%. From December 1990 to date, with the dual unit outage in progress, the overall effectiveness dropped slightly to 85% but is again trending upward. Our goal of 90% effectiveness by the end of 1991 should be achieved.

o Outage Management

Commencing four months prior to the dual unit outage start date, presentations on outage preparations were made by all disciplines to plant management. Some of the items covered in these meetings were as follows:

- Work identified
- PWOs written
- Radiation Work Permits (RWP) written
- Contracts issued
- Parts/material identified and ordered

- ALARA review completion
- Pre-fabrication work
- Manpower requirements
- ManRem estimates
- Clearance requirements/written
- Staging of equipment/parts
- Vendor support
- Plant Change Modifications (PCM) status/engineering support requirements
- Process sheets written

Preparations for future outages is a continuing process and improvements will continue based on experience gained from the dual unit outage.

o Clearances

As stated in the last SALP, FPL had committed to improving the clearance procedures and providing training prior to the start of the dual unit outage. This has been completed and the revised clearance procedures have resulted in improvements in this area. The plant clearance process was modified to eliminate non-related administrative requirements. Since this modification, some minor deficiencies have been found and corrected.

From January 1990 to September 1990, 11 findings were attributed to this process. In October 1990, new procedures were written and personnel training on the new procedures was completed. From October 1990 through May 1991, only three findings were attributed to the new process. Appropriate corrective actions have been taken.

o Personnel Errors

As stated in the last SALP, FPL is committed to continue its emphasis on reducing the number of personnel errors. Operations Department efforts have helped to reduce the significance of the errors as evidenced by a reduction in violations. Since the last SALP, the plant has had ten operator errors of varying significance, with eight of the errors occurring since the start of the outages. Corrective actions for outage related activities were previously discussed in the section entitled "Operations Outage Planning Improvements." These events are receiving management attention in an effort to reduce the number of errors. Actions taken to reduce operator errors include: giving self-check training to all operators, increasing personnel awareness of errors by providing thorough briefings (covering the errors, their root causes and methods for avoiding them) during weekly

shift meetings, and the previously mentioned outage planning improvements. The clearance procedure and training improvements discussed above are an aid in this area. Operations has also scheduled additional training on selected procedures to further aid in reducing personnel errors.

o **Component Identification**

In 1991, the component labeling program entered the maintenance phase with its primary emphasis on correcting identified deficiencies. Labels continue to be added as a result of equipment additions. Since the improved component identification program was implemented in late 1989, no mispositioning events due to mislabeling have occurred.

o **Improved Surveillance Tracking and Implementation of Revised Technical Specifications**

A team was established to develop a system to ensure all Technical Specification surveillances are implemented and tracked. Surveillance intervals of seven days or greater will be tracked by a computerized system. The system will be reviewed by an independent company to ensure proper implementation. It will then be approved by the Plant Safety Committee.

o **Fire Protection Program Improvements**

During this SALP period, the following improvements in the Fire Protection Program have been implemented:

- Increased coordination and support on surveillances and testing of Fire Protection equipment.
- Enhanced the Preventive Maintenance Programs for the fire protection equipment to improve reliability.
- Enhanced the Fire Brigade Training Program to include training of on-site fossil fire brigade personnel and training in hazardous materials.
- Increased the plant staff awareness of Fire Protection requirements through the increased use of the video telecommunications network, training of contractor and plant personnel on the proper use of fire extinguishers, proper fire reporting procedures, and by posting precautionary signs on various fire protection systems.

- Implemented a departmental instruction to insure that Fire Protection procedures are revised and implemented correctly.
- Established an enhanced Fire Protection Data Base to track Fire Brigade Training and qualifications, surveillance tracking, and departmental priority issues report.
- Upgraded manual Fire Protection equipment such as protective clothing, hoses, breathing apparatus, large hose stream monitor nozzles, portable cascade breathing air and trailer system.
- Increased knowledge level of off-site support organizations by providing site specific training on the Fire Protection Program at Turkey Point.

II RADIOLOGICAL CONTROLS

Radiological controls at Turkey Point have continued to improve since the previous SALP period. For example, the Unit 4 resistance temperature detector (RTD) manifold elimination was completed with a total exposure of approximately 76 man-rem. Lessons learned were incorporated into the planning for Unit 3's modification. As a result, exposure dropped to 54 man-rem, which represents the lowest exposure to date for this modification in the United States. Turkey Point's personnel exposure is projected to be 370 man-Rem/unit for the first twelve months of this SALP period. Even with nine months of dual unit outage, including extensive modifications, extensive recoating of containment surfaces, and ISI activities, this personnel exposure is projected to be only 25 man-Rem/unit above the previous twelve month SALP period. Personnel contaminations have been reduced to a projected 140 contaminations for this SALP period from 219 contaminations during the previous SALP period. As of May 31 1991, 96 personnel contaminations have occurred during this SALP period.

Actions taken to address the concern in the July 1990 SALP report and to further improve performance in the area of radiological controls include:

o Radioactive Material Posting and Labeling

Turkey Point is implementing several programs to significantly improve posting, labeling and control of all radioactive materials as described below:

- The Health Physics Department Letter of Instruction for radiological postings has been replaced with Procedure O-HPS-025.1, "General Posting Requirements for Radiological Hazards," to give Radiation Protection personnel better, more consistent guidance in posting radiological hazards.
- The Health Physics Department has begun a performance improvement program which places increased accountability for the quality of radiological controls, including radiological postings, on first-line supervisors. Health Physics supervisors have been assigned responsibility for an area which is inspected weekly by department supervision. Each supervisor's overall performance is critiqued during a monthly evaluation.
- Turkey Point is working to reduce the number of radioactive material storage areas on site. Storage areas inside the Radwaste Building have been reduced to a single 600 square foot bay. Approximately one third of the radioactive material stored in the Dry Storage Warehouse has been eliminated. Additional plans are in progress to reduce the number of sea-land storage containers and packaged waste staging areas.
- An administrative procedure, O-ADM-605, "Control of Contaminated Tools, Equipment and Components," has been prepared and scheduled for implementation on July 1, 1991. This will provide clear guidance to the plant for packaging, and identification and storage of radioactive materials.
- The staff responsible for control of radioactive material in outside areas of the RCA is currently supplemented with four additional Radiation Protection personnel.

o Radioactive Waste Processing

Turkey Point conducted a thorough evaluation of the spent resin transfer and packaging process and made substantial improvements in this area. The collective dose for individuals operating the transfer and dewatering equipment was expected to be in the range of 300 to 1100 man-millirem. Individuals operating the transfer and dewatering equipment during the May 1, 1990 evolution received a collective total dose of 1065 millirem. After modification of procedures, addition of remotely-operated valves and improved flushing techniques, subsequent transfers were completed satisfactorily and individuals operating the system received a collective total dose of only 50 millirem, a dose reduction of a factor of twenty-one for this evolution.

o **Contaminated Floor Space**

A reduction in the amount of contaminated floor space from 9,023 sq. ft. on July 31, 1990 to 6,616 sq. ft. was achieved prior to the start of the dual unit outage. Although the amount of contaminated floor space has increased to 15,878 as of May 20, 1991, this was an expected increase as a result of dual unit outage activities. A goal has been set to reduce this number to 6,345 sq. ft. by the end of 1991.

o **ALARA**

Improvements in the ALARA Program at Turkey Point continue, and include the following:

- Expanded management involvement in the ALARA Review Board (ARB) helps give clear, concise direction for the implementation of ALARA programs and techniques. The ARB is chaired by the Plant Manager and includes the Department Heads.
- All Radiation Work Permits, are assigned to the Department Supervisor or superintendent responsible for the task. He is thereby responsible for the personnel exposure for all personnel who are involved in the task, including the supporting groups.
- ALARA Field Monitors, Radiation Protection Men (RPMs) specifically assigned to the ALARA Section, tour work areas correcting exposure wasting problems and identifying exposure saving ideas. The monitors provide daily reports to the ALARA Supervisor, who ensures the information is disseminated to the other work groups as well as interested management personnel.
- A computerized job history database has been created using an IBM Personal Computer and Dbase IV. The data base includes histories of recurring jobs as well as "one-of-a-kind" jobs. Data fields include survey information, exposure-saving techniques, man-hour information and problems encountered. The information is available to all personnel involved in the job planning, ALARA Review and Radiation Work Permit programs.

III. MAINTENANCE/SURVEILLANCE

Maintenance performance has continued to improve throughout this SALP period. Significant progress is being made to upgrade the material condition of the plant. Increased emphasis is being placed on improving and monitoring supervisor performance. Reliability improvements made during this and previous SALP periods are showing favorable results in plant performance indicators. Increased emphasis on personnel safety has resulted in no maintenance department lost-time injuries during this SALP period (as of June 14, 1991) contributing to a site record of 324 consecutive days and greater than 2.0 million consecutive manhours without a lost-time injury. For the SALP period ending July 30, 1989, the number of violations issued by the NRC in the area of maintenance was nine. For the August 1, 1989 to July 31, 1990 SALP period, there were only two violations in the area of maintenance and during this SALP period, the number of violations continued to be low with one violation for the first 9 months of the SALP period (August 1, 1990 through May 1, 1991). Additional enhancements are being made to the maintenance program to ensure that maintenance improvements are an ongoing process. A self-assessment program has been initiated to monitor the effectiveness of these enhancements. Actions to address the maintenance concerns identified in the September 25, 1990 SALP Report and to achieve further improvement in this area include:

o Plant Material Condition

Upgrading the material condition of Turkey Point continues to be one of Maintenance's major challenges. During this SALP period, significant progress has been made in Turkey Point's Material Condition Upgrade Plan as well as other activities contributing to improved plant material condition. Following is a summary of material condition upgrade efforts during this SALP period:

- Formal weekly management walkdowns continue to be an effective method of identifying and tracking the resolution of material condition deficiencies. Follow-up inspections of areas indicate that deficiencies are either being corrected or entered into the plant work control system to be worked off as the priority warrants. Efforts are made to include the responsible supervisor for the area being inspected on the weekly management walkdown to reinforce management standards and provide both positive and negative on-the-spot feedback.

- Overhaul of the No. 3 Blackstart Diesel. This completes the overhaul and upgrade of all five Blackstart Diesels.
- Upgrading of the Unit 3 and Unit 4 containment spray pump rooms and water treatment plant acid tank.
- Maintenance continues to provide extensive support to the Health Physics Department's efforts on reduction of contaminated floor space.
- Continued emphasis on reducing the number of control room deficiency tags and control room instruments out of service. During this SALP period, the trend was generally declining until the units' shutdown. New lows were achieved for control room deficiency tags (a new low of 44 as of November 14, 1990) and control room instruments out of service (28 on August 6, 1990). Dual unit outage conditions have resulted in an increase in control room deficiency tags to 65, and control room instruments out of service to 38 as of May 30, 1991; however, year-end levels have been established of 20 control room deficiency tags per unit and 14 control room instruments out of service per unit. These levels compare well to the 1990 industry average for control room instruments out of service (as reported by INPO) of 14 per unit. Plant design changes are being implemented during the dual unit outage that will contribute to these reductions. They include upgrade of the Area Radiation Monitoring System and the Boric Acid Concentration Reduction efforts.
- The valve repacking program is continuing during the dual unit outage with greater than 600 valves planned for repacking.
- A major containment painting effort is underway in the Unit 3 and Unit 4 containments with emphasis being placed on the 58' elevation and the 14' elevation inside the biological shield.
- An INPO Assistance Visit was scheduled at Turkey Point's request to assist in enhancing material condition upgrade efforts. The Assistant Maintenance Superintendent participated as a team member. Recommendations as a result of the assistance visit are being incorporated into Turkey Point's programs.
- As part of a comprehensive MOV Maintenance Program designed to address industry issues and meet the requirements of NRC Generic Letter (GL) 89-10, the following items are being performed:

- * During the 1990 Unit 3 refueling outage, 54% of the Unit 3 MOV's were overhauled, with the remaining 46% undergoing an extensive grease inspection. In addition, a significant number of MOV's in both Unit 3 and Unit 4 are being overhauled and tested during the dual unit outage. As of May 23, 1991, 68% of all MOV's in both units have been overhauled, with 72% of all Safety-Related MOV's being diagnostically tested.
- * In conjunction with GL 89-10 activities, 4 train limit switches have been installed to separate the open torque switch bypass from the closed light indication.
- * MOV spring packs have been replaced on selected valves to prevent hydraulic locking and Belleville washer collapse, both identified as potential common mode failure mechanisms in recent 10 CFR Part 21 Notices.

The ongoing efforts described above will ensure that material condition at Turkey Point will continue to improve.

o Dual Unit Outage Efforts

A significant effort was placed on pre-outage planning for Maintenance Department dual unit outage activities. An outage preparation group was assigned within the Maintenance Department five months prior to the outage. This group was charged with providing work packages, construction work orders, assurance of parts availability and a logic tied schedule for all known maintenance work. In an effort to promote ownership of the outage schedule, meetings were held twice a week between Maintenance, Operations and support department personnel. The scope of these meetings was to review work on all major systems and select clearance boundaries that would best support the work activities. This information was then factored into the logic for the overall outage schedule. Additional meetings were held with Construction personnel to resolve interface problems. The number of work packages planned by the pre-outage planning group was 1275 electrical packages, 1221 instrument and control packages and 1062 mechanical packages.

For the first time since March 1987, the reactor disassembly and reassembly for both units is being performed by Maintenance Department personnel as opposed to contractors. An in-depth hands-on training program was provided to Maintenance personnel on the new reactor vessel stud tensioning and handling equipment in preparation for this effort. This new

equipment is designed to reduce the time and personnel exposure required to detension and remove reactor vessel head studs as well as subsequent stud installation and tensioning at the end of the outage. Personnel exposure estimates had been provided for vessel disassembly and defueling activities based on the lowest actual exposures for previous efforts. Reactor vessel disassembly and defueling were completed for both units within scheduled durations and with personnel exposures less than those estimated. It is also notable that no personnel contaminations were logged for the Radiation Work Permits associated with the reactor vessel disassembly.

The Planned Maintenance Group has been assigned the responsibility for equipment preservation/layup during the dual unit outage. A determination was made concerning components to include and what methods of layup should be applied to these components. The basis for this determination included industry experience (EPRI), plant experience, and feasibility of providing layup. Preventive maintenance activities, plant work orders and periodic surveillances were generated to accomplish layup activities. These activities were assigned to the responsible departments for performance and tracking. The goal of this program is to reduce equipment degradation while the equipment is idle. While the outcome of this effort may be difficult to precisely quantify, increased equipment reliability is expected.

As part of the plant's dual unit outage restart readiness program, the Maintenance Department has initiated a series of continuing reviews to assure that plant equipment is operational when required to support start-up milestones. These reviews are intended to ensure that:

- Required preventive maintenance activities are complete.
- New and revised maintenance procedures/instructions to support system operation and maintenance are in place.
- Procedures that support the revised Technical Specifications are updated and reflect revised requirements.
- No operability concerns exist relative to open plant work orders (performed in conjunction with Operations and System Engineering personnel).
- All post-maintenance tests have been completed.
- Required preventive maintenance is current.
- Spare parts for new plant equipment have been ordered.

- Required training has been completed.
- New surveillance procedures have been functionally verified where appropriate and practical.

These reviews will be documented, reviewed and approved by the Maintenance Department heads and the Maintenance Superintendent prior to releasing a system or component for operation.

o Personnel Indicators

Improvements have continued from the previous SALP period in many of the performance indicators relating to Maintenance Department personnel. Following is a summary of two of these indicators:

- Maintenance Overtime Rates

Efforts to reduce maintenance department overtime continue to be effective. Despite the additional maintenance activities resulting from the dual unit outage, Maintenance Department overtime has been controlled by limiting maintenance support during other than normal working hours to only those activities critical to the outage. The following data shows the continued reduction in overtime from 1989 through April 1991.

	<u>1989</u>	<u>1990</u>	<u>1st 4 months 1991</u>
Mechanical	26%	25%	9.9%
Electrical	37%	30%	25.9%
I & C	33%	24%	10.4%
All Maintenance	29.8%	24.4%	12.4%
(Includes All Disciplines and Staff)			

- Lost Time Accidents

Increased emphasis has been placed on improving personnel safety at Turkey Point. On-site professional safety expertise was added late in the last SALP period (July 1990). The Safety group has become more proactive as demonstrated by increased presence in the plant, improved procedures and implementation of a safety incentive program that rewards those individuals exhibiting good safety performance. Maintenance supervision is also being held accountable for safety performance of their crews through the use of monthly performance monitoring, with crew safety record being one indicator contributing to the supervisor's performance rating. These efforts are showing positive results. For the previous SALP period (August 1, 1989 through July 31, 1990) the Maintenance

nance Department experienced five lost time accidents. For the present SALP period (August 1, 1990 through June 10, 1991), no lost time accidents have occurred. As of June 14, 1991, the site has established a record 324 consecutive days (greater than 2.0 million manhours) without a lost time accident.

Additionally, a new comprehensive medical facility recently became operational. This facility provides prompt, and convenient service to both the emergency and non-emergency needs of the plant staff on a 24 hour a day, 7 days a week basis.

o Licensee Event Reports

Maintenance department activities contributed to the submission of 9.5 Licensee Event Reports to the NRC during 1990. This was less than the 1990 target of 10. For January through April 1991, no Licensee Event Reports have been submitted relating to maintenance activities.

o Spare Parts

Availability of spare parts to support maintenance activities continues to be a challenge for Turkey Point. Improvements have occurred in some of the spare parts indicators as follows:

- During the period from July 1, 1990 to May 1, 1991 a total of 10,727 newly listed items (not previously stocked in inventory) have been added to Stores. Of these 10,727 items, 9,734 have been received into Stores.
- Since July 1, 1990, 1,510 dormant/obsolete spare part line items have been eliminated from Stores.
- The number of corrective maintenance plant work orders on hold awaiting parts has decreased from 179 as of June 14, 1990 to 97 as of May 23, 1991, a decrease of over 45%.

Despite these improvements, the number of spare part items below the minimum stock levels (not including newly listed items) has increased from 2,432 on June 1, 1990 to 3,311 on May 1, 1991, a 36% increase. This increase can be attributed primarily to the large number of spare parts being issued to support the dual unit outage. Efforts are on-going by the Stores and Purchasing Departments to reorder this material.

o **Equipment Reliability**

The results of reliability improvements mentioned in previous SALP reports as well as material condition upgrade efforts are having a positive impact on equipment reliability as evidenced by the dual unit record run of 102 days prior to the scheduled shutdown of Unit 4. In addition, only one unplanned shutdown occurred due to equipment problems, a significant reduction from the six unplanned shutdowns due to equipment problems during the previous SALP period. The number of unplanned days off-line attributed to maintenance activities for 1990 were less than the yearly targets for both units.

o **Reliability Centered Maintenance and Predictive Maintenance Programs**

The reliability centered maintenance program continues on schedule having dispositioned fifteen items to date including power operated relief valves, pressurizer heaters, and condensate pump motors (the component resulting in the one unplanned shutdown during this SALP period). Modifications to equipment design, maintenance and operation practices are being implemented in response to the results of the analysis and are being tracked by the Planned Maintenance Group.

The predictive maintenance program continues to be effective in identifying degraded conditions so that corrective maintenance can be performed prior to equipment failure.

o **Corrective Maintenance Backlog**

Emphasis continued during this SALP period to control the corrective maintenance (CM) PWO backlog. Even though emphasis has been placed on working those maintenance activities requiring unit shutdown during the outage, the non-outage CM backlog was reduced to 668 for both units as of May 21, 1991, a low for this SALP period and below the goal of 700 established during the previous SALP period. Backlog reduction efforts also include emphasis on working off the older PWO's. The ten oldest PWO's for each maintenance discipline are tracked in the daily Plan of the Day report as well as the monthly maintenance indicator package. In addition, in January 1991, Maintenance started tracking the PWO backlog for critical systems.

o Preventive Maintenance

The number of overdue Preventive Maintenance (PM) items continues to decline from the previous SALP period. During the previous SALP period, the number of overdue PM items averaged less than 20 per month; however, during this SALP period the monthly average has been less than 10. The average PM/(PM+CM) ratio from August 1, 1990 through April 30, 1991 is approximately 47%. The extensive amount of corrective maintenance being performed during the dual unit outage has resulted in this ratio declining from 61.6% at the beginning of the SALP period.

o Rework Efforts Continue

Maintenance Department rework has been reduced to an average of less than 3 activities per month; however, this can not be compared to the previous data as the indicator has been redefined to better determine whether the failure was actually related to a previous maintenance activity. As a result of a review of 1991 rework data, and industry methods for addressing rework as well as suggestions from INPO, the Maintenance Department has determined that rework will be addressed by the system engineers under the larger category of repetitive maintenance. Procedure revisions are in progress to implement this change in responsibility.

o Maintenance Program Enhancements

The Maintenance Department is implementing a process that is designed to ensure continued improvements in Turkey Point's Maintenance Program. Turkey Point developed a maintenance program guide which incorporates the best features of the NRC Maintenance Team Inspection Tree, INPO 90-008 (Maintenance Programs in the Nuclear Industry), INPO 85-038 (Guidelines for the Conduct of Maintenance at Nuclear Power Stations), NRC Draft Regulatory Guide DG-1001 (Maintenance Program for Nuclear Power Plants), and Turkey Point's maintenance program. This maintenance program guide has been published and approved by the Maintenance Superintendent. The maintenance program guide will provide the basis for an on-going self-assessment effort that will be used to measure the effectiveness of Turkey Point's maintenance program and improvement activities as well as initiating additional improvement efforts where weaknesses are identified. A limited scope self-assessment of a specific aspect of maintenance work control was started in May 1991. This self-assessment is being used to test various types of assessment techniques that may be used for future self-assessments.

o Maintenance Supervisory Development

Turkey Point has continued to place emphasis on improving the supervisory skills of Maintenance Department supervisors. Activities supporting this effort include the following:

- A supervisory training program was initiated in May 1990 encompassing management expectations for supervisors, development of interpersonal skills and training in Conduct of Maintenance. The Maintenance Superintendent teaches the first day of the course, personally communicating his expectations relative to supervisory performance. As of May 31, 1991, 49 of 56 supervisors in the original target population have completed the classroom portion of the training.
- Supervisory qualification criteria have been developed that include the classroom training described above as well as on the job training/observation that must be completed prior to an individual qualifying as a supervisor.
- A Maintenance Policy Manual has been published and approved by the Maintenance Superintendent. This policy manual is intended to provide maintenance supervisors and craft with a ready reference for maintenance policies, guidelines and expectations to be used in the performance of maintenance activities.
- Commencing in April 1991, monthly performance monitoring is being initiated for maintenance supervisors, relative to predefined performance indicators. This program is intended to bring the Maintenance Department performance indicators down to the crew level to provide a sense of ownership and accountability.

IV. EMERGENCY PREPAREDNESS

On November 8, 1990, FPL successfully performed an emergency exercise involving the Turkey Point emergency organization, participation by Dade and Monroe County officials, and a limited response by the State of Florida. No violations or deviations were identified during the course of the NRC inspection of this exercise and the following three strengths were noted: excellent command, control and technical knowledge of the plant and plant systems by the Emergency Coordinator; the new in-plant radio system provided effective, efficient and reliable communications; Technical Support Center (TSC) status boards were legibly maintained and frequently updated with off normal values highlighted for quick identification. The NRC concluded that FPL had "fully

demonstrated the capability of implementing its Emergency Plan and procedures to provide for the health and safety of the on-site personnel and the off-site public". (NRC Inspection Report Nos. 50-250/90-38 and 50-251/90-38, p. 2 of Summary)

FPL has also taken actions to address concerns raised by the NRC during the September 1990 SALP and the November 1990 emergency exercise, including:

- o **Technical Support Group in the TSC Needs Definitive Responsibilities and Current Information**

Training was enhanced to provide the Technical Support Group with more task specific information. Coordination and control of the Technical Support Group was improved by adding a task assignment board to the Technical Support Center. These changes led to improved performance in the November 1990 exercise and closure of this item by the NRC.

- o **No Provision for Emergency Coordinator (EC) Approval of State of Florida Notification Form, Changes Made Without Informing EC (IFI 50-250, 251/90-38-01)**

Corrective actions includes revising the procedure to require EC approval of the State of Florida notification form and any changes to it, and emphasizing the point of not releasing the form without EC approval during training.

- o **Operations Support Center Procedures Not Verified for On-the-Spot Changes (OTSC's) (IFI 50-250, 251/90-38-02)**

Corrective action include institution of a procedure control system implemented by Document Control personnel who will properly verify OTSC's.

FPL has also undertaken the following initiatives to further improve the emergency preparedness of Turkey Point:

- o **Enhanced Training Programs**

- Task listings were developed in 1990 for all Emergency Response Organization positions in order to provide personnel with specific assignments. This included the TSC Technical Support Group previously mentioned.

- These task listings have been incorporated into Lesson Plans and are being taught during the 1991 training cycle.
- Simulator Training emphasizing Emergency Preparedness aspects such as classification, completion of forms, and notifications was performed during the last quarter of 1990 and will remain as part of the Operations training.
- o **Procedure Upgrades**
 - Developed administrative directives to provide instructions on maintaining the Emergency Preparedness program.
 - Utilized training comments, drill critiques, Regulatory guidance, Engineering studies and industry experience to upgrade existing procedures.
- o **Improving Off-Site Interfaces**
 - Provided additional training to off-site support agencies in the handling of a contaminated injured individual.
 - Provided off-site support agencies with an overview of the Turkey Point plant through lectures and tours of the site.
 - Enhanced interfaces with state and local officials by establishing more of a daily working relationship with frequent phone calls and meetings.
- o **Facility Improvements**
 - Ensured NRC Emergency Response Facility needs were addressed to support effective integration into the Turkey Point Emergency Response Program.
 - Upgraded the Emergency Response Facilities in the areas of status boards, maps, equipment and communications.
 - Dedication of the Emergency Operations Facility to emergency response, eliminating the former practice of allowing the space to be used for other functions.
 - A new comprehensive medical facility recently became operational. The medical facility which is manned 24 hours a day, 7 days a week, has medical personnel trained on the handling of contaminated individuals and is set up to treat such victims. The addition of the on-site

medical facility will minimize the number of contaminated injured individuals sent off-site and will also provide expeditious response and treatment of contaminated injured personnel.

o **Aggressive Drill Program**

In addition to the routinely held drills and exercises, Turkey Point has:

- Implemented the conduct of unannounced Facility Activation Drills.
- Implemented the conduct of Augmentation Drills involving actual callouts and response.
- Held very comprehensive drill and exercise critiques and developed a system to track problems to full resolution.

V. SECURITY

As recognized in the last two SALP reports, FPL management has been focusing considerable effort on improving security at Turkey Point. The improved results were mentioned in the September 1990 SALP report and further improvements have been evident during the current SALP period. The number of cited violations in the area of security has declined from the nine mentioned in the October 1989 SALP report to one in the last SALP period and one during the first ten months (through May 31, 1991) of the current period. Recent NRC inspections have found the Turkey Point Security program and its implementation to be satisfactory overall (see, e.g. NRC Inspection Reports Nos. 50-250/251 90-45 and 50-250/251 91-06). An inspection as recently as February of this year (50-250/251 91-06) noted the following general comments:

1. There was continued support of the security program by senior licensee management as evidenced by their level of awareness and involvement.
2. Isolation zones were free of obstructions and security personnel were observed patrolling and checking barriers.
3. Discussions with security personnel performing compensatory functions showed that they were adequately trained and were provided with appropriate guidance.
4. Good radio communications discipline was maintained.

During the on-going dual unit outage, FPL is aggressively implementing security system hardware upgrades at Turkey Point, which will result in a modern state of the art and more automated security system at the plant. Performance in specific areas is discussed below.

o Security Upgrades

FPL is now implementing major upgrades to the Turkey Point security system. These upgrades include:

- New protected area perimeter fences, and exclusion of the fossil units from the protected area.
- A new automated security system that includes a state of the art main frame VAX 3600 computer with high resolution graphics and enhanced system reporting.
- Closed circuit television cameras to replace existing manned defensive positions (towers).
- Dual volumetric intrusion detection system in most zones combining diverse technologies, i.e. microwave, infra-red, ported coax, etc.
- A new centralized access facility allowing more effective processing of all plant personnel. Included in the "in-processing" of personnel are ingress card readers equipped with key pads to require personnel to utilize personal identification numbers (PIN) to eliminate the possibility of a mis-issued key card.

Excellent progress is being made on these items. In July 1991, the security system access control hardware should be placed in service, 65% of the new perimeter should be activated and the fossil units should be separated from the nuclear units protected area. Also in July, full use of the new Nuclear Entrance Building is planned. The Security Department was moved into new quarters in September 1990, enabling consolidation of the department into one location. The remainder of the security upgrades are scheduled for completion in late 1991.

o Adequacy of Vital Area Barriers

As an important part of the Turkey Point security upgrades, vital area barriers are being upgraded from chain-link fencing to heavy steel grating. Significant progress is being made and installation of the new barriers is scheduled to be completed in late 1991.

o **Access to Vital Areas/Compensatory Posts**

Because of the dual unit outage and the units being devitalized, compensatory posts have been kept to a minimum. Compensatory Post and Overtime indicators show the department near projected goals.

o **Control of Safeguards Information**

A new division wide safeguards program that is applicable to Turkey Point, St. Lucie and Juno Beach has been implemented. The program has been extremely helpful and effective during this upgrade period at Turkey Point, especially with the increased number of safeguards drawings and diagrams.

o **Loggable Security Information Reports**

The number of Loggable Security Information Reports has been reduced significantly. During the last SALP period, the number per month ranged from 19 to 77 with the average being 47 per month. During the first nine months of the present period, the average has been 27 per month, with the range being from 13 to 51 per month.

o **Security Training Program Improvements**

Significant improvements have been made in the Security Training Program. In late 1990, use of the enhanced training facilities in the new Security Training Complex began. The security Training and Qualification Plan has been consolidated and improved. Weapons are being upgraded with the transition to 9mm handguns is currently in progress and transition to AR-15A-2 rifles is planned. The dual-a-tron target system is being used providing much better simulation of live fire scenarios. Additionally, on November 27, 1990, in conjunction with Local Law Enforcement Authorities (LLEA) the largest single security contingency training drill in the history of commercial nuclear power was conducted at Turkey Point. This exercise tested 8 of the 16 contingency events and included such complexities as LLEA SWAT teams being inserted by helicopter into the protected area; a vehicle with an "explosive" device found during a vehicle search; a hostage situation that included taking the Site Vice President hostage by a "visitor" posing as a law enforcement officer; protest marches; vital area intrusions and injuries. Another contingency exercise is being planned for August in preparation for a security training exercise to be held in conjunction with the December 1991 Emergency Plan exercise.

o **New Medical Facility**

A new comprehensive medical facility recently became operational. This facility supports the Fitness for Duty Program by being manned 24 hours a day, 7 days a week by a professional staff.

o **Security Force Overtime and Turnover**

The 13% average monthly overtime rate achieved during the last SALP period was maintained through April 1991. This low level was maintained despite increased security support necessitated by the dual unit outage and the security upgrades project, as well as additional posts and patrols manned in response to heightened awareness during the Mid-East War. Closer coordination with maintenance and construction entities, more productive scheduling, and management support all contributed to this accomplishment.

During the first nine months of this period, the Security Force Turnover rate has averaged 9%, down from 13% during the last SALP period. This lower turnover rate has resulted in a more stable, experienced, and dependable force.

VI. ENGINEERING/TECHNICAL SUPPORT/TRAINING

A. Engineering

As discussed with the NRC, Engineering's major challenge for the last two SALP periods has been the preparation and completion of the home office engineering for the Emergency Power System (EPS) and Security upgrades currently under implementation during the dual unit outage. This effort represented over 550,000 engineering manhours (360,000 for EPS and 190,000 for Security). An on-site EPS/Security engineering support team of approximately 70 engineers (comprised mainly of FPL and A/E personnel who participated in the home office design effort) are continuing to support construction and startup efforts. The successful implementation of this coordinated effort with other balance of plant modifications is evidenced by completion of 97% of the Engineering Packages 60 days or more before the start of the dual unit outage, exceeding the 95% INPO good practices guidelines. This is a very significant accomplishment due to the large number of Engineering Packages (over 280) being implemented during this outage.

Several changes were implemented in the Engineering area to assure the continued improvement in performance during this SALP period as illustrated by the following good practices and accomplishments:

- As part of Engineering's self assessment efforts, Engineering Technical Staff is now responsible for Engineering Assurance. The Staff conducts audits and technical assessments to ensure that Engineering's design control program is being implemented effectively and that design outputs are technically acceptable. These technical reviews are focused on technical excellence. Thus, they go beyond the scope of QA audits, which ensure compliance with NRC QA program requirements.
- The Procurement Engineering backlog has been reduced by 68% during this SALP period. This is a significant improvement considering the challenges of implementation of Commercial Grade Dedication, other major process changes, and the dual unit outage.
- Engineering has established an Equipment, Support, and Inspections (ESI) department which consists of technical specialists in coatings, materials, welding, corrosion, and equipment/components. This department specializes in NDE testing, material failure analysis, welding requirements, technical support to the plants on specific equipment/component problems, etc. The ESI department has been of benefit to both Engineering and the Plant Technical staff for the real time support of maintenance, establishing root cause analyses and practical countermeasures, and interfaces well with the plant maintenance department.
- To insure improved reliability, Engineering prescribed additional start up test requirements on the original site Emergency Diesel Generators, similar to the new EDGs installed during the dual unit outage. Though not a regulatory requirement, a multiple start test program was implemented on the existing EDGs. This provides a conservative level of testing to be consistent with the guidelines of Regulatory Guide 1.108 for the extent of the modifications being performed.
- Localized corrosion was found on ICW system piping. Engineering initiated a crawl through inspection of all safety related ICW system piping and the intake structure. Statistically selected random areas of piping were ultrasonically inspected to determine minimum wall thickness, with satisfactory results. Normal wear areas were repaired, and degraded joints were restored to their original design conditions.

- Engineering developed a 10 CFR 50.59 Safety Evaluation to define the plant conditions, restrictions, and minimum equipment requirements necessary to ensure that safety would not be compromised during the implementation of the Emergency Power System enhancements. The construction schedules being used for implementing the numerous engineering packages depended on the orderly integration of the document requirements. Just a few of the critical attributes addressed in the safety evaluation include: Spent Fuel Pool Cooling, on-site back-up power requirements, Vital AC and DC bus availability, and radiation monitor requirements.

The Turkey Point Probabilistic Risk Assessment was completed and will be submitted on schedule. As a result of the PRA study, a plant modification to allow emergency service water tie-ins to "A" and "C" charging pumps is planned. This will reduce the probability of a RCP seal LOCA. Additionally, a hurricane "survival/recovery" procedure is in development to account for uncertainties for hurricane surges. Taking into account the above items, the total internal core damage frequency for Turkey Point is 1.0 E-4/year , meeting the NRC safety goal.

Actions taken to address the concerns noted in the September 1990 SALP report and to further improve performance in Engineering include:

- o **Errors Contained in the System Level Component Design Requirements (CDRs)**

Engineering initiated prompt corrective action to upgrade the documents. New writer's guides were developed to improve the format, content, and quality. Fourteen Turkey Point CDRs have been upgraded to improve the reliability of component level design basis information. The two remaining CDR upgrades are scheduled to be complete by September 1991. A recent re-evaluation of one of these upgraded CDRs was very favorable as stated in NRC Inspection Report (50-250/91-201; 50-251/91-201): "CDR information was well prepared, and every component was addressed in detail." Consequently, the related deficiency was closed. Additionally, the design basis verification of these documents is proceeding as scheduled, with a completion date of June 30, 1991.

- o **Scope of DBD Verification Program Was Too Limited in That It Did Not Address all Reactor Protection Systems (RPS)**

This item was identified during the NRC Design Verification Inspection (DVI) and was addressed at that time. The scope of the RPS verification was expanded and the Verification Report format was revised to the satisfaction of the inspector. These tasks were completed during the DVI.

- o **Design Information Not Being Incorporated into Plant Procedures (CCW Flow to the ECCs, PORV Stroke Times, ICW to TPCW Isolation Valves Test Requirements)**

The applicable design information has been incorporated into the appropriate surveillance test procedures. Improvements have been made to the program already in place to further assure that design information is incorporated into plant procedures. The program includes:

- Operation Review/Implementation Review process
- Procedures Group review of Engineering packages
- Systems Engineering reviews
- Systems Acceptance Turnover Status (SATS) signoff

- o **Inadequate Technical Overview of Contracted Engineering Services Contributed to Deficiencies in Design Calculations Identified by the NRC DVI Inspector**

In early 1990, FPL developed a program to improve both FPL and contracted engineering performance on calculations. This program consists of the following actions:

- Issuance of a more detailed procedure for the preparation of calculations, JPN QI-6.5.
- Adoption of this procedure by contracted engineering firms with training provided to their personnel.
- Development of a calculational deficiency indicator. A sample of contractor and FPL calculations is reviewed by FPL on a monthly basis. This review targets clarity, documentation and technical deficiencies.
- Correspondence is sent to the contractors on a monthly basis to identify the deficiencies found and to request corrective action as necessary.

- Several meetings have been held with the contractors' management and engineers to emphasize the importance of clear and technically accurate calculations.

Significant improvement has been noted in the quality of calculations since the beginning of this program. The number of calculational deficiencies found has been reduced by 55% overall (contractor and FPL), and by approximately 60% for the contractors. This program is on-going with a goal of continuing improvement.

The large majority of the deficiencies is due to poor documentation or explanations, as opposed to technical inaccuracies. None of the deficiencies found to date have led to physical field modifications.

o Calculations Associated with the CCW Modification Contained Errors

Calculation deficiencies have been corrected and no physical modifications were required. The calculations found deficient by the NRC inspector during the Design Validation Inspection (DVI), and the more recent DVI follow-up inspection (NRC Inspection Report 50-250/91-201, 50-251/91-201) had been completed before the calculation improvement program took effect and began to improve the quality of calculations. The only calculation (C-SJ 394-01) reviewed by the inspector which had been completed after the improvement program took effect, was found to have no deficiencies, and was complimented by the inspector. Quality Assurance reviewed many calculations as part of the EDG Safety Systems Outage Modification Inspection (SSOMI). Their comments were that the number and scope of the calculations performed is impressive and the quality was generally good.

o Drawing Deficiencies and Backlog Reduction

The as-built verification process is on schedule and the walkdowns for large bore pipe supports will be completed by June 1991. The affected drawings are scheduled to be updated by the end of 1992. The RHR drawing deficiencies have been corrected, and the containment sump screen drawing change request is complete and is in the drawing update process.

In the SALP report, the NRC noted that FPL had implemented a comprehensive corrective action plan for updating plant drawings and that implementation was adequate. Satisfactory progress continues to be made. Since February 1989, the backlog has been reduced from over 28,000 drawing discrepancies to the present backlog of less than 13,000. Even with

the increased drawing change workload due to the dual unit outage, the original safety related backlog will be completed by the end of 1991, with the balance of the safety related drawing update associated with dual unit outage modifications scheduled to be completed by March 31, 1992.

o **Improvement in Parts Procurement**

Engineering and technician support for the procurement process was combined into a single group. Engineering issued new Quality Instructions (QI) to cover the procurement process, including an enhanced Commercial Grade Dedication (CGD) program and a method of performing Item Equivalence Evaluations (IEE) for like-for-like replacement of similar components. As a result of these changes, the Procurement Engineering backlog has been reduced from 3422 on August 1, 1990 to 1088 requests as of June 1, 1991. In addition, requests affecting maintenance PWO's awaiting parts were consistently kept below the target of 20 requests.

o **Inadequate or Incomplete Generic Application Reviews for Specific Plant Issues**

Nuclear Engineering has improved its pro-active response to generic issues since the last SALP report, as evidenced by the following items:

- The Hilti Corporation identified anomalies regarding their Hilti Kwik-Bolt II expansion anchors in December of 1990, and they redesigned the bolts in March during the middle of the dual unit outage. Nuclear Engineering initiated and completed qualification testing and revised the bolt specifications in four weeks, minimizing the impact on the DUO modifications.
- Nuclear Engineering completed an evaluation of the CCW system configuration during IST testing, and based on the generic implications, determined the need to investigate other safety related system testing configurations (LER 90-021). These evaluations are currently in progress for the AFW, RHR, and other systems.
- A potential material deficiency of the SI accumulator nozzles was evaluated for Turkey Point based on experiences of nozzle cracking at H. B. Robinson, Unit 2. Also, a review of all other potentially affected tanks on site purchased from the same vendor was conducted, with no additional problems identified. Testing completed to date shows no SI nozzle cracking.

- Engineering initiated a Quality Instruction (QI) change to address more rigorous control of engineering on systems shared by Turkey Point nuclear and Turkey Point fossil. This QI resolves an interactive control problem on Turkey Point's raw water fire protection storage tank and other shared systems.

B. Technical Support

There have been several improvements and enhancements in the Technical Support area during this SALP period to support both the dual unit outage and general plant activities. These improvements and enhancements include:

o Configuration Control Program during the DUO

Because of the many modifications occurring during the dual unit outage, a process has been developed to enhance existing administrative controls related to Configuration Management. A Configuration Control Team has been established. The membership of the team is composed of System Engineers, Nuclear Engineering, Operations, Maintenance, System Protection and Outage Management Personnel. The team reviews upcoming modifications for impact on the Spent Fuel Cooling Function. System Engineers prepare and issue Configuration Control Notices for modifications. All Configuration Control Notices are placed in the Configuration Control Book, which is maintained in the Control Room. Any modifications that affect the Spent Fuel Cooling functions are shown in marked up drawings which are maintained in the Control Room. The Configuration Control Program is controlled by a temporary procedure.

o System Engineering Activities Supporting the Dual Unit Outage

System Engineers are providing additional assistance during the dual unit outage as follows:

- Assisted the ISI Group in the coordination of 10 year hydrostatic tests including verification of system boundary, determining requirements for clearance and resolution of problems.
- Development of temporary system modifications to provide alternate power supply to required equipment during implementation of EPS project.
- Membership in the Joint Test Group to review and approve pre-operational test procedures and results.

- Full time participation in the start up test program of the EDGs and Electrical systems.

System Engineers are participating in the restart readiness process following the dual unit outage as follows:

- Preparation and performance of Readiness Test Procedures to ensure systems are functional and ready to start.
- Review of all open Plant Work Orders for impact on operability and reliability.
- Performance of system readiness walkdown.

o Reduction of LCO Hours

System Engineers have continued the focus on reducing system LCO hours. Through December 1990, the LCO hour levels continued to be significantly lower than during 1989 and early 1990. The twelve month rolling average of LCO Hour per Hour of Operation has been lowered from approximately 1.4 in early 1989 to .43 in December 1990 for Unit 3 and from 1.2 to .61 during the same period for Unit 4.

o Plant Change/Modification Process

- DUO Closeout Team

The post implementation review process has been revised. The new process has eliminated the duplication of reviews by the Quality Control and Technical Departments. Also, the current close-out process requires the post implementation review be conducted prior to system turnover to Plant Operations (SATS). A dedicated team has been assigned to conduct these post-implementation reviews for all PC/Ms worked during the DUO.

- Backlog Reduction

A PC/M Backlog reduction plan has been established. The plan includes the conversion of "parts change" PC/Ms to Item Equivalency/Drawing Change Requests (IEE/DCR). The IEE/DCR process appropriately eliminates the need for PC/M implementation and associated close-out thereby streamlining manpower requirements. Approximately 100 "parts change" PC/Ms have been identified for conversion. The backlog reduction plan also includes the review and cancellation of "unnecessary" PC/Ms which are unrelated to parts replacement and the review of partially implemented PC/Ms for final close-out.

- Minor Engineering Package (MEP)

The MEP has been developed by Nuclear Engineering. This document has resulted in a more streamlined effort in the design and implementation of PC/Ms thereby reducing manpower requirements.

- o Integrated Procedure Maintenance Program.

- EOP Maintenance

An integrated software system for EOP maintenance has been implemented. This system helps to coordinate the EOPs with their related basis documents and setpoint derivation database, thereby improving the technical basis for EOP content and reducing the potential for errors during EOP changes. This system is also being used to maintain selected Off Normal Operating Procedures which interface directly with the EOP network.

- Consolidation of Writer's Guides

In the past, separate writer's guides were maintained for Administrative, Operations, Off-Normal, Emergency, Chemistry, Health Physics, and Maintenance procedures. A single writer's guide has been developed to provide a single source for procedure writing requirements eliminating conflicting guidance for procedure writing and improving the consistency and quality of plant procedures.

- o Improved Design Information Being Incorporated into Plant Procedures

Greater definition and more detailed guidance concerning design information have been incorporated into plant procedures. This has been accomplished through improvements in the PC/M implementation process, some of which include the following:

- Special Procedures Group established with the responsibility to upgrade all plant procedures to reflect EPS Enhancement Project modifications.
- Plant knowledgeable operator reviews and walkdowns of procedure changes.
- Improved procedure requirement tracking associated with PC/Ms to ensure all the design information is incorporated into Plant procedures.

- o **Develop New Modification Control Program**

- **Streamline Current Process**

The Request for Engineering Assistance (REA) process is being revised to streamline required reviews and eliminate unnecessary changes. The administrative procedure governing REAs (ADM-510) is currently being revised to assign increased responsibility to the sponsor and the Design Control Supervisor and eliminate the Change Review Team (CRT), CRT coordinator and Project Review Board coordinator.

- **Develop Prioritized Modification Lists**

Prioritized modification lists have been developed for upcoming refueling outages (i.e., "Top 20 list") and non-outage/short notice outage (i.e., "Top 30 list") PC/M activity. These lists reflect those projects which have been approved by the Plant Management Team for work resulting in more focused resources and effective budgeting.

- **Reduce Backlog of Requests for Engineering Assistance (REA)**

The list of open REAs is under review to cancel "unnecessary" REAs. Approximately 185 REAs have been canceled from March 1990 to date. The backlog of REAs requiring PRB review has decreased from 111 on January 1990, to 1 on May 1991.

A new process has been created for REAs which are required only to support changes to drawings. These changes are transmitted directly to Nuclear Engineering Services group where they are screened and the affected design documents are updated, as necessary. This eliminates the need for processing PC/Ms to incorporate drawing only changes when a basis for the proposed design change already exists. As of May 1991, approximately 205 drawing change only REAs have been issued to Nuclear Engineering and 147 of these have been dispositioned.

- o **Revised Stroke Time Criteria for Power Operated Valves**

Revised the stroke time acceptance criteria for power operated valves in the IST Program such that the "Maximum Allowable" time is based on the most limiting of a reasonable deviation (e.g., 25%) from a historical average stroke time, or any specified safety analysis limit. Additionally, valve performance is monitored more frequently at new "Alert" levels

(e.g., 15%). This provides an opportunity for planned and orderly maintenance prior to exceeding the specified "Maximum Allowable" limits.

- o **Enhanced 10 CFR 50 Appendix J Program**

A conservative total containment penetration leakage (at or below 40% of the allowable (.6L_a)) has been maintained for Type B and Type C local leak rate tests following refueling outages.

- o **Developed Grid Maps for Location of Items for Inspection and Maintenance**

Grid maps were developed and utilized for locating components identified for inspection and/or maintenance reducing the time spent locating the items, which in radiological areas results in reduction of man-rem required to perform the job.

C. TRAINING

During this SALP period the initial training of licensed operators continued to be a strength at Turkey Point as evidenced by the successful licensing of 3 SRO candidates in October 1990 and 22 SRO candidates (Group 13) in January 1991. This has allowed the plant to go to six shift operations, and the training department to bring Turkey Point experienced SROs over to training. This 100% pass rate significantly exceeds our current goal of 80% and equals the 100% initial examination pass rate noted by the NRC in the last SALP report (NRC Inspection Report 50-250/251 90-26). In that same report, the NRC noted several improvements made in the requalification training program which had previously been rated unsatisfactory. The NRC stated "The effectiveness of the training program improvements was demonstrated by the 1990 requalification examination results. Four of four ROs and 10 of 12 SROs passed requalification examinations. The NRC rated the licensee requalification program as satisfactory based on this 87.5 percent pass rate." FPL has continued to improve its requalification training program as evidenced by the 93.5% pass rate (44 of 47) on the February-March 1991 annual requalification examination series, and has maintained good performance in other areas. Specific actions and results include:

o **Operator Training and Requalification**

- For the 1991-1992 requalification year, significant revisions have been made to all training materials to reflect the vast amount of change being done in the plant during the dual unit outage. This effort is currently on schedule and will culminate with a comprehensive pre-start evaluation of all crews on both infrequently performed tasks and plant changes that have been made during the outage. These evaluations will be observed by plant management and we have invited the NRC to participate.
- All operator training programs were successfully re-accredited as were the Shift Technical Advisor and Health Physics training programs.
- As mentioned above, the successful licensing of Group 13 has allowed the plant to approve transfer of 3 PTN licensed SROs to the training department in April 1991. After a three month turnover period, these SROs will replace contractors, thus reducing our dependence on contractors for operator training.

o **Simulator Certification/Upgrades**

- During this SALP period the Turkey Point plant specific simulator has undergone a significant test program to validate and certify its ability to replicate actual plant responses. The simulator certification letter was submitted to the NRC on January 2, 1991.
- In addition, the PTN simulator was shut down during March and April 1991 to incorporate software and hardware changes needed to reflect the changes made to the plant during the dual unit outage. All major modifications that would affect operator performance have been completed. These include the EPS upgrade, RTD Bypass Elimination, ATWS modifications, and boron concentration reduction changes, as well as others. The Area Radiation Monitoring System modifications will be added to the simulator in 1992.

o **Maintenance and Specialty Training**

- The dual unit outage has also necessitated training material revisions in the Maintenance and Specialty (M&S) training programs. These modifications are progressing according to schedule. To ensure both operators and maintenance personnel are familiar with the new equipment

being installed, training aids for the exact equipment were procured and are being used to train plant personnel prior to use of the equipment in the plant. These components include the new diesel generator control panel, the new electrical sequencer, and the new ABB 4160 Volt and 480 Volt switchgear. Special courses have been scheduled to familiarize the various disciplines with the changes in their area of responsibility. The majority of this training has been completed and the remainder will be completed before the return to power operations.

- During this SALP period the M&S training groups have been preparing for re-accreditation. A very extensive task list re-validation effort has been completed, and a detailed self-evaluation report was generated and submitted to INPO in January 1991. The re-accreditation team visit is scheduled for the week of June 24, 1991. The accreditation board will convene sometime in the fourth quarter of 1991 to consider our re-accreditation.

VII. SAFETY ASSESSMENT/QUALITY VERIFICATION

Improvements have continued in the area of safety assessment and quality verification during the current SALP period. The Plant Licensing Group, re-organized near the end of the last SALP period, has now had over a full year in which to improve their organization and performance.

The same is true of the Site Quality organization, which is comprised of Quality Assurance Engineers and Quality Control Inspectors. We believe that during this SALP period the Quality organization has continued to contribute to the "superior performance in the Safety Assessment/Quality Verification area" as stated by the NRC on the cover letter of the last SALP evaluation. Both groups execute performance based evaluations and contribute significantly to the plants overall self-assessment efforts.

During this SALP period the QA organization has received favorable mention in several NRC inspection reports (90-34, 91-09, 91-09) specific to the areas of Health Physics, Chemistry, and in general to the overall audit program (91-12, 91-14) as described below:

- (90-34), "Through reviews of these audits and discussions with licensee personnel, the inspector determined that the licensee had an aggressive, effective audit program."

- (91-08), "In general, the audits were found to be well planned and well documented and contained items of substance related to the Radiation Protection Program." Also, "The inspectors noted that based on the depth of review and significance of identified issues, the present audit program was considered a program strength and had contributed to the Radiation Protection Program."
- (91-09), "The Quality Assurance audit and surveillance program provided management with a tool to ensure effective monitoring and implementation of the programs within the scope of this inspection." Also, "The inspector determined that the audit program was conducted in accordance with Technical Specification requirements, and that audits were conducted in such depth as to identify programmatic weaknesses if such existed."
- (91-12), "The inspectors reviewed the site QA audits and found that they were comprehensive and effective in licensee self identification of problems. The QA Group has been a significant factor in the licensee's self-assessment program in performing Technical Specification required audits and special audits as required by higher management."
- (91-14), "The inspectors reviewed a QA audit which demonstrated the organization's quality oversight involvement. The document was Audit QAD-PTN-90-039, EDG Phase 1, Design. The audit was comprehensive and used the methodology of NRC SSOMI audits."

Also, the plant staff in conjunction with QA personnel have made significant progress in reducing the length of time an audit finding remains open. In May 1990 there were 15 findings open greater than 180 days. In May 1991 there were 0. This is indicative of personal accountability in resolving identified problems and demonstrates an improving trend in quality.

Because the problems were first identified by Quality Assurance the NRC, in accordance with the new enforcement policy, issued four (4) non-cited violations during this SALP period, through May 1, 1991, (90-34-01, 90-36-01, 91-08-02, 91-08-07).

o Self Assessments

Notable self assessments and audits impacting nuclear safety and reliability conducted during this SALP. period have included:

- An in depth audit of Turkey Point's Emergency Power enhancements following the NRC's Safety System Outage Modification Inspection (SSOMI) format. Contracted technical expertise was utilized to augment QA staff and provide up-to-date industry knowledge. This resulted in areas being identified which enhanced safety and reliability of the Emergency Diesel Generator modifications.
- An integrated audit with Juno Beach QA staff was conducted to assess Turkey Point's effectiveness at implementing its Radiological Emergency Plan. The results of this audit determined that FPL's plans for responding to radiological emergencies are being effectively implemented, are in compliance with its licensing requirements, and that there were no problems with respect to the health and safety of the general public.
- A Simulator Certification program assessment utilizing NRC criteria of NUREG 1258 was conducted by QA. The results indicate that the Turkey Point Training Simulator Certification program is well defined and that implementation of ANSI/ANS 3.5, as endorsed by Regulatory Guide 1.149, is effective in meeting industry standards and NRC certification.
- QA evaluated selected elements of the Turkey Point configuration management program including operations, design, and modification activities associated with the emergency power upgrade. As determined by the assessment, construction configuration control practices, change request notice usage, and operational clearances affecting safe operation of systems are being satisfactorily implemented.
- QA reviewed selected aspects of Turkey Point's Spent Fuel Pool System (SFP) to determine system readiness in advance of the dual unit outage. The assessment examined the alternate and permanent SFP cooling systems to assure that both would perform their intended design functions. The results concluded that the design and operational controls of those key safety systems would perform as expected.

- QA performed several root cause analysis investigations. Included in these was an investigation of nonconforming Component Cooling Water (CCW) heat exchanger tube material. Resulting corrective actions required this and all future material purchases to be included in the Stores' inventory management system. Findings stemming from an investigation of the movement of the Unit 4 Lower Reactor Internals resulted in improvements to the ALARA and RWP processes and procedural enhancements to ensure ALARA requirements are accurately transferred to Radiation Work Permits.

There have been no NRC violations against the Quality Assurance Department during this SALP period.

o Safety Assessment

During 1990, FPL's Nuclear Division increased its commitment to self assessment and aggressive oversight of nuclear safety activities by restructuring the Company Nuclear Review Board (CNRB) activities. In July 1990, a senior level individual was designated as full time CNRB chairman, reporting to the V.P., Nuclear Assurance. Additionally, an ISEG chairman at each nuclear site reports to the CNRB chairman, as does the CNRB subcommittee, located in the Juno Beach office.

The CNRB's main function is to provide on-going independent oversight of activities related to nuclear safety and to advise the President, Nuclear Division of these issues. The CNRB membership includes the Nuclear Division senior management (below the president). Additionally, outside membership (non-FPL employees) was added to the "new" CNRB. The Board meets at least monthly. Members function as reviewers of: QA audit results, NRC violations and responses, plant and industry events, LERs, license amendments, and overall performance of our nuclear units in key areas.

The "new" CNRB meetings began in August 1990, with regularly scheduled monthly meetings occurring thereafter. Additionally, special meetings are convened as needed to meet plant schedules. While performing the obvious function of ensuring that the entire Nuclear Division Management Team remains aware of problems, issues, trends, and the effectiveness of corrective actions, the additional benefits of an aggressive, proactive CNRB have been:

- The development and augmentation of a more conservative approach to nuclear safety.

- Increased awareness of the importance and effectiveness of self assessment.
- Improved teamwork.
- Improved communication.
- Rising standards and expectations with regard to the quality of work.

o **Communications with the NRC**

Formal presentations to NRC staff have occurred during the Dual Unit Outage (DUO). These presentations have provided for the exchange of information between Turkey Point Personnel and NRC staff. Informal discussions have also been held with site, regional, and headquarters NRC staff. Among other topics, these discussions covered FPL's plans for DUO evolutions and enabled the NRC to present their views prior to the initiation of these evolutions.

o **Dual Unit Outage Efforts**

During this SALP period the following ten Proposed License Amendments (PLA) have been submitted:

- Boric Acid Concentration Reduction
- Integrated Schedule
- Miscellaneous Administrative
- Organizational Change
- RCS Flow Reduction
- RPS/ESFAS Setpoint Methodology
- RTD Bypass Elimination
- SI Accumulator Level
- Surveillance Capsule
- Undervoltage Setpoint

Several of these PLAs have required substantial resources from both the NRC Staff and FPL staff. To provide prompt support to the NRC, FPL staffed the Bethesda Licensing office during the first quarter of 1991 with an individual dedicated to the support of these amendments. The review process has been on schedule with four of the above PLAs having received NRC approval. Because of the NRC staff's support and progress in the handling of the PLAs, FPL has been able to decrease the level of support provided at the Bethesda Licensing office. Other major milestones during this SALP period include NRC approval of the Revised Technical Specifications and the Emergency Power System (EPS) Enhancement PLA.

The Emergency Power System upgrades are continuing. A full review of the Technical Specifications has been completed to assure that procedures implementing those specifications are in place. The procedures needing revision and new procedures required have been identified such that the necessary changes can be made prior to the full implementation of the Technical Specifications during the restart after the DUO. Included in this review was an effort to identify any administrative changes that would be required to correct clerical errors or provide administrative clarifications. Technical issues were also identified which will be submitted for approval to the NRC.

o **Licensee Event Reports (LERs)**

During the current SALP period (through May 31, 1991) 11 events have occurred requiring LERs. Also, three voluntary LERs have been issued during the SALP period concerning conditions found during testing of the new diesel generators. LER preparation efforts have focused on an improved analysis of events. All required Licensee Event Reports were filed within 30 days of the events reported. The total of 11 LERs compares very favorably to the 34 submitted for reportable events that occurred during the previous SALP period.

o **Commitment Tracking**

An aggressive commitment tracking system helps assure that FPL complies with all formal NRC commitments. Packages are prepared and available for NRC inspection review following commitment completion. This has facilitated closure of NRC open items and NRC Inspection Follow-up Items. Also, close interaction by FPL staff with NRC inspectors has helped to quickly resolve potential items or unresolved issues prior to the NRC inspector leaving the site. This has also helped to reduce NRC follow-up activity and allows Turkey Point staff more time to concentrate on outage related or other specific NRC concerns.
