BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Recovery of Fuel Costs Associated with Florida Power Corporation's Crystal River 3 Outages in 8/89 and 10/90.	) DOCKET NO. 910925-EI) ORDER NO. PSC-92-0289-FOF-EI) ISSUED: 5/5/92

The following Commissioners participated in the disposition of this matter:

THOMAS M. BEARD, Chairman
SUSAN F. CLARK
BETTY EASLEY

ORDER APPROVING RECOVERY OF FUEL COSTS

BY THE COMMISSION:

CASE BACKGROUND

In connection with the February, 1991 fuel adjustment proceedings in Docket No. 910001-EI, the Office of Public Counsel (OPC) contested Florida Power Corporation's (FPC) recovery of the fuel costs associated with two unplanned outages that occurred at the Crystal River Unit 3 generating facility. The first outage occurred from August through October of 1989 and was caused by the failure of a seawater pump. The second outage occurred in October of 1990 and was caused by a lubricating oil leak. To allow sufficient time for discovery, the issues were deferred to the August 1991 fuel hearings, and then spun off into this separate docket.

A hearing on recovery of the fuel costs associated with the outages was held on February 12 and 13, 1992. Posthearing briefs were filed on March 18, 1992. Public Counsel submitted proposed findings of fact and conclusions of law with its posthearing filings. Specific responses to Public Counsel's proposed findings of fact are found in Attachment A of this order. Public Counsel moved to strike part of FPC's posthearing brief, and FPC then moved to strike Public Counsel's motion. Both motions were denied by the prehearing officer on April 14, 1992, in Order No. PSC-92-0206-PCO-EI.

The Seawater Pump Outage

Facts

On August 24, 1989, a periodic test of Nuclear Services Seawater Pump 2B (RWP-2B) revealed that the pump was not meeting the minimum discharge flow standards that are required by the plant's technical specifications. The pump, along with four

others, is used to cool safety components in the Crystal River Unit 3 nuclear plant with seawater from the Gulf of Mexico. An initial external investigation of the pump did not reveal the cause of the decreased flow, and the plant was shut down on August 26th.

Four months earlier, in April 1989, seawater pump 2B had been rebuilt with a new rotating assembly, including a spare impeller that FPC had purchased in 1981. When the outage occurred the pump was dismantled and inspected by FPC personnel and a representative of the manufacturer, Sulzer-Bingham. Nothing unusual with the pump was detected at first, but when the pump was reassembled and tested again, the low flow condition remained. FPC decided to replace the recently installed impeller with the impeller that had been removed in April. At that time it was discovered that the spare impeller purchased in 1981 was the cause of the problem. Seawater pump 2B required an impeller that had seven vanes. The spare impeller installed in the pump in April had the correct external dimensions, but it only had five vanes. It appeared that the impeller had been "mismanufactured": a five vane impeller had been machined to the correct trim dimensions for a seawater pump that required a seven vane impeller and delivered to FPC with the assurance that it was the correct part for that pump.

The spare impeller had been ordered from Sulzer-Bingham in 1981, and delivered to FPC under the quality assurance standards required of sole source suppliers of nuclear generating equipment. No negative reports had been made regarding Sulzer-Bingham's quality assurance program when the spare impeller was ordered, and FPC thus had no reason to suspect that it could not rely upon the manufacturer's representation that the part was suitable for use in the pump RWP-2B. The purchase orders for the spare impeller and other parts ordered at the same time limited the supplier's liability for consequential damages, and warranted only that the equipment would be;

> free from defects in design, material and workmanship until the expiration of twelve(12) months after the date on which it was placed into service for the purpose for which it was purchased. If any such item of equipment, or any part thereof, fails to meet the foregoing warranties and purchaser so notifies Seller within a reasonable time after such failure, Seller shall thereupon promptly correct such failure at its sole expense including all shipping costs associated with such correction.

In 1982, a year after the impeller in question here was received from Sulzer-Bingham, FPC ordered another spare impeller for the Crystal River 3 seawater pumps, and was then informed that the pumps required impellers of three different external dimensions. Sulzer-Bingham held the internal design drawings and specifications of the impellers confidential, and FPC was not specifically informed when it ordered the second spare impeller that some of the seawater pumps required five vane impellers and some required seven vane impellers. There is evidence in the record that FPC did have two documents in its possession that contained information about differences in the impellers required for the different pumps. In September of 1982, FPC inserted data sheets in the seawater pumps' technical manual that refer to the number of vanes associated with the impellers for each pump. (Exhibit 10). The data sheets were not available when the original spare impeller was received, and FPC did not go back to confirm that the first spare conformed to the information received in 1982. Also, preconstruction documents in FPC's files reflect some differences in the pumps' impellers. (Exhibit 9).

The Nuclear Regulatory Commission determined that FPC had not committed any violation with respect to this incident, but did initiate an audit of Sulzer-Bingham's Quality Assurance Program. The results of that audit led FPC to classify Sulzer-Bingham as a "problem supplier", and FPC now conducts source inspections at the place of manufacture of all parts and equipment supplied by Sulzer-Bingham.

Sulzer-Bingham's response to FPC's request for corrective action after the August 1989 outage, (Exhibit 13, page 2) states the cause of supply of the "mismanufactured" impeller as follows:

> The impeller trim diameter specified on this order by the Parts Department was incorrect for the serial number specified by the customer. Although the Engineering material lists for all 5 pump serial numbers correctly show the impeller information, the wrong list was used for this order. We consider this to be a situation which is isolated to this order.

Sulzer-Bingham replaced the faulty impeller at cost, and paid all shipping and incidental costs associated with replacement of the impeller.

Replacement fuel costs for the 48 day outage cost $12,816,893. At the hearing FPC submitted an "as built schedule" showing that a transformer failure occurred two days after the seawater pump outage began. The activities necessary to replace the transformer took 46 days. FPC presented evidence that even if the impeller problem had not arisen, the transformer failure would have caused an outage at Crystal River Unit 3 that would have cost $11,901,716.

Decision

Public Counsel contends that this outage was a result of FPC's management imprudence, because FPC should have known that the replacement impeller that they had in inventory for eight years was improper. Public Counsel argues that the preconstruction documents in FPC's files and the data sheets inserted in the seawater pumps' technical manual should have placed FPC on notice to check the 1981 spare impeller for manufacturing defects.

We find that the evidence does not support this contention. The record shows that FPC was reasonably entitled to rely on the representations of the supplier that the impeller was suited for installation in the RWP-2B pump. While information about the correct vane configuration may have been in FPC's possession, there was nothing to put FPC on notice that the impeller might have been incorrectly configured. As FPC's witness Mr. Boldt testified;

> When a nuclear utility approves a Q.A. program for a nuclear grade vendor, we entrust the vendor with full responsibility to comply with its program. Such agreements specifically obligate the vendor to supply parts that are dimensional and materially correct and in accordance with drawings, specifications, and processes it holds to be proprietary and nondisclosable to the purchaser. . . . The NRC concurred that FPC had taken the proper procedural actions to ensure it had the correct replacement part.

OPC examined Mr. Boldt extensively about different part numbers representing different impellers for different pumps. The record is clear, however, that FPC ordered one spare impeller in 1981 for all five pumps, and subsequently, on advice of the vendor, ordered two additional impellers in 1982. The impeller ordered in 1981 had an outside diameter which would only fit Pumps 2A and 2B. Since Bingham considered the drawings and specifications on the

pumps to be proprietary, FPC could only check the diameter of the impeller to ensure that it was the correct impeller for the two pumps. In addition, as Mr. Boldt testified, when the outage began and FPC requested that a representative from Sulzer-Bingham come to the site to assist in the inspection of the equipment, even the Sulzer-Bingham representative could not determine initially that the internal configuration of the pump was incorrect.

We believe that FPC acted in a reasonable and prudent manner under the circumstances that existed at the time. FPC relied on the advice and consultation of the vendor who provided the original pumps and the parts for those pumps under a NRC approved quality assurance agreement. FPC was not aware, at the time the spare impeller was ordered, at the time the outage began, or at any intervening time, that the supplier's manufacturing procedures were deficient.

As FPC points out in its post-hearing memorandum, the facts here do not show that FPC failed to have a spare on hand that it knew from past experience that it needed. The facts here show that FPC did have a spare impeller on hand to prepare for problems that might reasonably be expected to arise with the rotating assembly of the seawater pump. The problem that arose, however, was not one that any past experience would have led it to anticipate. FPC could not reasonably have expected that the part itself would have been mismanufactured due to the supplier's failure to comply with its quality assurance program.

We will permit Florida Power Corporation to recover all replacement fuel costs associated with the August, 1989 seawater pump outage. The events that led to the outage were not the result of imprudent management by FPC. The outage occurred because the sole-source supplier of spare impellers for the seawater pumps delivered a mismanufactured impeller to FPC that FPC installed in the pump. The supplier considered the drawings of its pumps to be proprietary in nature and had not shared the design specifications with FPC. FPC was entitled to rely on the quality assurances of the supplier and could not reasonably have known or discovered that the spare impeller was mismanufactured.

The Lubricating Oil Leak Outage

Facts

After startup of Crystal River 3, subsequent to the refueling outage in June of 1990, FPC personnel discovered that there was an oil leak in one of the reactor coolant pump motors, and some of the

leaking oil was bypassing the oil collection system and leaking into the sump area. Since this did not pose an operational or radiological concern, and since it could replace the oil that was leaking, FPC notified the NRC and made plans to take the unit off-line in October of 1990 to repair the leak and to determine the cause for the oil bypassing the oil collection system. FPC's decision to wait until October was based upon the fact that electric demand was lower in October as opposed to the July through September period.

FPC initiated plant shutdown late on October 9, 1990 and entered Mode 3 at 5 a.m. on October 10, 1990. The inspection team entered the reactor building and identified the oil leak at a flange inside the oil collection housing of reactor coolant pump ID. The inspection team also discovered that a small piece of metal was missing from the bottom of the oil collection system. The motor oil leak and the associated repair to the oil collection system was performed in the first two days of the shutdown.

Mr. McKee testified that the oil collection system had not been properly reinstalled after the last refueling outage, and although supervisors inspected the reinstallation work in progress, supervisors did not inspect the completed project before the unit was brought back on line. The improper reassembly resulted in a low level NRC violation against FPC for failing to have proper reinstallation procedures in place.

After the initial repairs were completed, even though FPC could have taken the nuclear unit back on-line, Mr. McKee made the decision to completely shut down the nuclear unit to Mode 4 and then Mode 5 and to completely rebuild and upgrade the oil collection system. This work required that the nuclear unit be down for an additional six days. FPC decided to upgrade the oil collection system because the unit was already down and work on the system was already under way during a period of low electrical demand on FPC's system. It was FPC's intent to prevent a reoccurrence of the oil leak bypass for safety reasons. The system was upgraded to a tighter system capable of preventing oil from contacting hot surfaces and causing fires.

The time necessary to complete the upgrade of the system was extended six days because of harsh working conditions and a fatality on the site. The outage was extended an additional 6 days because a decay heat seawater pump bearing failed during plant startup.

Replacement fuel costs for the 16 day outage totaled $6,405,072. Because tropical storm Marco had damaged two circulating pumps during the time of the outage, the unit would have operated at 50% power for 4 1/2 days of that time. If the time devoted to the upgrade of the oil collection system is deducted from the total cost of the outage, the total cost would be $5,654,478.

Decision

Public Counsel urges that all replacement fuel costs should be disallowed for the period from October 10 through October 25, 1990, because FPC imprudently failed to properly supervise the reinstallation work. Public Counsel also contends that the decision to extend the outage to revamp the oil collection system at that time was imprudent.

The oil leak itself was an event that is normally expected to occur occasionally in the operation of any mechanical equipment, and the decision to shutdown during a period of low demand to repair it was entirely proper. Furthermore, it was reasonable for FPC to rely on the competence of its workmen to reinstall the oil collection system properly. The same work had been done several times before without any difficulty, and FPC had no reason to anticipate that this time would be any different.

We will permit Florida Power Corporation to recover all replacement fuel costs associated with this outage, because FPC's actions were reasonable, based on the circumstances and the information available to it at the time. When the oil leak was discovered, FPC acted prudently by waiting until an offpeak period in October to repair the leak and upgrade and repair the oil collection system.

It is therefore

ORDERED by the Florida Public Service Commission that the fuel costs associated with the August, 1989 and October, 1990 outages at Florida Power Corporation's Crystal River 3 Nuclear Generating Unit are approved for the reasons set forth in the body of this order. It is further

ORDERED that this Order shall become final pending a timely petition for reconsideration or notice of appeal. It is further

ORDERED that this docket be closed.

By ORDER of the Florida Public Service Commission, this 5th day of May, 1992.

STEVE TRIBBLE, Director
Division of Records and Reporting

(S E A L)

MCB:bmi

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.59(4), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

Any party adversely affected by the Commission's final action in this matter may request: 1) reconsideration of the decision by filing a motion for reconsideration with the Director, Division of Records and Reporting within fifteen (15) days of the issuance of this order in the form prescribed by Rule 25-22.060, Florida Administrative Code; or 2) judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or the First District Court of Appeal in the case of a water or sewer utility by filing a notice of appeal with the Director, Division of Records and Reporting and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days after the issuance of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900 (a), Florida Rules of Appellate Procedure.

RESPONSES TO PUBLIC COUNSEL'S PROPOSED FINDINGS OF FACT

I. The Crystal River 3 plant includes five nuclear services seawater pumps (raw water pumps), RWP-1, RWP-2A and -2B, and RWP-3A and -3B, which circulate seawater from the Gulf of Mexico through heat exchangers, which, in turn, serve to cool safety related reactor components. [T.32] RWP-1 is the normal duty pump; RWP-2A and -2B are the emergency nuclear service pumps; and RWP-3A and -3B are the decay heat services pumps. [T.62, 99; Exhibit 6, page 8] The pumps differ in size and in the horsepower of their motors. RWP-2A and -2B have the highest horsepower and flow rates of the five pumps. [T.103]

Accepted.

II. Florida Power was motivated to have sufficient spare parts in inventory by the Commission's decision in Order No. 9950, dated April 15, 1981, in Docket No. 810001-EU, in which the Commission refused to allow the utility to pass on to its customers approximately $3.5 million of replacement fuel costs attributable to an outage extended because a decay heat pump was not carried in inventory. [T.126-28]

Accepted.

III. It was Florida Power's intent to have in inventory adequate spares to repair any particular pump which might come up next for preventative maintenance or fail in service. [T. 61-62] Florida Power acknowledges that ordering parts to have on hand in case of an outage is only going to serve its intended function if those parts are, in fact, satisfactory as replacement parts. [T.131]

Accepted.

IV. Florida Power ordered one impeller from the manufacturer, Bingham, on June 10, 1981, to serve as a spare for all five of its raw water pumps referencing pump serial numbers 240493 through 240497. [T.61, 110; Exhibit 6, page 4, Exhibit 7, page 2] This first order for a replacement impeller was placed approximately a decade after the pumps were first received and about four years after Crystal River 3 began commercial operation. [T.110]

Accepted.

V. On June 10, 1981, Florida Power set up its own inventory number (MMIS No.) 66430368 for the impeller it had ordered and described it as applicable to all five raw water pumps. [T.73, 87-89; Exhibit 8, page 1]

Accepted.

VI. On September 8, 1981, Bingham sent Florida Power the original bill of materials for the five raw water pumps which specified the serial number, the pattern number, the drawing number and the number of vanes for each of the pumps. [T.113-16; Exhibit 10, page 27]

The Commission rejects the finding that Bingham sent the original bill of materials to Florida Power on September 8, 1981. Witness Boldt at T-116 (Lines 10-18) stated "Well, the only clarification I can add is it is addressed to Mr. R.E. Baker, who I earlier testified was a contractor working with us for the purpose of working up rigging and overhead connections for doing future maintenance on these pumps, and that this was not provided, as you'll notice in the cover letter, as any signification of something that should be added to the official Bingham instruction manual or to be added to the ordering information".

VII. The impeller ordered on June 10, 1981, was received by Florida Power on September 23, 1981. [Exhibit 7, page 2] This impeller had five vanes as required for RWP-1, -3A and -3B, but it had a trim diameter required by RWP-2A and -2B, which used seven-vane impellers. [T.13, 51; Exhibit 6, page 4] The Bingham drawing number, D-11059, was inscribed on the impeller. [Exhibit 5, page 1] It was inspected for damage upon receipt. [T.15]

Accepted, except for the supposition by Public Counsel that, upon receipt, Florida Power knew that the impeller ordered on June 10, 1981 had only five vanes. That knowledge did not occur until the outage in 1989.

VIII. Bingham did not err in fabricating a five-vane impeller pursuant to Florida Power's 1981 purchase order. Bingham's error was in using the trim diameter for the seven-vane impeller with a five-vane casting. [T.17, 185; Exhibit 13, page 3]

Accepted.

IX. Florida Power decided to order one additional spare and submitted an order on January 26, 1982, using the same information used to order the impeller in 1981 but also referring to drawing

number D-11059 as an element of the part number. [T.63, 70-72, 117-18; Exhibit 7, page 2]

Accepted.

X. The pump manufacturer, Bingham, informed Florida Power on May 27, 1982, that there were three different pump configurations at Crystal River 3, so the utility would have to specify which impeller it wanted. [T.63; Exhibit 6, page 4, Exhibit 7, page 2]

Accepted.

XI. On June 3-4, 1982, Florida Power made a "part change" to its inventory part number to designate #66430368 as applying specifically to RWP-2A/2B. [T.78, 89-90; Exhibit 7, page 3] The impeller in stock was not physically verified to assure that the impeller was the correct one for RWP 2A/2B. [T.80; Exhibit 7, page 3]

Accepted.

XII. The pump manufacturer did not specifically state that the impeller provided in 1981 was for RWP-2A/2B. [T.79; Exhibit 7, page 3] Florida Power "determined that the impeller in our warehouse (which had been received in 1981) was the appropriate spare for RWP-2B." [T.27] There is no documented reason for Florida Power designating the "mismanufactured" impeller received in 1981 for use in RWP 2A/2B. [T.81; Exhibit 7, page 4]

Rejected. Witness Boldt at T-81 (Lines 15-18) stated "The answer to your question is yes, there are no documents. But we do have testimony from others or input from others indicating that they did check the diameter of the impeller at that time". The evidence shows that the 1981 spare impeller was the appropriate trim diameter for RWP-2B.

XIII. Florida Power canceled its January 26, 1982, purchase order and submitted a new purchase order on June 8, 1982, for two impellers with different trim diameters for use in RWP-1 and in RWP-3A/3B. [T.52; Exhibit 6, page 4, Exhibit 7, page 2] Florida Power specified drawing number D-11059 for the two new impellers even though the impeller in inventory was also inscribed with D-11059. [T.72]

Accepted.

XIV. On June 7, 1982, Florida Power had set up its inventory part numbers 66430369 and 66430370 for impellers for RWP-1 and RWP-3A/3B respectively. [T.91-92; Exhibit 7, page 3] Between June 11, 1982, and July 2, 1982, Florida Power made a "part change" to those two inventory part numbers to add catalog numbers including the D-11059 designation. [T.73, 91]

Accepted.

XV. On June 11-18, 1982, another "part change" was made to Florida Power's inventory part number 66430368 (for RWP-2A/2B) to specify the manufacturer's catalog number, which included the D-11059 designation. [T.91]

Accepted.

XVI. As of July 2, 1982, Florida Power's inventory documents had all three impellers designated by the same drawing number, D-11059, but with three different inventory part numbers. [T.28, 92, 94]

Accepted.

XVII. The spare impeller ordered on June 8, 1982, for RWP-1 was received by Florida Power on September 13, 1982. The spare for RWP-3A/3B was received on November 16, 1982. [Exhibit 7, page 3]

Accepted.

XVIII. As of September 24, 1982, Florida Power's technical manual contained the specific trim dimensions and specific number of vanes for the impellers associated with the three different raw water pump configurations. [T.76; Exhibit 7, page 3] The instructions in the technical manual were intended to apply to both the installation and subsequent maintenance of the raw water pumps. [T.109]

Accepted, if each section of this proposed finding is considered separately. If the finding is viewed as a composite finding, then it is rejected. As indicated in finding of fact number 6, this data was submitted to a contractor for Florida Power and was not provided to Florida Power for the purpose of installing the original equipment or maintenance of the equipment.

XIX. Nuclear Quality Assurance personnel at Florida Power determined that the impeller that had been installed in RWP-2B in April 1989 was unacceptable for use in any of the five pumps by

reviewing data sheets provided for each pump in the pump technical manual. [T.77; Exhibit 7, page 3]

Accepted.

XX. In 1984, Florida Power instituted a very formal vendor information system to identify information that should be included in vendor manuals. [T.86]

Accepted.

XXI. In 1987, Florida Power rebuilt RWP-2A. [T.32, 118] This gave Florida Power some prior experience in assembly and disassembly of this type of pump. [T.119] The impeller from RWP-2A was sent to Bingham, the pump manufacturer. [T.204] Florida Power documents, and Bingham documents received by Florida Power, note the D-11060 designation for that pump's impeller. [T.119-121, 124-25; Exhibit 11]

Accepted.

XXII. After receiving notice from Bingham in November 1988 that heat treatment of the impellers may have been inadequate and that there may be a problem with surface pitting, Florida Power inspected each of the three spare impellers in inventory but did not realize that none were suitable for RWP-2A/2B. [T.29, 32-33]

Accepted.

XXIII. In April, 1989, Florida Power disassembled RWP-2B for inspection and maintenance because of the November 1988 letter from Bingham. [T.12-13, 33] It was noted that the wear rings were worn. [T.12] The "mismanufactured" spare impeller that was received in 1981 was withdrawn from inventory and installed in the pump. [T.33; Exhibit 6]

Accepted.

XXIV. Before installing the "mismanufactured" impeller in April 1989, Florida Power had in its inventory three five-vane impellers, each of which was inscribed with the drawing number D-11059. [T.52, 54-55, 72; Exhibit 5]

Accepted.

XXV. Documents in Florida Power's possession since approximately 1971 showed that RWP-2B required a seven-vane impeller. [T.103]

Accepted.

XXVI. If Florida Power had the correct impellers for each raw water pump application, it would have had two five vane impellers inscribed with D-11059 (with different trim diameters) and one seven-vane impeller inscribed with D-11060. [T.56, 119-21]

Accepted.

XXVII. The impeller removed from RWP-2B in April 1989 has seven vanes and seven balance holes, and is inscribed with the manufacturer's drawing number D-11060. [T.47-49, 115, 119-24]

Accepted with qualification. Witness Boldt testified at T-49 (Lines 18-19) when asked by Mr Howe whether "those are marked by drawing number D-11060" that "By our current experience some are and some aren't. I don't know."

XXVIII. The impellers designed for use in raw water pumps RWP-1 and RWP-3A/3B have five vanes and five balance holes, and are inscribed with the manufacturer's drawing number D-11059. [T.48, 113]

Accepted with qualification. Witness Boldt testified at T-50 (Lines 4-5) when asked by Mr. Howe "Those are marked by drawing number 11059" answered "I was told by the system engineer who checked those that some are and some aren't."

XXIX. The "mismanufactured" impeller installed in RWP 2B in April 1989 had five vanes, five balance holes, and was inscribed with the drawing number D-11059. [T.51-54; Exhibit 5, page 1]

See response to proposed finding of fact 28.

XXX. The balance holes and the vane ends are visible looking down on the impeller. [T.43-47; Exhibit 4] The vane ends are also visible from the side of the impeller. [T.43-47; Exhibit 3 (photograph C)]

Accepted.

XXXI. The impeller is visible for inspection even when the pump is fully assembled if the pump is supported on its side. It

was in this configuration during the April 1989 replacement of RWP-2B's impeller. [T.101]

Accepted with the qualification that without comparison to a correctly configured impeller, or the design specifications, it was not reasonably possible to determine that the impeller was wrongly configured.

XXXII. Florida Power personnel handled the "mismanufactured" impeller installed in April 1989 when it was received and inspected for damage in 1981, when it was removed from inventory, when it was checked for burrs or anything else that required finishing, when the shaft was attached to the impeller, and when the wear rings were attached. [T.15, 135, 138] The assembly was handled again when it was returned from Tampa Armature after balancing. [T.134-36]

Accepted.

XXXIII. A flow test was performed on RWP-2B on May 10, 1989, with satisfactory results. [T.12, 33] Florida Power now believes results were satisfactory because the test was done improperly. [T.20; Exhibit 6, page 5]

Accepted.

XXXIV. A routine quarterly operability test of RWP-2B on August 24, 1989, indicated flow and pressure conditions were outside established parameters. [T.10, 33; Exhibit 6, page 2] Crystal River 3 was taken off line on August 26, 1989, after it was determined that the cause of the problem could not be ascertained and fixed within the 72 hours required by technical specifications. [T.11, 33, 37; Exhibit 6, page 3]

Accepted.

XXXV. The rotating element of RWP-2B was removed and examined on September 4, 1989. Inspection revealed that an incorrect impeller had been installed when the pump was rebuilt in April 1989. [T.13; Exhibit 6, page 3]

Accepted.

XXXVI. Florida Power intended to send the impeller and shaft removed from RWP-2B in April 1989 to Bingham, but, as of the date of the failed test in August 1989, had not done so. Florida

Power knew the original impeller and shaft would have to be re-balanced because vibration had been detected during operations. [T.13, 145-46]

Accepted.

XXXVII. Florida Power did not know whether the seven-vane impeller could be reused after its removal from RWP-2B in April 1989 until it was sent back to Bingham for testing consistent with Bingham's November 1988 notification of possible annealing problems. [T.152-54]

Rejected. Witness Boldt stated at T-152 (Lines 15-18) "We had a high confidence in our judgement it could be reused because it did not exhibit the outward indications that were present at the Diablo Canyon plant."

XXXVIII. When it became clear in August 1989 that the original seven-vane impeller removed from RWP-2B would have to be reused, Florida Power decided to send it to the nearest facility, Tampa Armature, on September 2, 1989, instead of back to Bingham. [T.155]

Accepted.

XXXIX. Tampa Armature, however, could not perform the necessary work because the shaft was out of alignment. [T.155] On September 4, 1989, the partial assembly was sent to Bingham for repair and refurbishing. A new shaft had to be fabricated from material provided by Florida Power. [T.13, 38, 156; Exhibit 6, page 7] The refurbished assembly was received back by Florida Power on September 19, 1989. [T.14, 38]

Accepted.

XL. It took Florida Power seventeen days, from September 19, 1989, until October 6, 1989, to install and test the refurbished original seven-vane impeller assembly in RWP-2B. [T. 14, 23, 38; Exhibit 1]

Accepted.

XLI. Florida Power's direct case on the subject of work required to be performed on safety-related batteries consisted, in its entirety, of Mr. Boldt's testimony that "[t]he safety related

batteries were reaching the end of their design life and certain actions were required to ensure they would work until their scheduled replacement in Refuel 7. [T.22]

Accepted.

XLII. The "certain actions" included seeing to it that the batteries were filled to the proper level. [T.160] Florida Power's procedures required that these batteries be filled to the maximum level, so that the heat generated in the charging process would necessarily cause the batteries to become overfilled. [T.159-61, 165]

Rejected. Witness Boldt stated at T-160 (Lines 13-18) "Yes, It had a procedure that would require them to be filled up near, not up to their maximum level, but to a level defined such that evaporation would not cause them to drop and go below the minimum level required. There's both a minimum and a maximum level required".

XLIII. On August 28,1989, a transformer which supplies 480 volts to one of the safety-related busses failed in service. [T.39] Pursuant to technical specifications, Florida Power had 72 hours in which to make repairs or to take Crystal River 3 off line. [T.194] Replacement of the transformer and re-establishing set points for the new transformer took 46 days to accomplish. [T.193-94]

Accepted.

XLIV. During a refueling outage, Refuel 7, at Crystal River 3, which ended on June 23, 1990, Florida Power performed certain maintenance on its reactor coolant pumps (RCP's) and reinstalled the oil collection system designed to capture oil leaks from those pumps. [T.240]

Accepted.

XLV. Somewhere between one and three weeks after Crystal River 3 came back on line on June 23, 1990, bolts securing a flange located in a lubricating oil system near the top of the motor on RCP-1D became loose from normal vibrations of operations causing oil to leak from the motor. [T.242, 282-83]

Accepted.

XLVI. The pump holds approximately 200 gallons of lube oil, with 170 gallons in the upper reservoir. [T.257, 281] The rate of

leakage increased and then leveled off at approximately 2.2 gallons per day between July and early October 1990. [T.283]

Accepted.

XLVII. Leaking oil from the RCP's can be replenished remotely. [T.257] The difference between the high and low level alarm points on the oil reservoir is approximately 15 gallons. [T.281] After a low level alarm, oil must be added within two or three days depending on the leakage rate. [T.257] Oil was being added first every ten days and, later, every seven days. [T.281-82]

Accepted.

XLVIII. On October 10, 1990, at approximately 3:00 AM, Florida Power took Crystal River 3 off line to detect and repair an oil leak in reactor coolant pump RCP-1D. [T.219, 271] By 7:30 AM, Florida Power knew where the leak on the motor was coming from and also knew where the oil was bypassing the collection system. [T.271]

Accepted.

XLIX. Although Exhibit 17 shows repairs of the oil collection system beginning on October 13, 1990, repairs actually began on October 10, 1990. [T.251, 271]

Accepted.

L. Repairing the leak in RCP-1D, stopping other minor leaks in the other three RCP's, and repairing the bottom and lower sides of the oil collection system took approximately two days. [T.243] Repairs to the oil collection system were performed along with the flange repair while the unit was in a full temperature and pressure condition (Mode 3). [T.251]

Accepted.

LI. Crystal River 3 could have been brought back on line at that time, but Florida Power decided to instead upgrade the oil collection system. [T.255] Florida Power decided to perform additional work on the oil collection system because the unit was already off line and work on the system was already underway. [T.266] In order to do this, the plant had to be taken from a full temperature and pressure condition (Mode 3) to cold shutdown (Mode 5). [T.243-45]

Accepted.

LII. Nuclear Regulatory Commission regulations, Appendix R, Paragraph O, required that Florida Power have an oil collection system for its four reactor coolant pumps. [Exhibit 18]

Accepted.

LIII. Pursuant to Appendix R, the oil collection system had to be designed, engineered and installed to prevent a fire from leaking oil contacting hot surfaces during normal or design basis accident conditions. The oil collection system also had to withstand the Safe Shutdown Earthquake standard. [T.262; Exhibit 18]

Accepted.

LIV. The oil collection system had to be capable of collecting lube oil from all potential pressurized and un-pressurized leakage sites in the reactor coolant pump lube oil systems. [Exhibit 18]

Accepted.

LV. Appendix R requires that leakage be collected and drained to a vented closed container capable of holding the entire reactor coolant pump lube oil system inventory. [Exhibit 18]

Accepted.

LVI. Each reactor coolant pump holds approximately 200 gallons of oil. The vented closed container required by Appendix R is designed to hold the 800 gallons of lube oil from the four pumps. [T.259]

Accepted.

LVII. At full power, the coolant flowing through the reactor coolant pumps is at a temperature of approximately 545 degrees. [T.260] If lubricating oil from a reactor coolant pump contacts a hot surface, a fire will start. [T.260] The purpose of the oil collection system is to keep oil from contacting hot surfaces at any time. [T.223-24, 241, 260-61]

Accepted.

LVIII. Florida Power had not previously interpreted Appendix R as requiring that all oil leaks be contained. Specifically,

Florida Power did not interpret Appendix R as requiring that all spraying oil be collected by the oil collection system.

Accepted.

LIX. Florida Power interpreted Appendix R as requiring that the bottom and the first six inches of the oil collection system be leak tight. [T.254] The leak in the oil collection system that caused Crystal River 3 to be removed from service, in fact, occurred in this region of the oil collection system. [T.254] A small piece of sheet metal was missing along the bottom of the oil collection system. [T.227, 242-43]

Accepted.

LX. Initial repairs to all the oil collection systems involved openings in the bottoms and lower sides of the oil collection systems. [T.243]

Accepted.

LXI. The "upgrade" to the oil collection system was intended to preclude leaks "similar" to those experienced in this outage. [T.220, 244] Florida Power wanted to ensure that all reasonable actions were taken to avoid "this type of event." [T.230] The event at issue in this proceeding did not involve spraying oil bypassing the oil collection system.

Accepted.

LXII. Florida Power determined that the oil leak bypassing the oil collection system could be interpreted by the NRC as a failure to be in strict compliance with Appendix R. [T.225] Florida Power informed the NRC as soon as sufficient data substantiated that the leaking oil was not being captured by the oil collection system. [T.226]

Accepted.

LXIII. Independent of Appendix R, Florida Power, as a matter of policy, does not tolerate leaks of any kind. [T.221]

Accepted.

LXIV. During Refuel 7, some pieces of the oil collection system for RCP-1D were not installed. [T.265-68] Oil leaking from a flange on the motor was therefore able to bypass the oil collection system and drain into the reactor building sump. [T.234, 242]

Accepted.

LXV. From 1983 to 1990, the oil collection system was maintained in compliance with Appendix R. In 1990, however, during Refuel 7, the system was not put back together properly. [T.266-68, 288] As a result, it did not function properly between June 1990 and October 1990. [T.267]

Accepted.

LXVI. Florida Power is now more stringently implementing the fire protection regulations. [T.235]

Accepted.

LXVII. Florida Power did not previously have detailed procedures for reinstallation of the oil collection system so that all fire protection requirements were met. [T.236, 272]

Accepted.

LXVIII. The oil collection system for RCP-1D was not in a configuration to meet Appendix R requirements. [T.272] Additionally, documentation was not in place to provide clear instructions for removal, installation and post-maintenance testing of the oil collection system. [T.274, 278-79, 287-88; Exhibit 22, page 3]

Accepted.

LXIX. Deficiencies in the installation of the oil collection system for RCP-1D included a missing floor pan, missing seals, missing screws, and a panel separated by 1 1/2 inch. [Exhibit 22, page 2] Similar deficiencies existed in the oil collection systems of the other three reactor coolant pumps. [Exhibits 19-21]

Accepted.

LXX. The oil collection systems for all four reactor coolant pumps were improperly assembled. [T.229-30; Exhibits 19-22] The work request instructions were not approved by the plant review

committee (PRC) and did not provide sufficient instructions to assure proper reassembly of the oil collection systems. Incomplete reassembly of the oil collection systems resulted in the failure of its intended function of collecting leakage from the lube oil system of the RCP. [T.272; Exhibit 23]

Accepted.

LXXI. Florida Power found that an inadequate level of direction had been provided to the responsible maintenance personnel during Refuel 7. [T.234]

Accepted.

LXXII. Maintenance supervisors walked through and inspected the reinstallation of the oil collection system while work was in progress but did not inspect the completed work. [T.285-86]

Accepted with qualification. Witness McKee said at T-286 (lines 22-23) was "My answer was that because it's not documented, I can't swear to it." In addition at T-286-287 (Lines 25 and 1) he stated "But that's what we hired people to do". In other words he felt that the supervisors should have inspected the work at the conclusion of the job, but he had no proof that they did.