Duquesne Light
435 Sixth Avenue
Pittsburgh, Pennsylvania
15219

(412) 471-4300

January 11, 1979

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Attention: A. Schwencer, Chief
Branch No. 1
Division of Operating Reactors
Washington, D. C. 20555

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334
Response to December 1, 1978 letter on Fire Protection

Gentlemen:

Enclosed are four signed originals of our response to your December 1, 1978 letter on the Fire Protection Program at Beaver Valley Power Station, Unit No. 1.

Your letter requested our schedule for the implementation of administrative controls and the installation of equipment at Beaver Valley required to address forty staff positions. We are providing our best estimate of schedule dates to implement these positions or alternatives which we have determined will provide an equal degree of protection.

The scheduled dates provided in this response are very rough estimates. The completion of activities that require detailed engineering, NRC approval, procurement of material and a refueling outage of the station to install cannot be accurately predicted at this time.

It is our intent to complete all possible activities during the second refueling outage which is anticipated to occur early in 1981. Any modification requiring a lengthy station outage that is not completed during that refueling will be completed during the third refueling outage which is presently anticipated to be performed during the calendar year of 1982.

Very truly yours,

C. N. Dunn
Vice President, Operations

Attachment

CC: Messrs.: Ralph Paolino, NRC, Region I
Robert Dodds, NRC, Region V
Ingemar Asp, Gage, Babcock & Assoc., Inc.

7901160234

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(CORPORATE SEAL)

Attest:

Joan S. Senchyshyn

Joan S. Senchyshyn
Asst. Secretary

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this 12th day of JANUARY, 1979, before me, EDWARD P. KINAVEY JR., a Notary Public in and for said Commonwealth and County, personally appeared C. N. Dunn, who being duly sworn, deposed, and said that (1) he is Vice President of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge, information and belief.

Edward P. Kinavey Jr.

EDWARD P. KINAVEY, JR., Notary Public
Pittsburgh, Allegheny County, PA
My Commission Expires February 20, 1982

DUQUESNE LIGHT COMPANY

Docket 50-334

ATTACHMENT I

RESPONSE TO NRC ENCLOSURES I & II

Including

IMPLEMENTATION SCHEDULE SUMMARY

January 11, 1979

IMPLEMENTATION SCHEDULES

	POSITION	SCHEDULE
PF-1,	Fire Brigade Training	In Effect
PF-2,	Instrument Air Supply	June 30, 1980
PF-3,	Hose Stations (& Cable Penetration Areas)	Implementation depends on shutdown schedule. To be installed during a refueling outage scheduled in late 1981 or 1982.
PF-4,	Containment Fire	See PF-3 above
PF-5,	Exterior Hose Houses	December 31, 1979
PF-6,	Hydrant and Post Indicator Valve Guard Posts	October 31, 1980
PF-7,	Fire System Valve Supervision	June 30, 1979
PF-8,	Exterior Fire Hydrant Inspection	June 30, 1979
PF-9,	Welding, Cutting, Grinding and Open Flame Work Procedure	July 31, 1979
PF-10,	Maintenance of Fire Equipment Inventories	June 30, 1979
PF-11,	Turbine Lube Oil Reservoir	October, 1980
PF-12,	Diesel Generator Rooms	June 30, 1980
PF-12.6,	Diesel Generator Drain System	December 31, 1979
PF-12.7,	Diesel Oil Line Break Detection	July 31, 1980
PF-13,	Fire Retardant Wood	December 31, 1979
PF-14,	Control of Flammable Liquids - Auxiliary Building, Elev. 768'7"	June 30, 1980

	POSITION	SCHEDULE
PF-15,	Cable Fire Stops - Auxiliary Building	December 31, 1979
PF-16,	Fire Rated Barrier Penetrations	December 31, 1979
PF-17,	Safe Shutdown - Auxiliary Building	None Required
PF-18,	Auxiliary Building - Waste Storage	October 31, 1980
PF-19,	Control of Unnecessary Combustibles	June 30, 1979
PF-20,	Trash Containers	June 30, 1979
PF-21,	Charging Pump Cubicles	December 31, 1979
PF-22,	Interior Fire Hoses	See PF-3 above
PF-23,	Cable Vaults	Not Required
PF-24,	Auxiliary Feedwater Pumps	October 31, 1980
PF-25,	Auxiliary Building - Stairwell, Elev. 722'	Complete
PF-26,	Gas Cylinder Storage	January 31, 1979
PF-27,	Floor Panel Lifter - Process Control Room	June 30, 1979
PF-28,	Fire Wall Penetrations	December 31, 1979
PF-29,	Cable Spreading Room	October 31, 1980
PF-30,	Cable Spreading Room Ceiling Penetrations	Complete
PF-31,	Control Room - Fire Detection in Vertical Panels	June 30, 1979
PF-32,	Separation of Kitchen Area in Control Room	December 31, 1979

	POSITION	SCHEDULE
PF-33,	Control Room - Portable Extinguishers	March 31, 1979
PF-34,	Control Room Analysis	See PF-29
PF-35,	Booster Hose	See PF-14
PF-36,	Hydrogen Lines	June 30, 1980
PF-37,	Battery Room Ventilation	December 31, 1979
PF-38,	Fire Brigade Equipment	December 31, 1979
PF-39,	Smoke Ejectors	December 31, 1979
PF-40,	Fire Hose Testing	June 30, 1979

NOTE: Detailed engineering, NCR review, procurement schedule is in the process of being developed.

PF-1 FIRE BRIGADE TRAINING

Staff Position:

1. Regular, planned meetings held every three months which repeat the classroom instruction program over a two-year period.

2. Practice sessions at regular intervals, but not to exceed one (1) year for each brigade member.

3. Drills performed at regular intervals, but not to exceed three (3) months for each brigade. At least one (1) drill per year to be performed on a "back shift" for each fire brigade. A sufficient number of these drills, not less than one (1) for each fire brigade per year, to be unannounced to determine the fire readiness of the plant fire brigade leader, fire protection systems, and equipment.

Response:

1. The overall program was developed with due consideration to the availability of fire fighting assistance from local paid and volunteer fire companies. Considering the proximity and expertise of the local fire companies and the response action plan which indicates a response time of ten (10) minutes or less, we feel any fire training beyond that which is required to provide assistance and first aid in the event of a major fire would be excessive.

   The initial response company and the backup company are trained on our fire system and radiological practices. Our training stresses First Aid Fire Fighting Procedures, includes items as fire science, power plant fire fighting, nuclear power plant fire fighting, and is broken into sixteen (16) segments, is enhanced by conducting a practical session as part of the classroom instruction, and repeated every two (2) years.

2. Since smoke clouds result from field practice session training, field exercises are scheduled yearly during the summer months when a variance can be obtained from the County Smoke ordinance.

   Due to the nature of our Emergency Squad, shift rotation and station activities, it is nearly impossible to schedule all members so that they do not exceed one year. Since the large majority do receive annual field exercises, our overall program, based on a two-year cycle, is most effective in assuring a well-trained Emergency Squad onsite at all times.

3. The drills are held to enhance the Emergency Squad response to exigent situations. These drills may include the use of fire protection and/or first aid equipment. Each Squad member will participate in at least four (4) drills per year.

   Due to the nature of our Emergency Squad and shift rotation, a brigade as a unit of specifically identified members to function as a fire squad is not possible. Each of the four (4) shift supervisors do hold drills for the Emergency Squad members on shift at the time of the drill.

   Emergency Squad drills are normally held on back shifts, are unannounced and do include a critique as well as assessment of Squad effectiveness.

   The Station Fire Brigade Training Program has been in effect for the last two (2) years and has proven most effective in assuring a well-trained Emergency Squad.

4. It is not possible to provide formal training to all Fire Brigade members on a quarterly basis due to shift rotation, vacations, illnesses and personnel turnover. A commitment to ensure that all fire brigade personnel will participate in a retraining program that will duplicate the original training program over a two-year period is acceptable.

PF-2 INSTRUMENT AIR SUPPLY FOR SAFE SHUTDOWN

Staff Position:

An emergency air supply system should be provided to operate those valves necessary for safe shutdown.

Response:

The air supply lines to these valves will be provided with connections to permit the use of bottled nitrogen or carbon dioxide which are readily available as an emergency power operator source.

PF-3 Reactor Containment - Hose Stations

Staff Concern:

Hose coverage should be capable of reaching all areas in the containment vessel, including unprotected safety-related cables at the cable penetration area.

Staff Position:

A standpipe system should be provided with a sufficient number of hose stations in order that all areas of the containment can be reached by a maximum of 100 ft of 1 1/2 in hose at each hose station. An automatically actuated water suppression system should be provided to protect the safety-related cables at the cable penetration area.

Response:

The requirements for hose stations for the containment were supplied under Table E.3-2 of the responses dated November 1978.

A remotely operated, manually activated open head water spray deluge system will be provided for each redundant cable penetration area in lieu of an automatically actuated system to reduce the possibility of inadvertent operation. These areas are separated by a 12 in thick reinforced concrete wall ($\geq$ 3 hr.) as described on page 94 of the Fire Protection Program Review. The system will employ two detection loops. The indication in the control room from any detector in one loop would alarm for immediate investigation. If an alarm were received from both loops, the operator would manually deluge the area. Two kinds of detectors will be used - thermal of the rate compensated type and smoke of the photoelectric type.

PF-4 Containment Fire - Safe Shutdown

Staff Concern:

A fire in the containment vessel would destroy or damage redundant divisions of cables required for safe shutdown before it is detected and manually suppressed.

Staff Position:

An evaluation should be provided to demonstrate that a fire in any location in the containment vessel would not destroy or damage redundant divisions of cable required for safe shutdown before it is detected and manually suppressed. If effective manual suppression capability cannot be demonstrated for the existing cable tray system, the following fire protection measures should be considered to assure manual suppression capability:

1. Fire retardant coatings or covering on the cables.

2. Rerouting one division of the required cables to obtain greater separation between redundant divisions.

3. The use of solid barriers (e.g., Marinite board) between redundant division cables.

4. In addition to any of the above items, fire detection should be provided in the vicinity of the cables.

Response:

Systems used for safe shutdown which are jeopardized by a fire inside the containment are the RHR system and the instrumentation used for safe shutdown. The only area where a fire could destroy redundant channel of safe shutdown instrumentation is the cable penetration area (see PF-3) inside containment. The RHR system could be jeopardized by a fire in the (RHR) pump area. The response to Question A.2-1 recommends installation of fire detection and automatic suppression in the RHR pump area.

PF-5 EXTERIOR HOSE HOUSES

Staff Position:

Equipment should be added to the equipment already contained in the exterior hose houses, as necessary, so that equipment in each hose house includes the following items:

Two (2) hose gaskets for each hose size used.
One (1) 2-1/2" x 1-1/2" x 1-1/2" gated valve.
One (1) forcible entry tool.

All hose houses and hose cart houses and equipment stored therein should be kept reasonably free of dirt and sand.

Inoperative door latches on hose houses should be repaired.

Response:

DLC agrees to implement the Staff Position by December 31, 1979. The extended time period is mainly due to the procurement of the 2-1/2" x 1-1/2" x 1-1/2" gated valves which are not stock items.

PF-6 HYDRANT AND POST INDICATOR VALVE GUARD POSTS

Staff Position:

Barrier posts should be provided at the hydrants, post indicator valve and hose house locations.

Response:

DLC agrees to implement the above position by October 31, 1980. A survey of all hydrants, post indicator valves and hose houses will be performed and guard posts installed in areas where they are subject to vehicular traffic damage.

PF-7 FIRE SYSTEM VALVE SUPERVISION

Staff Position:

Valves in the fire water suppression system should be either electrically supervised or provided with tamper-proof seals and administratively controlled. These provisions are not required for control valves at the standpipe hose stations.

Response:

DLC agrees to implement the Staff Position by June 30, 1979.

PF-8 EXTERIOR FIRE HYDRANT INSPECTION

Staff Position:

A semi-annual inspection (Fall and Spring) should be conducted of exterior hydrants to ensure the barrel is dry and that the threads are properly lubricated.

Perform an annual operational hydrostatic test of hydrants to verify barrel integrity following the winter freeze season.

Response:

DLC agrees to implement the Staff Position by June 30, 1979.

PF-9 WELDING, CUTTING, GRINDING AND OPEN FLAME WORK PROCEDURES

Staff Position:

Provide administrative controls to protect safety related equipment from fire damage or loss from work involving ignition sources such as welding, cutting, grinding, or open flame work. The program should include the following provisions:

1. All cutting, welding, grinding, or open flame work should be authorized by the responsible foreman or supervisor through a work permit.

2. Before issuing the permit, the responsible foreman or supervisor should, as a general rule, physically survey the area where the work is to be performed and establish that the following precautions have been taken:

   a. All moveable combustible material below, or within, a 35-foot radius of the cutting, welding, grinding, or open flame work has been removed (see NFPA-51B).

   b. All immovable combustion material below, or within, a 35-foot radius has been thoroughly protected and that fire extinguishers or other fire-fighting equipment is provided at the work site (see NFPA-51B).

   c. A fire watch, trained and equipped to prevent and combat fires, is present throughout any operation in which there is a potential for fire that might damage safety related equipment. The fire watch should remain on the work site while work is performed and remain in the area following completion of the work to check for smoldering fires.

   d. All equipment issued is in a safe, working condition.

3. The signature concurrence of a member of the Plant's management, or quality control inspector

PF-9 WELDING, CUTTING, GRINDING AND OPEN FLAME WORK PROCEDURES (continued)

certified to make this concurrence, should be obtained whenever the responsible supervisor or foreman determines that a fire watch is not required.

Response:

Administrative procedures and controls are being developed to provide protection in safety related areas of the plant from fire damage whenever work activities involve potential ignition sources. An authorization system will be implemented and utilized by July 31, 1979, which will meet the intent of NFPA-51B for surveying the area prior to authorization of the work activities, establishing fire watches when necessary, issuing proper equipment and certifying that work in safety related areas will not result in fire damage.

PF-10 MAINTENANCE OF FIRE EQUIPMENT INVENTORIES

Staff Position:

Tamper indicating seals should be installed on all fire equipment storage enclosures. Broken seals should require that an inventory be taken and the immediate replacement of any missing equipment.

Response:

DLC agrees to implement the Staff Position by June 30, 1979.

PF-11 TURBINE LUBE OIL RESERVOIR

Staff Position:

Verify that the curbed area beneath the turbine lube oil reservoir is adequate in height to contain entire volume of tank plus a margin for fire suppression water, assuming no credit for drains.

Response:

As part of the EPA Oil Spill Prevention Upgrade Program, the curbed area will be increased in height sufficiently to contain the entire volume of the tank plus a margin for fire suppression water (no credit for drains was assumed).

DLC agrees to implement the upgrading of the curbed area below the Turbine Lube Oil Reservoir no later than October, 1980.

PF-12 DIESEL GENERATOR ROOMS

Staff Position:

1. Curbing

   The curbing proposed by DLC should be of sufficient height to prevent an oil spill in one room from entering the adjacent room via the doorway communicating through the common wall.

2. Additional Three (3) Hour Door

   An additional three (3) hour rated fire door and frame with self-closing hardware should be provided at the doorway between the two rooms.

3. Manual Actuation Stations

   The manual actuation pull station for the CO_2 extinguishing system should be relocated outside the room it is designed to protect.

4. Fire Rating of Penetration

   Verify that the cable, conduit and pipe penetration through the wall separating the two rooms have a minimum three (3) hour fire rating.

5. Diesel Oil Transfer Pumps

   Provide a method of disabling the diesel transfer pump external to emergency diesel generator room.

Response:

DLC agrees to implement the Staff Position by June 30, 1980.

PF-12 DIESEL GENERATOR ROOMS - FIRE PROTECTION

Staff Position:

12.6 Drain System

DLC should verify that the fuel cannot communicate between the diesel generator rooms via the drain system.

Response:

As part of the EPA Oil Spill Prevention Upgrade program, the drains in the diesel generator buildings will be plugged.

PF-12 Diesel Generator Rooms - Fire Protection

Staff Concern:

Fire could spread via the drain system. Further, a break in the diesel oil supply system could go undetected for a substantial period of time.

Staff Position:

12.7 Diesel Oil Line Break Detection

Provide detection to indicate and alarm in the control room should a break occur in the diesel oil supply system.

Response:

A level detecting device will be installed in a sump close to the day tank to detect an oil accumulation due to a leak. High sump level will be annunciated in the control room.

PF-13 FIRE RETARDANT WOOD

Staff Position:

All untreated lumber and wood items in safety related areas should be removed. All lumber/wood required to be used in such areas should be treated, fire-retardant lumber and should be limited to temporary use, to be removed when no longer needed. Large wooden timbers may be coated with a U.L. listed fire retardant compound having a flame spread rating of 25 or less.

Response:

DLC agrees to implement the Staff Position by December 31, 1979.

PF-14 CONTROL OF FLAMMABLE LIQUIDS - AUXILIARY BUILDING ELEVATION 768'6"

Staff Position:

A designated area, which is curbed and provided with automatic suppression system, should be established for the storage of combustible materials.

Response:

Fire cabinets are being provided for storage of flammable liquids in the Auxiliary Building. Unnecessary combustibles (normally, oil removed from the reactor coolant pumps) will be removed from the Auxiliary Building and stored in a radiation control area outside prior to processing for shipment and disposal. Methods are presently being investigated for the disposal of contaminated oil to eliminate storage at the station.

PF-15 CABLE FIRE STOPS - AUXILIARY BUILDING

Staff Position:

Fire stops should be provided in all vertical cable runs between floors.

Response:

All fire barrier penetrations in safety related areas are being properly sealed and all flammable materials (plastic foam) removed as per the Staff Position. Completion of all required areas will be finalized no later than December 31, 1979.

As of December 15, 1978, 236 seals have already been sealed and the following areas have been completed:

- Control Room (including benchboard and vertical board)
- Computer Room
- Relay Room
- Sequence of Events Power Supply Area
- Process Control and Instrument Room, and Emergency Shutdown Panel Area
- Rod Drive M-G Set Room
- AE and DF Emergency Switchgear Room
- Normal Switchgear Room
- Battery Rooms 1, 2, 3 and 4
- Control Room Ventilation and A/C Room
- Cable Spreading Mettanine Room

PF-16 FIRE RATED BARRIER PENETRATIONS

Staff Position:

All flammable materials (plastic foam) should be removed from all fire rated barrier penetrations.

Response:

All fire barrier penetrations in safety related areas are being properly sealed and all flammable materials (plastic foam) removed as per the Staff Position. Completion of all required areas will be finalized no later than December 31, 1979.

As of December 15, 1978, 236 seals have already been sealed and the following areas have been completed:

- Control Room (including benchboard and vertical board)
- Computer Room
- Relay Room
- Sequence of Events Power Supply Area
- Process Control and Instrument Room, and Emergency Shutdown Panel Area
- Rod Drive M-G Set Room
- AE and DF Emergency Switchgear Room
- Normal Switchgear Room
- Battery Rooms 1, 2, 3 and 4
- Control Room Ventilation and A/C Room
- Cable Spreading Mettanine Room

See Response to PF-15.

PF-17 Safe Shutdown - Auxiliary Building

Staff Concern:

Fire in any location in the Auxiliary Building could destroy redundant division cables required for safe shutdown before it is detected and manually suppressed.

Staff Position:

An evaluation should be performed for the Auxiliary Building to demonstrate that a fire in any location would not destroy/damage redundant division cable required for safe shutdown before it is detected and manually suppressed. If effective manual suppression capability cannot be demonstrated for the existing cable tray system, the following protective measures should be considered to assure manual suppression capability.

1. Fire retardant coatings or covering on cables.
2. Rerouting one division of the required cables to obtain greater separation between redundant divisions.
3. Use of solid barriers (e.g., marinite boards) between redundant divisions.
4. In addition to any of the above items, fire/smoke detection should be provided in the vicinity of these cables.

Response:

The Auxiliary Building has been analyzed on a floor-by-floor basis to determine the effects that a fire would have on safe shutdown capability. This analysis is covered in the response to question A.2-1 and demonstrates that a fire in any location would not destroy/damage redundant division cable required for safe shutdown.

PF-18 CONTAMINATED WASTE STORAGE - AUXILIARY BUILDING ELEVATION 735'6"

Staff Position:

The contaminated waste storage area adjacent to the drumming station should be provided with an early warning detector and protected by an automatic water suppression system.

Response:

The contaminated waste storage area will be expanded and relocated in a new building to be constructed in the near future.

PF-19 CONTROL OF UNNECESSARY COMBUSTIBLES

Staff Position:

All waste, debris, scrap, rags, oil spills, or other unnecessary combustibles resulting from work activity in safety related areas should be removed following completion of the activity or at the end of the work shift (whichever is sooner). Administrative procedures should be established to control combustibles in safety related areas. The unnecessary combustibles in the following areas should be removed.

Auxiliary Building

Cable Vaults

Control Room Complex (includes area behind vertical control board)

Intake Structure

Fuel Oil Tank in Yard (weeds)

Response:

Maintenance activities that are ongoing twenty-four (24) hours a day will be kept clear of highly combustible material.

For noncontinuous activities, highly combustible materials will be cleaned up at the end of the shift or activity, whichever is sooner.

Low-hazard combustible materials will be removed at the end of the activity.

The unnecessary combustibles in safety related areas, notably the Auxiliary Building, Cable Valuts, Control Room and Intake Structure, will be cleaned up by April 15, 1979.

Administrative procedures and controls will be established and implemented no later than June 30, 1979.

PF-20 TRASH CONTAINERS

Staff Position:

Trash containers in safety-related areas should be metal with swing tops.

Response:

DLC agrees to implement the Staff Position by June 30, 1979.

PF-21 CHARGING PUMP CUBICLES

Staff Position:

A smoke detector should be provided in each charging pump cubicle with alarm annunciation in the control room.

Response:

DLC agrees to implement the Staff Position by December 31, 1979.

PF-21 Charging Pump Cubicles

21.2 Fire Spread Through Tunnel

Staff Concern:

Fire could spread from one charging pump cubicle to the other charging pump cubicle via the connecting tunnel in the floor.

Staff Position:

Verify that a fire in one of the charging pump cubicles cannot spread to the adjacent cubicle through the connecting tunnel in the floor.

Response:

The charging pump cubicles in the auxiliary building have been verified as being isolated from the piping tunnels. Therefore, a fire in one charging pump cubicle cannot spread to an adjacent cubicle through the tunnel.

PF-22 Interior Fire Hose Station Capability

Staff Concern:

Sufficient hose stations, with hoses not exceeding 100 feet in length, should be available to provide manual coverage for all safety-related areas. (Note: Cable vaults appeared to be deficient in this area of concern.)

Staff Position:

Verify by a hose stretch test that all areas of the plant can be reached from existent hose stations with present hose lengths. Add additional hose stations/lengths (total not to exceed 100 feet), as required, if this cannot be satisfactorily accomplished.

Response:

This response was supplied on Question E.3-2 dated November 1978. Hose stations which will be added to assure complete coverage are listed in Table E.3-2

PF-23 SAFETY RELATED CABLES PASSING THROUGH BOTH CABLE VAULTS

Staff Position:

Identify and reroute redundant safe shutdown cables passing through one cable vault to the other cable vault or provide a water suppression system for both cable vaults.

NOTE: Cable tray covers should be removed if water suppression system is used.

Response:

Cable vault CV-2 has a small number of orange conduits passing through the area. Although failure of all safe shutdown cables in the purple train and failure of those orange safe shutdown cables result in a loss of redundancy for several systems, the ability to safely shut down following a fire in CV-2 is not lost. Systems that are lost are the boron injection system (control cables for valves only), component cooling water system (control cables for pumps), chemical volume control system (control wiring for valves), and power and control cabling for MCC-E3 and E4 located in the Auxiliary Building.

Since the boron injection system and component cooling water system are not required for hot standby, there is ample time for manual operation or repairs prior to the cooldown to cold shutdown.

Failure of the control wiring to the suction valves in the chemical and volume control system between the charging pumps and the refueling water storage tank could possibly cause failure to automatically open. These valves are not located in the fire area CV-2 and can therefore be manually operated. Failure of MCC-E3 and E4 causes loss of control and power cabling to valves in the CVCS described above.

PF-23 SAFETY RELATED CABLES PASSING THROUGH BOTH CABLE VAULTS (continued)

The safe shutdown cables traversing through CV-2 from CV-1 are as follows:

Cables	Components
ISILNOK020	MOV-SI-867B
ICHVBOC001	MOV-CH-115B
ICHVCOC001	MOV-CH-115C
ICCPAOC305	CC-P-1A
IEHSAOC205	MCC-1-E3
IEHSAOL205	MCC-1-E3

PF-24 Auxiliary Feedwater Pumps

Staff Concern:

Oil spillage and fire from one auxiliary feedwater pump could involve the redundant feedwater pump(s) needed for safe shutdown.

Staff Position:

Provide suitable fire containment/curbing and automatic fire suppression to prevent an oil fire in one auxiliary feedwater pump from spreading to the redundant pump(s). Note: An early warning fire-smoke detector(s) should also be installed.)

Response: (See Answer to Question A.2-1 and Auxiliary Feedwater Analysis)

Fire containment by the installation of fire barriers between pumps is not possible. A curb to contain the spread of oil from each pump will be installed. The waste system will be modified to limit the spread of oil via the waste system using the existing drains. A preaction sprinkler spray system over the entire feed pump area is proposed using closed heads and a detector system to alarm and release water up to the heads but discharge water only from those heads that are fused. An early warning smoke detection will be provided.

PF-25 AUXILIARY BUILDING STAIRWELL - ELEVATION 722'

Staff Position:

Flammable materials should not be stored in stairwells. Flammable storage cabinet in stairwell should be removed.

Response:

Flammable storage cabinets have been relocated outside of stairwell areas. The Staff Position has been implemented.

PF-26 GAS CYLINDER STORAGE

Staff Position:

Gas cylinders should be stored in racks in areas designated for that purpose. Storage should be in the approved manner.

Response:

DLC agrees to implement the Staff Position and to be in full compliance no later than January 31, 1979.

PF-27 FLOOR PANEL LIFTER - PROCESS CONTROL ROOM

Staff Position:

A dedicated floor panel lifter should be provided in the process control room contained in a wall-mounted break glass front box.

Response:

DLC agrees to implement the Staff Position no later than June 30, 1979.

PF-28 FIRE WALL PENETRATIONS

Staff Position:

Penetrations above the fire door between the control rod M-G sets and the switchgear room should be compatible with fire wall rating.

Response:

All fire barrier penetrations in safety related areas are being properly sealed and all flammable materials (plastic foam) removed as per the Staff Position. Completion of all required areas will be finalized no later than December 31, 1979.

As of December 15, 1978, 236 seals have already been sealed and the following areas have been completed:

- Control Room (including benchboard and vertical board)
- Computer Room
- Relay Room
- Sequence of Events Power Supply Area
- Process Control and Instrument Room, and Emergency Shutdown Panel Area
- Rod Drive M-G Set Room
- AE and DF Emergency Switchgear Room
- Normal Switchgear Room
- Battery Rooms 1, 2, 3 and 4
- Control Room Ventilation and A/C Room
- Cable Spreading Mettanine Room

See response to PF-15.

PF-29 Cable Spreading Room Sprinkler System

Staff Concern:

Because of cable tray congestion and probable dense smoke, manual suppression (fire hose) of a fire in the cable spreading room does not seem feasible as a backup system should the CO_2 system fail.

Staff Position:

The cable spreading room should be provided with a manually activated water suppression system. (Note: In order to make the system effective, the covers on top of the cable tray should be removed or relocated to permit exposure of cables to water spray.)

Response:

The following cables in the safe shutdown systems will be rerouted.

PNL-SHUTDN-A

1CCPAØC304	1FWEAØC303	1RHSAØC303
1CCPCØC304	1FWEAØC606	1SWSAØC302
1CHSAØC302	1FWEAØC611	1SWSCØC302
1CHSCØC302	1FWEBØC011	
1CHSNØC605	1FWEFØC011	

PNL-SHUTDN-B

1CCPBPC304	1FWEAPC011	1RHSBPC303
1CCPCPC304	1FWEBPC303	1SWSBPC302
1CCPCPC306	1FWEBPC606	1SWSCPC302
1CHSBPC302	1FWEBPC611	1SWSCPC305
1CHSCPC302	1FWEBPC613	
1CHSCPC304	1FWECPC011	
	1FWEEPC011	

This change will ensure that the station can be shutdown if a fire results in the total loss of the cable spreading room. This modification provides greater immunity to a fire and will be made in lieu of installing a second automatic fire suppression system in the cable spreading room.

PF-30 Cable Spreading Room Ceiling Penetrations

Staff Concern:

The penetration fire barriers between the cable spreading room and the control room benchboards have been breached. Further, the fire rating of the metal panels between the control room benchboards and the ceiling of the cable spreading room had not been established. Both these conditions could lead to involving the control room in the event of a fire in the cable spreading room.

Staff Position:

Penetrations between the cable spreading room and the control room benchboards should be upgraded to a 3-hour fire rating.

The metal panels between the control room benchboards and the ceiling of the cable spreading room should be upgraded to provide a 3-hour rated fire barrier.

Response:

Modifications as described in the response to PF-29, ensure that the loss of CS-1 and CR-1 would not prevent safe shutdown from the auxiliary shutdown panel located in fire area CR-4. However upgrading to a 3-hour fire rating to reduce the potential consequences of a fire in CS-1 was accomplished as of December 15, 1978.

PF-31 CONTROL ROOM - FIRE DETECTION IN VERTICAL PANELS

Staff Position:

Early warning detectors should be provided in the walk through section of the vertical control board panels.

Response:

DLC agrees to implement the Staff Position by December 31, 1979.

PF-32 SEPARATION OF KITCHEN AREA IN CONTROL ROOM

Staff Position:

Prove a one (1) hour rated fire barrier between the kitchen area and the control room operating areas.

NOTE: Barrier should be sufficient to enclose personnel utilizing the kitchen area. Automatic water suppression system could be utilized in lieu of the fire barrier, provided safety-related equipment would not be affected by the water spray or accumulation of water on floor.

Response:

Analysis of the effects of a control room fire on safe shutdown equipment is covered in the response to PF-34. Although it has been demonstrated that the plant can be safely shut down, the addition of a one-hour fire barrier results in an additional increase in safety. Therefore, the one-hour fire barrier will be installed.

PF-33 CONTROL ROOM - PORTABLE EXTINGUISHERS

Staff Position:

Provide a dry chemical extinguisher on the wall adjacent to the cooking range and a 2-1/2 gallon pressurized water extinguisher at each entrance for the control room.

Response:

DLC agrees to implement the Staff Position by March 31, 1979.

PF-34 CONTROL ROOM - SAFE SHUTDOWN ANALYSIS

Staff Position:

Verify that an exposure fire in the control room benchboard will not affect controls for redundant safe shutdown equipment. Provide adequate barriers where this is not the case.

Response:

Modifications as described in PF-29 to the 1E Electrical distribution system and safe shutdown instrumentation (monitoring only) will be made to make the auxiliary shutdown panel circuits immune to any postulated failure due to a fire in CR-1. All other systems required for safe shutdown are also controlled from the auxiliary shutdown panel located in CR-4 and, through the use of the transfer switch, failures in the CR-1 are cleared. This allows for a control capability which is independent of CR-1.

PF-35 Booster Hose Service for Water Sensitive Electrical Areas

Staff Concern:

Controlled water spray is essential to limit water damage to safety-related equipment and cables when small fires cannot be put out with portable extinguishers.

Staff Position:

One inch booster hose lines equipped with variable gallonage nozzle and ball valve shutoff should be provided for coverage of the control room switchgear room, and the instrument relay rooms. Each station should be limited to hose length of 100 ft.

Response:

Coverage for the control room switchgear room and instrument relay rooms would be provided from new hose stations in stairwells as outlined in Answer to Question E.3-2.

A standard 1 1/2 inch cotton rubber-lined hose will be installed to provide higher pressure for better atomization at the fog nozzle. To control the amount of water, a 12 to 30 gpm variable gallonage and adjustable spray angle nozzle with ball valve shutoff (Akron Brass Co. Turbojet Style 1710 or equivalent) and 1 1/2 by 1 in reducing adapter (Akron style 337) will be provided for the control, switchgear and instrument relay rooms.

PF-36 HYDROGEN LINES

Staff Position:

All hydrogen lines in safety-related areas should be identified by color coding or lettered markers affixed to the pipe.

Response:

DLC agrees to implement the Staff Position no later than June 30, 1980.

PF-37 Battery Room Ventilation Air Flow Monitor

Staff Concern:

Failure of exhaust ventilation in battery room could lead to buildup of explosive hydrogen concentrations.

Staff Position:

A ventilation air flow monitor should be installed in the exhaust duct of each of the station battery rooms to alarm and annunciate in the control room upon loss of air flow.

Response:

A flow switch will be installed in the ventilation ducts to determine low flow. Low flow will be annunciated in the control room.

PF-38 FIRE BRIGADE EQUIPMENT STORAGE

Staff Position:

Provide a suitable storage area (or areas) reasonably close to the control room for fire brigade equipment. Fire brigade equipment should include:

1. Set of fire fighting protective clothing consisting of turnout coats with removable liners, thigh length boots, gloves and fire fighter style helmets for each brigade member.

2. Six (6) complete self-contained breathing units with two (2) cyoinders for each unit and with the spare cylinders for all other units.

3. One (1) 2-1/2" x 1-1/2" x 1-1/2" gated wye.

4. One (1) 2-1/2" gate valve.

5. Two (2) forcible entry tools (halligan type).

6. Two (2) 2-1/2" double female adapters.

7. Two (2) each, 2-1/2" and 1-1/2", universal hose spanners.

8. Two (2) portable radios.

9. Two (2) battery powered portable handlights (7-1/2 volts).

10. Spare lengths of 2-1/2" and 1-1/2" hose.

11. Spare gaskets for 2-1/2" and 1-1/2" hose couplings.

12. Spare 2-1/2" and 1-1/2" fog nozzles.

Response:

A suitable storage area for fire brigade equipment will be provided no later than December 31, 1979, which will include the following:

1. At least five (5) sets of fire fighting clothing for each brigade member on shift. The minimum required by BVPS Unit I - Technical Specifications - is five (5) Emergence Squad members per shift.

2. At least five (5) complete, self-contained breathing units with a spare cylinder for each unit.

3. Items 3, 4, 6, and 7 all pertain to 2-1/2" hose adapters and equipment, which are not necessary inside the fire brigade storage area. All 2-1/2" hose fittings, adapters and hoses are stored in Hose Cart Houses (3) and Hose Reel Cabinets (9) in strategic locations around the perimeter of the plant.

4. Two (2) forcible entry tools will be supplied.

5. Spare lengths of 2-1/2" and 1-1/2" hoses and gaskets will be available at the storage area.

6. Two (2) portable radios will be made availabe to the Emergency Squad, but will be stored inside the control room for tighter controls and equipment operability (radio checks, charging unit, etc.).

7. Two (2) battery powered portable lights will be made available to the Emergency Squad, but will be stored inside the control room for tighter control.

8. Spare 1-1/2" fog nozzles will also be stored in the storage area.

In addition, the fire brigade members also have access to the following:

- Strategically located portable fire extinguishers throughout the plant

- Fire hose and cart house hose stations
- First aid equipment
- Spare auto sprinkler heads
- Personnel protective equipment (hard hats, rubber boots, fire suits and gloves)
- Transportation facilities onsite

In the event of a locking mechanism failure, manual key overrides are installed on the doors. The keys are stored on a key ring in the control room, easily accessible to the fire brigade, and are taken along on each emergency by the Emergency Squad.

PF-39 SMOKE EJECTORS

Staff Position:

Three (3) 5,000 CFM portable, explosion-proof, fire service smoke ejectors with suitable ducting should be provided.

Response:

DLC agrees to implement the Staff Position by December 31, 1979.

PF-40 FIRE HOSE TESTING

Staff Position:

All outside fire hoses should be tested annually and all inside hoses should be tested every three (3) years. The test pressure should be 50 psi above working pressure.

During the periodic inspection of hose stations, any hoses found with water from valve seepage should be removed, drained, dried and reinstalled on the rack.

Response:

Hoses stored outside buildings are enclosed in cabinets and hose cart houses, specifically to prevent deterioration of equipment. We, therefore, will continue our present hydro schedule every three (3) years as per BVPS Unit I - Technical Specifications. During the periodic testing and inspection of the hose/rack stations, any hose found with water from valve seepage will be removed, drained, and reinstalled on the rack. All fire hoses at the station are Imed with rubber and not susceptible to deterioration.

DLC agrees to implement the above by June 30, 1979.

TENNESSEE VALLEY AUTHORITY
Browns Ferry Nuclear Plant
P. O. Box 2000
Decatur, Alabama 35602

JAN 10 1979

Nuclear Regulatory Commission
Office of Management Information
and Program Control
Washington, DC 20555

Gentlemen:

Enclosed is the December 1978 Monthly Operating Report for Browns Ferry Nuclear Plant Units 1, 2, and 3.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. G. Dewease
Plant Superintendent

Enclosure
CC: Director, Region II
Nuclear Regulatory Commission
Office of Inspection and Enforcement
230 Peachtree Street, NW
Suite 818
Atlanta, GA 30303 (1 copy)

Director, Office of Inspection
and Enforcement
Nuclear Regulatory Commission
Washington, DC 20555 (10 copies)

Mr. J. A. Prestele, Acting Director
Nuclear Engineering and Operations Dept.
Electric Power Research Institute
P. O. Box 10412
Palo Alto, CA 94304

A05
1/1

TENNESSEE VALLEY AUTHORITY

DIVISION OF POWER PRODUCTION

BROWNS FERRY NUCLEAR PLANT

MONTHLY OPERATING REPORT

December 1, 1978 - December 31, 1978

DOCKET NUMBERS 50-259, 50-260, and 50-296

LICENSE NUMBERS DPR-33, DPR-52, and DPR-68

Submitted by J. B. Lenoase
Plant Superintendent

TABLE OF CONTENTS

Operations Summary

The following summary describes the significant operational activities during the reporting period. In support of this summary, a chronological log of significant events is included in this report and begins on page 5.

There were 10 Reportable Occurrences reported to the NRC during the month of December.

Unit I

Significant operational events for Unit 1 are tabulated by date and time beginning on page 5.

The unit was shutdown for scheduled refueling the entire month.

A summary of maintenance work is shown on pages 21 through 31.

Unit 2

Significant operational events for Unit 2 are tabulated by date and time beginning on page 5.

The unit did not scram during the month.

A summary of maintenance work is shown on pages 21 through 29.

Unit 3

Significant operational events for Unit 3 are tabulated by date and time beginning on page 9.

The unit did not scram during the month.

A summary of maintenance work is shown on pages 21 through 29.

Operations Summary (continued)

Fatigue Usage Evaluation

The cumulative usage factors for the reactor vessel are as follows:

Location	Usage Factor		
	Unit 1	Unit 2	Unit 3
Shell at Water Line	0.00377	0.00259	0.00237
Feedwater nozzle	0.17304	0.11409	0.09383
Closure studs	0.16449	0.09806	0.07206

Note: This accumulated monthly information will satisfy technical specification section 6.6.A.17.b(3) reporting requirements.

Common Systems

Approximately 8.11E+5 gallons of waste liquid were discharged containing approximately 8.6E-1 curies of activity.

Cooling towers 4 and 5 were operational this month for two lift pump operations. Tower 6 was operational for one lift pump operation. Modifications by the tower vendor were continued on Tower 3 and Tower 2 and began on Tower 1. None of the towers had significant operational problems.

Operational Data

The average daily unit power level for units 1, 2 and 3 is shown on pages 12 through 14.

The operating data reports for all three units are shown on pages 15 through 17.

Unit shutdowns and power reductions for all three units are shown on pages 18 through 20.

Operations Summary (continued)

Maintenance

Major electrical, mechanical, and instrument maintenance activities during the month are described on pages 21 through 29. Refueling outage activities for Unit 1 are summarized on pages 30 and 31.

Refueling Information

Unit 1

Unit 1 began its second refueling on November 26, 1978, with a restart date of January 16, 1979. Resumption of operation on that date will require a change in technical specifications pertaining to the core thermal limits. Licensing information in support of these changes was submitted in August 1978. This refueling will load additional 8 X 8R (retrofit) fuel assemblies into the core, replacing presently loaded 7X7 fuel and will involve installing a new recirculation pump trip (RPT) system.

There are 764 fuel assemblies in the core. The spent fuel storage pool presently contains 322 spent 7X7 fuel assemblies and two 8 X 8R fuel assemblies. The present storage capacity of the spent fuel pool is 1080 assemblies. Present planning is to increase that capacity to 3471 assemblies. With present capacity, the present refueling is the last refueling that could be discharged to the spent fuel storage pool without exceeding that capacity and maintaining full core discharge capability in the pool.

Unit 2

Unit 2 is scheduled for its second refueling beginning on April 22, 1979, with a restart date of July 1, 1979. Resumption of operation on that date will require a change in technical specifications pertaining to the core thermal limits. Present scheduling is to submit licensing information in

Operations Summary (continued)

Unit 2 (continued)

support of these changes before the refueling. This refueling will involve replacing some more 7 X 7 fuel assemblies with 8 X 8R (retrofit) assemblies.

There are 764 fuel assemblies in the core. At the end of the month there were 132 discharged cycle 1 7X7 fuel assemblies in the spent fuel storage pool. There are presently 36 new 8 X 8 fuel assemblies in the spent fuel storage pool which were not loaded into the core during this cycle. The present storage capacity of the spent fuel pool is 1080 assemblies. Present planning is to increase that capacity to 3471 assemblies. With present capacity, the 1979 refueling would be the last refueling that could be discharged to the spent fuel pool without exceeding that capacity and maintaining full core discharge capability in the pool.

Unit 3

Unit 3 is scheduled for its next refuel outage beginning on August 30, 1979. This refueling will involve loading additional 8 X 8R (retrofit) assemblies into the core. Resumption of operation following refueling will require changes in technical specifications pertaining to the core thermal limits. Licensing information in support of these changes will be submitted before the refueling.

There are 764 fuel assemblies presently in the core. There are 208 fuel assemblies in the spent fuel storage pool. The present licensed storage capacity of the spent fuel pool is 1132 assemblies.

Significant Operational Events

Unit 1

Date	Time	Event
12/1	0000	Reactor shutdown for reload 2, cycle 3 refueling outage
12/3	1015	Commenced shuffling and sipping fuel
		End of Month

Unit 2

Date	Time	Event
12/1	0000	Reactor thermal power at 98%, steady state
12/2	0112	Reduced thermal power from 98% to 85% for turbine C.V. tests and SI's
	0231	Turbine C.V. tests and SI's completed, commenced power ascension
	0700	Reactor thermal power at 98%, steady state
12/3	0745	Reduced thermal power from 98% to 72% for removal of "C" reactor feed pump from service for maintenance (flange leaks)
	1230	Repairs to "C" reactor feed pump completed and pump placed in service
	1240	Commenced power ascension from 72% thermal power
	2300	Reactor thermal power at 98%, steady state
12/4	1212	Reduced thermal power from 98% to 72% for removal of "A" reactor feed pump from service due to high vibration
12/5	1400	Repairs to "A" reactor feed pump completed and pump placed in service
	1530	Commenced power ascension from 72% thermal power
	2000	Commenced PCIOMR from 90% thermal power
12/6	0400	Reactor thermal power at 98%, steady state
	0850	Reduced thermal power from 98% to 72% for removal of "A" reactor feed pump from service due to high vibrations
	1016	Repairs to "A" reactor feed pump completed and pump placed in service

Significant Operational Events

Unit 2

Date	Time	Event
12/6	1040	Commenced power ascension from 72% thermal power
	1200	Commenced PCIOMR from 95% thermal power
	2300	Reactor thermal power at 98%, steady state
12/7	1404	Reduced thermal power from 98% to 72% for removal of "A" reactor feed pump from service due to high vibration
	1730	Repairs to "A" reactor feed pump completed and pump placed in service
	1745	Commenced power ascension from 72% thermal power
	2100	Commenced PCIOMR from 95% thermal power
12/8	0700	Reactor thermal power at 98%, steady state
	2300	Reduced thermal power from 98% to 56% for maintenance to "C" reactor feed pump leaks and turbine C.V. tests and SI's
12/9	0106	Reduced thermal power from 56% to 40% for control rod sequence exchange from "A" to "B"
	0300	Control rod sequence exchange from "A" to "B"completed, commenced power ascension
	0600	Commenced PCIOMR from 60% thermal power
	2300	Reactor thermal power at 73%, holding for "A" reactor feed pump vibration problems
12/11	1250	"A" reactor feed pump maintenance completed, commenced power ascension
	1500	Commenced PCIOMR from 80% thermal power
12/12	2105	Reactor thermal power at 98% steady state
12/15	2125	Reduced thermal power from 98% to 85% for turbine C.V. tests and SI's
	2225	Turbine C.V. tests and SI's completed, commenced power ascension
12/16	0700	Reactor thermal power at 98%, steady state

Significant Operational Events

Unit 2

Date	Time	Event
12/19	2225	Commenced thermal power reduction to 60% for "A" recirculation pump MG set brush replacement and "B" reactor feed pump vibration checks
	2355	"A" recirculation pump MG set brush replacement completed and pump placed in service and "B" recirculation pump MG set removed from service for brush replacement. "B" reactor feed pump vibration checks completed
12/20	0250	"B" recirculation pump MG set brush replacement completed, commenced power ascension from 60% thermal power
	0600	Commenced PCIOMR from 90% thermal power
	1000	Reactor thermal power at 98%, steady state
12/23	2225	Reduced thermal power from 98% to 70% for turbine CV tests and SI's
12/24	0150	Turbine C.V. tests and SI's completed, commenced power ascension
	0700	Commenced PCIOMR from 75% thermal power
12/25	1430	Reactor thermal power at 98%, steady state
12/27	1310	Reduced thermal power from 98% to 95% due to a valve leak in "F" condensate demineralizer vessel
	1357	Valve leak in "F" condensate demineralizer vessel fixed, commenced power ascension
	2300	Reactor thermal power at 98%, steady state
12/29	0230	Reduced thermal power from 98% to 85% for removal of "G" condensate demineralizer from service for back washing and precoating
	0300	"G" condensate demineralizer placed in service, commenced power ascension
	0700	Reactor thermal power at 98%, steady state
12/30	0020	Reduced thermal power from 98% to 85% for turbine C.V. tests and SI's
	0238	Turbine C.V. tests and SI's completed. commenced power ascension

Significant Operational Events

Unit 2

Date	Time	Event
12/30	0300	Commenced PCIOMR from 95% thermal power
	0700	Reactor thermal power at 98%, steady state
	1525	Reduced thermal power from 98% to 85% for removal of "C" reactor feed pump from service due to high vibration
	1848	"C" reactor feed pump placed in service, commenced power ascension from 85% thermal power
12/31	1922	Reactor thermal power at 98%, steady state for the remainder of the month

Significant Operational Events

Unit 3

Date	Time	Event
12/1	0000	Reactor critical with startup in progress
	0230	Rolled T/G
	0306	Synchronized generator, commenced power ascension (Sequence "B")
12/3	0255	Commenced PCIOMR from 60% thermal power
12/5	0138	"A" reactor feed pump trip (cause unknown) reducing thermal power from 90% to 70%
	0150	"A" reactor feed pump trip reset and pump placed in service, commenced power ascension
	0225	Commenced PCIOMR from 87% thermal power
	0700	Reactor thermal power at 92%, holding due to core flow limits
	1700	Reduced thermal power from 92% to 72% for removal of "C" reactor feed pump from service for maintenance (pump discharge flange leakage)
12/6	1200	Maintenance completed on "C" reactor feed pump and pump placed in service
	1830	Reduced thermal power from 72% to 65% for FW testing (RTI-23A)
12/7	0158	RTI-23A completed, commenced power ascension
	0330	Commenced PCIOMR from 85% thermal power
	1500	Reactor thermal power at 92%, steady state, core flow limited
	1826	Commenced reducing thermal power from 92% to 35% for recirculation pumps flow tests (RTI-32A)
12/8	0518	Recirculation pumps flow tests completed, commenced power ascension for recirculation pumps trip tests (RTI-27)
	0525	Reactor thermal power at 70%, holding for RTI-27

Significant Operational Events

Unit 3

Date	Time	Event
12/8	0550	RTI-27 discontinued due to system load demand, commenced power ascension
	0830	Reduced thermal power from 85% to 70% for resuming RTI-27
	0925	Both recirculation pumps tripped, thermal power to 35%
	0936	Both recirculation pumps in service, commenced power ascension
	1210	Reactor thermal power at 40% holding for control rod sequence exchange from "B" to "A"
	1428	Control rod sequence exchange from "B" to "A" completed, commenced power ascension in control rod sequence "A"
12/9	0020	Reduced thermal power from 78% to 70% for turbine C.V. tests and SI's
	0357	Turbine C.V. tests and SI's completed, commenced power ascension
	1505	Commenced PCIOMR from 80% thermal power
12/11	1500	Reactor thermal power at 97%, steady state
12/12	0025	Reduced thermal power from 97% to 90% for removal of "B" string high pressure heaters from service for maintenance (leakage)
	0300	Commenced PCIOMR from 90% thermal power
	2300	Reactor thermal power at 95%, core flow limited
12/15	2330	Reduced thermal power from 95% to 60% for "B" recirculation pump MG set brush replacement
12/16	0225	"B" recirculation pump MG set brush replacement completed, commenced power ascension
	0700	Commenced PCIOMR from 75% thermal power
12/17	2000	Reactor thermal power at 99%, steady state
12/22	2115	Reduced thermal power from 99% to 90% for turbine C.V. tests and SI's

Significant Operational Events

Unit 3

Date	Time	Event
12/23	0230	Turbine C.V. tests and SI's completed, commenced PCIOMR from 90% thermal power
	0930	Reactor thermal power at 98%, steady state
12/24	1425	Reduced thermal power from 98% to 80% for removal of "B" reactor feed pump from service due to high vibrations
12/26	1500	Reactor thermal power at 80%, holding for "B" reactor feed pump maintenance
12/27	0405	"B" reactor feed pump maintenance completed and placed in service
	0430	Commenced power ascension from 80% thermal power
	0820	Reduced thermal power from 93% to 80% for removal of "B" reactor feed pump from service due to high vibrations. Reactor thermal power held at 80% the remainder of the month

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-259
UNIT Browns Ferry I
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

MONTH December, 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	-6	17	-4
2	-5	18	-4
3	-4	19	-2
4	-5	20	-2
5	-4	21	-2
6	-4	22	-2
7	-3	23	-3
8	-3	24	-3
9	-4	25	-2
10	-4	26	-3
11	-4	27	-3
12	-4	28	-2
13	-4	29	-2
14	-4	30	-3
15	-4	31	-2
16	-4		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-260
UNIT Browns Ferry II
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

MONTH December 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	262	17	1011
2	469	18	1067
3	711	19	1073
4	891	20	1073
5	908	21	1070
6	790	22	1079
7	827	23	1049
8	647	24	971
9	777	25	838
10	921	26	837
11	1040	27	857
12	991	28	830
13	1032	29	836
14	1010	30	858
15	1020	31	821
16	770		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-296
UNIT Browns Ferry III
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

MONTH December

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	1056	17	1081
2	1074	18	1070
3	988	19	1056
4	930	20	977
5	870	21	1072
6	1031	22	1085
7	999	23	1033
8	1065	24	832
9	708	25	1032
10	810	26	1072
11	822	27	1077
12	976	28	1071
13	1084	29	1065
14	1063	30	1088
15	1068	31	1006
16	1066		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

(9/77)

OPERATING DATA REPORT

DOCKET NO. 50-259
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry I
2. Reporting Period: December 1978
3. Licensed Thermal Power (MWt): 3293
4. Nameplate Rating (Gross MWe): 1152
5. Design Electrical Rating (Net MWe): 1065
6. Maximum Dependable Capacity (Gross MWe): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

Notes

9. Power Level To Which Restricted, If Any (Net MWe): N/A
10. Reasons For Restrictions, If Any:

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	744	8760	38,738
12. Number Of Hours Reactor Was Critical	0	7251.71	20,231.59
13. Reactor Reserve Shutdown Hours	0	352.33	4,399.13
14. Hours Generator On-Line	0	7045.21	19,691.34
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	0	18,399,443	50,772,672
17. Gross Electrical Energy Generated (MWH)	0	5,999,980	16,818,000
18. Net Electrical Energy Generated (MWH)	0	5,817,873	16,306,220
19. Unit Service Factor	0	80.4	50.8
20. Unit Availability Factor	0	80.4	50.8
21. Unit Capacity Factor (Using MDC Net)	0	62.4	39.5
22. Unit Capacity Factor (Using DER Net)	0	62.4	39.5
23. Unit Forced Outage Rate	0	6.0	40.2

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):

25. If Shut Down At End Of Report Period, Estimated Date of Startup: January 1978

26. Units In Test Status (Prior to Commercial Operation):

	Forecast	Achieved
INITIAL CRITICALITY		
INITIAL ELECTRICITY		
COMMERCIAL OPERATION		

OPERATING DATA REPORT

DOCKET NO. 50-260
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry II
2. Reporting Period: December 1978
3. Licensed Thermal Power (MWt): 3293
4. Nameplate Rating (Gross MWe): 1152
5. Design Electrical Rating (Net MWe): 1065
6. Maximum Dependable Capacity (Gross MWe): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Gi Reasons:

Notes

9. Power Level To Which Restricted, If Any (Net MWe): N/A
10. Reasons For Restrictions, If Any:

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	744	8,760	33,649
12. Number Of Hours Reactor Was Critical	744	6,150.06	16,718.29
13. Reactor Reserve Shutdown Hours	0	276.94	11,476.71
14. Hours Generator On-Line	744	6,034.50	16,067.86
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,272,498	17,278,651	43,451,788
17. Gross Electrical Energy Generated (MWH)	768,240	57,716,838	14,313,788
18. Net Electrical Energy Generated (MWH)	749,325	5,547,360	13,890,164
19. Unit Service Factor	100	68.9	47.8
20. Unit Availability Factor	100	68.9	47.8
21. Unit Capacity Factor (Using MDC Net)	94.6	59.5	38.8
22. Unit Capacity Factor (Using DER Net)	94.6	59.5	38.8
23. Unit Forced Outage Rate	0	4.4	45.8

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):
Refuel outage April, 1979

25. If Shut Down At End Of Report Period, Estimated Date of Startup:

26. Units In Test Status (Prior to Commercial Operation):

	Forecast	Achieved
INITIAL CRITICALITY		
INITIAL ELECTRICITY		
COMMERCIAL OPERATION		

(9/77)

OPERATING DATA REPORT

DOCKET NO. 50-296
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry III
2. Reporting Period: December 1978
3. Licensed Thermal Power (MWt): 3293
4. Nameplate Rating (Gross MWe): 1152
5. Design Electrical Rating (Net MWe): 1065
6. Maximum Dependable Capacity (Gross MWe): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065

Notes

8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

9. Power Level To Which Restricted, If Any (Net MWe): N/A
10. Reasons For Restrictions, If Any:

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	744	8,760	16,104
12. Number Of Hours Reactor Was Critical	744	6,395.53	13,091.20
13. Reactor Reserve Shutdown Hours	0	517.00	1105.41
14. Hours Generator On-Line	740.90	6,230.67	12,729.98
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,013,518	17,509,688	36,151,382
17. Gross Electrical Energy Generated (MWH)	672,650	5,733,630	11,767,500
18. Net Electrical Energy Generated (MWH)	656,104	5,554,282	11,405,188
19. Unit Service Factor	99.6	71.1	79.0
20. Unit Availability Factor	99.6	71.1	79.0
21. Unit Capacity Factor (Using MDC Net)	82.8	59.5	66.5
22. Unit Capacity Factor (Using DER Net)	82.8	59.5	66.5
23. Unit Forced Outage Rate	.4	9.0	9.5

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):

25. If Shut Down At End Of Report Period, Estimated Date of Startup:

26. Units In Test Status (Prior to Commercial Operation):	Forecast	Achieved
INITIAL CRITICALITY		
INITIAL ELECTRICITY		
COMMERCIAL OPERATION		

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-259
UNIT NAME Browns Ferry I
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

REPORT MONTH ~~December~~

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
55	78 11 26	5	744	C	2				Refueling

1
F: Forced
S: Scheduled

2
Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method:
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Other (Explain)

4
Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I - Same Source

(9/77)

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-260
UNIT NAME Browns Ferry II
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

REPORT MONTH December

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
68	78 12 03	F		A					Derated when "C" Rx feed pump flange leaked
69	78 12 04	F		A					Derated when "A" Rx feed pump had high vibration
70	78 12 06	F		A					Derated when "A" Rx feed pump had high vibration
71	78 12 07	F		A					Derated when "A" Rx feed pump had high vibration
72	78 12 09	F		A					Derated when "C" Rx feed pump flange leaked
73	78 12 19	F		B					Derated to replace brushes in both recirc pump M.G. sets
74	78 12 23	S		B					Derated for turbine control valve test and SI's

1 F: Forced
S: Scheduled

2 Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3 Method:
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Other (Explain)

4 Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5 Exhibit I - Same Source

(9/77)

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-296
UNIT NAME Browns Ferry III
DATE 01-05-79
COMPLETED BY W Don Green
TELEPHONE 205/729-6846

REPORT MONTH December

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
67	78 12 01	F	3.10	A	2				LPRM connections were improperly installed
68	78 12 05	F		A					Derated when "A" Rx feed pump tripped
69	78 12 05	F		A					Derated when "C" Rx feed pump tripped
70	78 12 07	F		B					Derated to perform recirc pump flow test
71	78 12 08	F		B					Derated to perform recirc pump trip test
72	78 12 15	F		B					Derated to replace brushes in recirc pump MG set

1
F: Forced
S: Scheduled

2
Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method:
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Other (Explain)

4
Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I - Same Source

(9/77)

BROWNS FERRY NUCLEAR PLANT UNIT 1

CSSC EQUIPMENT

MECHANICAL MAINTENANCE SUMMARY

For the Month of December 1978

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
12/1	RHR	FCV 74-68	Packing leak	None	Unknown	None	Repacked valve with graphoil
12/12	CRD	CRD Module 10-23	Leaking star valve	None	Operation	None	Replaced packing seat and body o-ring
12/13	Ventilation	1A Refuel zone exhaust fan	Expansion joint worn out	None	Operation	None	Replaced joint and lubricated dampers
12/13	CRD	CRD module 06-27, valve 229	Valve leaking	None	Operation	None	Replaced stem packing
12/29	CRD	HCV's 85-229	Packing leak	None	Operation	None	Repack cartridge valve

BROWNS FERRY NUCLEAR PLANT UNIT 2

CSSC EQUIPMENT

MECHANICAL MAINTENANCE SUMMARY

For the Month of December 19 78

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
12/11	HPCI	Booster pump	Outboard Bearing oil reservoir needs oil	None	Unknown	None	Added oil to bearing reservoir
12/13	RCIC	Turbine	Turb. inboard bearing oil reservoir low on oil	None	Low oil level	None	Added oil
12/11	RCIC	Turbine	Inboard turb. bearing needs oil	None	Oil Low	None	Added oil

BROWNS FERRY NUCLEAR PLANT UNIT 3

CSSC EQUIPMENT

MECHANICAL MAINTENANCE SUMMARY

For the Month of December 19 78

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
12/6	CRD	Exhaust filter	Filter "B" need cleaning filter is isolated, vented, and drained	None	Filter was dirty	None	Replaced dirty filter with new one.
12/16	SLC	3A pump relief valve	Valve operating at 1150 psi T.S. 4.4.A-2	None	Valve lifting at 1150 psi	None	Re-run S.I. work o.k.

BROWNS FERRY NUCLEAR PLANT UNIT 1

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 1978

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
12/1	All with CR120A relays	CR 120A relay contact arm retainer	Change all CR 120A relay contact arm retainers per EMI 53	None	Contact arm retainers not of valoz	Possible fire hazard	Change out all contact arm retainers not made of Veloz per EMI 53. TR 99508, 99503, 99507, 99520, 99509, 99567, 99512, 99518, 99524, 99516, 99513, 99517, 99511, 99515, 99514, 99528, 99505, 99527, 99506, 99525, 99501, 99523, 99502, 99519, 99504, 99526, and 99522
12/1	Diesel Generator	D/G 1 C & D	STOL1 relay on C and annun. relay on D failed to operate properly per SI 4.9.A.1.d	None	STOLI relay on "C" D/G ann. relay bad on "D" D/G	Did not meet criteria of SI 4.9.A.1.d	Changed both relay. Met all criteria of SI 4.9.A.1.d. Checked ok. TR 87915
12/1	RHR	HCV 74-44	Open limit switch still made up with valve closed	None	Limit switch was bad	Incorrect annunicator	Changed out limit switch. Checked ok TR 107190
12/2	Control Air	FCV 32-62	Limit switch on FCV 32-62 will not pick up	None	Limit switch arm bent and out of adjustment	Incorrect ann.	Straightened limit switch arm adjusted limit switch. Checked ok. TR 109622
12/2	RCIC	Steam line condensate level switch	Bad level switch	None	Bad level switch	Improper Ann.	Replaced level switch Ran EMI 56. Checked ok. TR 106412

BROWNS FERRY NUCLEAR PLANT UNIT 1

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 1978

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
12/4	250V DC	No. 1 battery charger for No. 1 battery board	Not operating correctly	None	Bad control transformer	Not operating correctly	Replaced transformer Checked ok. TR 115522
12/6	4-kV SD. Board	Breaker 1624	Breaker will not rack in	None	Jack nut and screw bad damaged threads	Breaker would not rack in	Repair jack nut and screw. Checked ok. TR 115621
12/6	250V DC	Battery charger No. 1	Charger will not hold voltage and tripped nor K.C. supply bkr.	None	Blown fuse	Battery charger not operational	Replaced blown fuse with new one. Checked ok. TR 116609
12/20	RHR	HCV 74-55	Red light is on with valve closed	None	Limit switch stuck	Red light on with valve closed	Freed limit switch and lubricated. Checked ok. TR 116259
12/24	Diesel Generator	Power failure alarm for D/G A	Power failure alarm will not close	None	Coil burned out on D/G control panel	Power failure alarm would not clear	Replaced coil and cleared alarm. TR 34115

BROWNS FERRY NUCLEAR PLANT UNIT 2

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 1978

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
12/6	Air. Cond.	Battery room supply fan 2B	Bearing noisy	None	Bad motor bearings	Bearings noisy	Replaced motor bearings (2) Checked ok TR 116567
12/7	HPCI	FCV 73-26	No indicating lights in control room	None	Wire burned from JB 2217 to FCV 73-26	No indicating lights	PUlled new wire. Replaced flex conduit Performed EMI 18. Checked ok. TR 116544
12/9	250V DC	250V batt. bd. No. 2	Bd. No. 2 has 230V pos. ground	None	Limit switches on FSV 3-92 were grounded due to water and corrosion	Bd. No. had 230V pos. ground	Replaced limit switche Checked ok. TR 114765
12/11	RHR Service	Limit switch on HCV 23-43	No red indicating light in control room	None	Limit switch out of adjustment	No red indicating light in control room	Adjusted limit switch Checked ok. TR 116531
12/14	250V Rx. MOV Bd 2C	2A-K61A relay	Relay bad	None	Coil open	Relay inperable	Replaced coil. Checked ok. TR 115310
12/30	HPCI	HPCI trip solenoid	HPCI failed to trip during performance of SI	None	Bad solenoid coil resistor, and diode	HPCI would not trip by trip solenoid	Replaced solenoid, resistor, and diode. Ran SI 4.5.E.1.B Meet all criteria. TR 37512

BROWNS FERRY NUCLEAR PLANT UNIT 3

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 19 78

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
12/1	HPCI	Gland seal Exhauster	Runs for about 2 min. and then thermals out	None	Al lead contact clip on breaker was loose	Motor thermals out	Tightened clip to breaker finger exhauster running correctly. TR 116306
12/1	Neutron Monitoring	D - SRM	"D" SRM has both in-out lights and will not move	None	Coil bad in relay 7CK7K	"D" SRM will not move	Replaced coil in relay 7CK7K. Checked ok TR 116398
12/1	Air Cond.	Emergency chiller for 3A and 3B Rx. MOV boards	Chiller has leak	None	Break in suction line and sight glass	Chiller was leaking	Replaced sight glass Repaired leak. Checked ok. TR 110028
12/1	Diesel Gen.	Press. switch AP2 D/G 3D	Diaphragm blown out on AP2	None	AP2 - Press switch bad	Press switch inoperable. Alarm in	Replaced press. switch Alarm cleared. TR 110084
12/1	RHR	FCV 74-1	Valve will not operate by motor	None	Motor bad	Valve cannot be motor operated	Replaced motor. Ran EMI 18. Checked ok TR 114330
12/5	Fire Protection	Smoked Detector 39-19A	Detector alarmed for no reason	None	Bad detector	False alarm	Change model FT-200 to model 1212 detector Ran SI 4.1.1.C.1&.5 TR 115870
12/1	Core Spray	Seal in contact	Seal in contact would not pick up	None	Close contacts not sealing in seal in contact bent	Valve would stop travelling when hand switch was released	Repaired and adjusted contact. Checked ok. TR 110098

BROWNS FERRY NUCLEAR PLANT UNIT 3

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 19 78

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
12/7	HPCI	HCV 73-23 limit switch	Limit switch out of place	None	Limit switch actuator loose	Limit switch would not give full open position	Repositioned and tightened actuator limit switch checked ok. TR 116407
12/1	CRD	HS 85-48	Control switch stop is broke	None	Hand switch broke	HS 85-48 not operating	Replaced stop plate on HS 85-48. Check ok. TR 114353

BROWNS FERRY NUCLEAR PLANT UNITS 1,2 & 3

INSTRUMENT MAINTENANCE SUMMARY

For the Month of December 1978

CSSC Equipment

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
UNIT 1							
12/8	RPIS	Probe 58-35	Replace	None	Bad reed switch	No "00" indication	None
	RPIS	Probe 26-03	Replace	None	Bad reed switch	No fuel in indication	None
12/13	Main steam	TI-1-40D	Replace	None	Switch broken during outage	Caused half isolation	None
12/14	Rad Monit	RI-90-8A	Maintenance	None	Transistor faulty	Alarm would not test	None
12/30	SLC	LI-63-1B	Calibration	None	Zero shift	Did not agree within 1% of stick measurement	None
UNIT 2							
12/15	Feedwater	PI-3-79	Calibration	None	Transmitter zero shift	Indicated high reactor pressure	None
12/19	CRD	PDS-85-63, 64	Replace	None	Gages damaged	Indicate DP when none existed	None
UNIT 3							
12/4	SLC Feedwater	LT-3-53	Calibrate	None	Zero shift on transmitter	Indicated 4" low	None
12/5	Primary Containment	LI-64-54, A, B	Calibrate	None	Slight zero shift	Two indicators did not agree	None

OUTAGE SECTION MONTHLY REPORT

December 1978

During the entire month of December, Unit 1 was down for a refueling outage.

The refueling sequence progressed from reactor vessel disassembly through fuel shuffling and sipping. In addition to normal refueling activities, major maintenance items accomplished during this time included changeout of eight CRD's and nine LPRM's; leak rate testing and repair of all containment isolation valves including the eight MSIV's; changeout and testing of 11 MSRV's; replacement of the two MSSV's with two new MSRV's and the routing of tailpipes for these valves; leak checking and probolog of feedwater heaters and condenser waterboxes, CRD HCU maintenance; inspection and repair of "C" LP turbine which included discovery by non-destructive examination of 273 cracked pins on generator side and 195 on the turbine side requiring the spindle to be pulled; furmaniting of RWCU regenative heat exchanger; motor testing was completed with drywell blower 1A1 requiring replacement; approximately 80% of the electrical board maintenance was completed during this month.

Several unforeseen problems occurred which have placed the outage behind the original outage schedule. One of these was the decision to sip all 8 X 8 fuel bundles instead of just the 440 (7 X 7) reload bundles originally planned. Another problem occurred when several items were dropped into the vessel during jet pump plug installation. This necessitated a prolonged time for search and retrieval, and one item, a tube of versilube lubricant, has not been found.

OUTAGE SECTION MONTHLY REPORT (Con't)

December 1978

Recirculation valve maintenance included disassembly of valves 68-3 and 68-33 which required the jet pumps to be plugged and the loop drained. After disassembly, it was found that both valves had broken stems and these were replaced. All recirculation loop isolation valves had their bonnets seal welded.

Major modifications worked this month were the recirculation pump trip modification, HPCI modifications, security modifications, generator field ground modification, addition of two new MSRV's and routing of tailpipes, second level undervoltage protection, generator monitor modification, and RHR vent piping modification.