OCT 17 1984

Docket No. 50-458

APPLICANT: Gulf States Utilities Company

FACILITY: River Bend Station (RBS)

SUBJECT: SUMMARY OF MEETING HELD GSU AND NRC STAFF TO RESOLVE INSTRUMENTATION & CONTROLS (I&C) CONFIRMATORY ISSUES

The meeting was held on August 7-9, 1984 at the GE offices in San Jose, California. Enclosure 1 is a meeting summary and Enclosure 2 is a list of persons participating in the meeting.

The meeting was held to aid in resolving I&C confirmatory items identified in Chapter 7 of the RBS Safety Evaluation Report (SER). The status of each issue, based on the results of this meeting, is provided in Enclosure 1.

Original signed by

Edward J. Weinkam III, Project Manager
Licensing Branch No. 2
Division of Licensing

Enclosures: As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Enclosure 1

SUMMARY OF THE AUGUST 7, 8, & 9, 1984 MEETING HELD BETWEEN GSU AND THE ICSB AT THE GE OFFICES IN SAN JOSE, CA. TO RESOLVE CHAPTER 7 (INSTRUMENTATION & CONTROLS) CONFIRMATORY ISSUES FOR RIVER BEND UNIT 1

I. OPEN ITEMS

Agenda Item A

INOPERABLE AND BYPASSED STATUS INDICATION

This is the single remaining Chapter 7 open item as discussed in Section 7.5.2.2 of the River Bend SER. This issue was discussed at meetings held between the applicant (GSU), the HFEB, and the ICSB on June 18, and July 10, 1984 in Bethesda. Stone & Webster Engineering Corp. (SWEC) was present at the July 10 meeting. This issue was not discussed at the August 7, 8, & 9, 1984 meeting at the GE offices in San Jose. By memorandum dated August 2, 1984 (from R.W. Houston to T. Novak), the ICSB documented its concerns regarding the bypassed and inoperable status indication system design provided at River Bend to monitor the status of plant safety systems, and provided guidance concerning the minimum requirements for an acceptable design. This information was transmitted to GSU by letter dated August 29, 1984 (from A. Schwencer to W.J. Cahill, Jr.).

STATUS:

The staff is currently waiting for the GSU response to the August 29, 1984 letter.

II. CONFIRMATORY ITEMS

Agenda Item A:

ISOLATION DEVICES

GSU confirmed that there are only two types of electrical isolation devices used to accomplish isolation between redundant safety related I&C circuits, and between safety related and non-safety related I&C circuits. These are: 1) Potter Brumfield MDR relays (rotary type coil-to-contact isolation; metal barriers are provided to separate the coil and contact sections of the relay), and 2) optical isolator modules (housing 4 or 8 input and output isolator cards with approximately 4 to 12 isolators per card depending upon its application). The module contains an isolation boundary between the input and output cards consisting of one inch polished quartz crystal rods (light pipes) which are encapsulated in a ceramic barrier. All cards on a given side of the isolation boundary are powered from the same division.

The staff audited the test plans and procedures used to demonstrate the qualification of both the MDR relays and optical isolators as acceptable isolation devices. The acceptance criteria for both devices was found to be acceptable (i.e., upon application of a fault to the output of the device, no degradation occurs to the input). However, the test plans and procedures are GE design

record file documents which could not be released to the staff. Therefore, GSU will provide summary descriptions of these documents, including the acceptance criteria, test configurations, test results and conclusions (for both the MDR relays and optical isolators). GSU stated that relay contact-to-contact isolation is not used in the RBS design, and that the FSAR will be revised accordingly.

The staff's audit of the test plan and procedures (TPP) for the optical isolators indicated that a high potential (HI-POT) test (dielectric strength test) was performed at 5000 Vdc across the device (input to output). However, the staff review of the TPP indicated that the maximum credible fault was not applied to the device in the transverse mode (i.e., between signal and return). GE advised the staff that a test was conducted where 5000 Vdc was applied to the device line to line (assumed to be transverse mode), although not documented in the TPP. GE stated that upon application of the 5000 Vdc, breakdown occurred at 2.5 mA. The staff expressed concern that this test may not bound the maximum credible fault to which the device could be exposed for its applications at RBS. GSU will analyze the RBS design to determine the maximum credible fault, and have GE apply the fault to the optical isolator in the transverse mode to verify its acceptability. GSU will provide a summary of the test procedures, test results and conclusions.

In addition, GSU will document that the isolation devices (relays and optical isolators) are seismically and environmentally qualified for their applications at RBS.

The above discussion does not apply to the isolation devices used in the ERIS or the DRMS. The isolators used in ERIS have been reviewed and found acceptable by the staff. The isolation devices used in the DRMS (supplied by GA Technologies) were not reviewed. GSU must demonstrate that these devices are acceptable (See Agenda Item C).

STATUS:

This item will remain open pending receipt of the documentation identified above.

Agenda Item B

INITIATION OF ESF SUPPORTING SYSTEMS

GSU indicated that the ESF pump room unit coolers run continuously. Control room annunciation is provided for certain conditions resulting in unit cooler failure. Examples are cooling water supply valves closed, and loss of power. If a unit cooler becomes inoperable, then the ESF system(s) which it supports also become inoperable (in accordance with the technical specification definition of

operability), which places the plant in a limiting condition for operation (LCO). This is assuming that the unit cooler is an "essential" auxiliary/supporting system. GSU may provide an analysis which demonstrates that the unit coolers are not required to support the operation of ESF equipment for mitigation of design basis events.

The staff expressed concern that a unit cooler could fail and go undetected. All conditions that could result in unit cooler failure are not/cannot be annunciated. GSU stated that periodic surveillance will be performed to verify unit cooler operability during operation. The staff requested that the surveillance frequency be specified.

STATUS:

This item can be closed pending receipt of documentation from GSU confirming that unit cooler surveillance will be performed during operation (provided that the surveillance frequency is adequate), or demonstrating that the unit coolers are not required to support ESF system operation.

Agenda Item C:

DIGITAL RADIATION MONITORING SYSTEM (DRMS)

A drawing review of the DRMS electrical elementary/schematic diagrams was performed. The safety related and non-safety related portions of the DRMS were identified. No information was available for audit regarding qualification of the DRMS isolation devices. GSU must demonstrate that the DRMS isolation devices are acceptable for their applications. The acceptance criteria and test configurations (e.g., maximum credible fault, transverse mode, etc.) were discussed under Agenda Item A ("Isolation Devices"). GSU will summarize the test procedures, results and conclusions for these devices. GSU indicated that this information would be obtained from the vendor (GA Technologies).

As part of the staff's review, DRMS circuits were traced from input to output for safety related functions. This includes both indication and control (i.e., isolation, initiation, etc.). GSU will provide a description of the test program used to demonstrate operability of the DRMS during operation (as required by the plant technical specifications), from input (sensor) to output (indication/control function).

GSU indicated that the DRMS software development was conducted in accordance with the GA Technologies V&V program. GSU must demonstrate that this program is acceptable. This can be accomplished by confirming that the DRMS V&V program is identical to the program applied to the Seabrook DRMS also manufactured by GA Technologies, which was reviewed and accepted by the staff.

Information was provided regarding the DRMS EMI susceptibility testing performed by the vendor. However, the test results were not available for audit. GSU will provide a summary of the test results and demonstrate that the actual EMI environments for the Class 1E applications of the DRMS are bounded by the test. The staff specifically requested GSU to address the use of walkie-talkies with respect to effects on DRMS operability.

GSU will also provide on the docket DRMS drawings identified during the drawing review (including 0386-0004, 0386-0025, E-115-860 Rev. 3, Fig. 10-1, and the drawing for isolation device 0357-5200 used for isolation between divisions), the DRMS RM-23 and RM-80 manuals, and a discussion of how DRMS setpoints are accessed/changed.

STATUS:

This item can be closed pending documentation of the information identified above, and completion of the staff's review.

Agenda Item D:

EMERGENCY RESPONSE & INFORMATION SYSTEM (ERIS)

A drawing review of the ERIS was performed. The safety related and non-safety related portions of the ERIS were identified. GSU will provide electrical schematic/elementary drawings of the ERIS. A meeting was held between the staff and GE at the GE offices in San Jose on July 24, 25, and 26, 1984 to discuss the SPDS portion of the ERIS design. The isolation provided between safety related and non-safety related circuits was reviewed and found to conform with the guidelines of NUREG-0737 Supplement 1 (Clarification of TMI Action Plan Requirements; Requirements for Emergency Response Capability) issued by Generic Letter 82-33. Isolation is accomplished using fiber optic cable which varies in length from 2 feet to 5000 feet. Characteristics of fiber optic cable include non-susceptibility to the coupling of crosstalk and EMI. Further information regarding the ERIS/SPDS isolation devices will be provided in the staff's generic evaluation of GE SPDS design, scheduled to be issued in October 1984.

All inputs to the ERIS enter through remote input modules (RIMs). Two types of RIMs are used; GEDAC-4800 and GEDAC-5500. GEDAC-4800 modules are qualified as Class 1E devices to IEEE Standards 323-1974 and 344-1975. The GEDAC-5500 modules are used in non-Class 1E applications. The remainder of the ERIS (downstream of the RIMs) is non-Class 1E. Inputs to the ERIS from a given division are routed to the associated PGCC termination cabinet (which houses the RIMs) in the control room. Some RIMs are mounted locally. In these cases, the signals are transmitted to the control room via fiber optic cable.

The RIMs, multiplexers (MUX), and data formatter module (DFM) are combined to form the data aquisition system (DAS) portion of the ERIS. Each DAS component executes a self test routine which checks for valid hardware and software within the module as well as valid external connections where possible. Alarms are provided in the control room upon DAS self-test detected failures. GSU has indicated that the self-test circuitry for the RIMs has been qualified not to adversely affect safety related circuits upon failure. GSU will document that the interface between the self-test circuits and safety related circuits complies with the guidance of Regulatory Guide 1.75 (Physical Independence of Electric Systems), and that

failure of the self-test circuits (including failures due to electrical faults) will not compromise the performance of the safety related circuits. FSAR Section 7.7.1.7.2 indicates that the ERIS will be used to aid plant personnel in performing routine surveillance tests during commercial operation. GSU stated that the ERIS will not be used to satisfy plant technical specification surveillance requirements. The ERIS will be used to monitor over 1400 test points during startup transient testing, as identified by the ERIS input/output signal list for River Bend. Over 1000 of these will remain connected following startup.

Also discussed at the July, 1984 SPDS meeting was the software/firmware methodology used and implementation of the methodology in the final ERIS design (i.e., verification and validation; V&V). At the meeting, GE stated that the basis for the V&V program used in the design of the ERIS was NSAC-39 (Verification and Validation for Safety Parameter Display Systems). The staff has reviewed this program and found it to be in conformance with the guidelines of NUREG-0737, Supplement 1, and therefore acceptable. Further information regarding the ERIS/SPDS V&V program will be provided in the staff's generic evaluation of the GE SPDS design.

STATUS:

This item can be closed pending receipt of the required information.

Agenda Item E:

ROD PATTERN CONTROL SYSTEM

There are two automatic self test programs used to verify operability of the RCIS/RPCS. The first test is used to verify overall RCIS operability. A test pattern generated within the RACS cabinets is transmitted to the RGDS cabinet, and to the field bi-junction modules (BJMs) and transponders. The test circuitry compares the actual system response to the test pattern, with the expected system response. Upon detection of a failure, control room annunciation is provided and a rod block is initiated. LED displays located within the RCIS cabinets are used to localize the failure. The failure must be corrected before the system can be reset (i.e., before the rod block signal can be cleared and control rod movement permitted). The test signals consist of short duration pulses in order to prevent control rod movement during testing. This test scans the circuitry (continuity check) for each rod individually, in a specified sequence, until all rods have been tested. At this point, the test program repeats itself. This test program runs continuously. The second test is used to

detect hardware or software failures within the rod pattern controller (RPC). As is done in the first test, a test pattern is generated, and the proper response verified. RPC failed annunciation and a rod block are generated upon detection of a failure. Off-line external diagnostics can be run from the RACS cabinet front panel to isolate a fault. These diagnostics perform individual steps of the overall RPC self test sequence. The method(s) used to verify operability of the self test circuitry, and capability for manually testing the RPCS, will be reviewed as part of the River Bend Technical Specification review conducted by the ICSB.

There are 8 keylock bypass switches provided to bypass control rod position inputs into the RPCS. The number of rods which can be bypassed is limited to 8 in accordance with the plant technical specifications. GSU stated that FSAR Section 7.6.1.7 which indicates that 20 bypass switches are provided, will be revised. In addition, the River Bend RPCS design allows substitute rod positions to be entered into the RPCS upon individual control rod position indicating switch (reed switch) failures. This is done to prevent rod blocks due to disagreements between redundant RPCS channels caused by single reed switch failures.

RPCS EMI/noise testing was performed by the vendor (Hitachi). GE indicated that the RPCS performed acceptably during the tests.

STATUS:

This item will be closed pending the FSAR revision described above.

Agenda Item F:

ISOLATION BETWEEN THE NEUTRON MONITORING SYSTEM AND THE ROD CONTROL AND INFORMATION SYSTEM

The staff reviewed all inputs to the RCIS (both safety related and non-safety related). All inputs to the RACS cabinets (which contain the safety related RPCS) are buffered using optical isolation devices. These devices are the light emitting diode/photo transistor type mounted on printed circuit (PC) cards. Where the RACS cabinet inputs are from the same division (e.g., NMS, mode switch, turbine first stage pressure, position multiplexers, SDIV level), only the buffering is provided. Where the inputs are from a redundant division (NMS) or from a non-safety related source (refueling platform), electrical isolation using quartz rod isolator modules (described in item A above) is provided in addition to the buffering. In addition, RACS cabinet inputs from the RCIS itself (RGDS

cabinets and operators control module) are isolated using the quartz rod modules. GSU will provide revised RCIS electrical schematic/elementary diagrams, including the buffering circuits, and a revised FSAR Figure 7.7-2.

The staff was initially concerned that the isolation provided between NMS Division 1 and RCIS/RACS Division 1, and NMS Division 2 and RCIS/RACS Division 2 may not be sufficient. However, based on subsequent review of these interfaces, the staff has concluded that the isolation provided is sufficient because 1) in addition to the buffering, coil-to-contact isolation is provided, 2) all other inputs to the RCIS/RACS are buffered/isolated as discussed above, and 3) should a fault within the RCIS degrade the NMS, redundant and diverse instrumentation is available to accomplish all required protective functions (reactor scram and rod block).

STATUS:

This item will be closed pending receipt of the electrical drawings identified above.

Agenda Item G:

CIRCUITS AND SENSORS LOCATED IN OR ROUTED THROUGH STRUCTURES NOT SEISMICALLY QUALIFIED

It was verified that all circuits identified in response to Q421.018 are fail safe (i.e., loss of power results in the protective action). The main condenser vacuum, main steamline pressure, and TSV and TCV circuits were traced. Isolation between faults, which could occur in non-seismic areas, and the protection system is provided in one of two ways: 1) for analog signals, isolation is provided using several stages of relay coil-to-contact isolation between the trip unit outputs and protection system actuation logic. In addition, each cable is run in a separate grounded conduit from the sensor to the protection system cabinets. 2) for digital signals (e.g., limit switch position), isolation is provided using a combination of fuses, circuit breakers, and coil to contact isolation. In addition, for the TSV and TCV scram signals, diverse (backup) scram signals are provided. This design is acceptable to the staff.

STATUS:

This item will be closed. No additional information is required.

Agenda Item H:

HIGH PRESSURE/LOW PRESSURE SYSTEM INTERLOCKS

The control circuits for valves F053A&B were reviewed. Two-out-of-two reactor low pressure permissive logic must be satisfied in order to open each of the valves. The control circuits for valves E12-F053A&B, F006A&B, F008, and F009 were reviewed concerning operation from the remote shutdown panels. The low reactor pressure permissive interlock function is bypassed for these valves upon transfer to the shutdown panels. The valves cannot open upon transfer to the shutdown panels due to mis-positioned control switches because 3-position spring return to center (neutral position) control switches are used. This resolves staff concerns regarding inadvertent valve operation upon transfer to the remote shutdown panels. The staff is still reviewing the River Bend design regarding bypassing the high pressure/low pressure interlock function at the remote shutdown panels.

STATUS:

This item is still under review. GSU must submit the remote shutdown system electrical elementary/schematic diagrams showing use of the "spring return to center" control switches.

Agenda Item I:

TEMPERATURE EFFECTS ON LEVEL MEASUREMENTS

GSU will provide documentation of the following items: 1) the vessel level instrument sensing lines at RBS are routed such that the vertical drop of the reference and variable legs inside the drywell are as close as practicable in order to minimize density errors caused by high drywell temperatures; 2) an analysis was performed which shows that level instrument errors caused by high drywell temperatures are conservative, i.e., the indicated level is lower than the actual level in the vessel (the only exception to this is from the fuel zone range level instruments); and 3) that the operating procedures contain guidance for the operators to ascertain vessel level given high drywell temperatures which could cause flashings/boiloff of the reference leg.

STATUS:

This item will be closed following documentation of the information identified above.

Agenda Item J:

END OF CYCLE RECIRCULATION PUMP TRIP

The EOC RPT circuitry was traced from the RPS schematic/elementary diagrams. A 2-out-of-2 logic is used to bypass each logic division (4 transmitters total; 2 logic divisions, either division will trip both recirculation pumps). Turbine first stage pressure is indicated on meters located on the individual trip unit modules in cabinets HP13-691,2,3,&4 in the control room. GSU indicated that these meters can be used to perform channel checks. In addition, it was verified that control room annunciation is provided when either logic division is bypassed (i.e., when the 2-out-of-2 bypass logic is satisfied). Also, bypass status lights are provided on HP13-691,2,3,&4. SER Section 7.6.2.4 will be revised to reflect this design.

STATUS:

This item will be closed pending receipt of revised electrical schematic/elementary diagrams of the EOC RPT function.

Agenda Item K:

STANDBY LIQUID CONTROL SYSTEM

The SLCS elementary diagrams showing the interlock of concern (i.e., the SLCS pump suction valves will not open if test valve C41-F031 is open) were reviewed. C41-F031 is opened monthly to perform testing of the SLCS pumps. The staff indicated that inoperable status indication

should be provided in the control room when valve C41-F031 is open.

STATUS:

GSU will discuss this concern with GE before taking a position. Possible options discussed at the meeting include removing the interlock (if SLCS performance is not degraded) or providing inoperable status indication using spare limit switch contacts. This item remains open.

Agenda Item L:

RPS POWER SUPPLY PROTECTION

GSU will provide revised drawings 762E427AA (Sheets 1 thru 4) and 944E981. The staff questioned GSU regarding precautions taken to ensure that the voltage supplied to the RPS scram pilot valve solenoids is not degraded due to voltage drops in the cables from the RPS buses to the solenoids. A degraded voltage condition during startup testing at Grand Gulf resulted in several scram pilot valves sticking in the energized/closed (non-safe) position when the associated solenoids were de-energized. Specifically, low voltage due to insufficient cable sizing caused "chattering" of the solenoid core internals, resulting in subsequent overheating and failure of the solenoids. GSU provided the staff with a portion

of the GE design spec data sheet which sets forth the procedure for establishing electrical protection assembly (EPA) overvoltage, undervoltage, and underfrequency setpoints. This procedure requires that the EPA setpoints be established based on actual voltage measurements at the scram pilot valve solenoids, thus accounting for voltage drops from the power source to the loads that result from wiring and cabling impedance. This procedure will ensure adequate solenoid voltage (between 125 and 105 Vac), and is acceptable to the staff. GSU will document that the EPA setpoints at River Bend will be established in accordance with the GE spec (22A3771AG Rev. 4).

The staff expressed concern regarding the independence provided between redundant RPS divisions based on a diagram of the RPS which shows the neutral leads for scram pilot valve "A" solenoids (powered from RPS bus A) and "B" solenoids (powered from RPS bus B) electrically connected. GSU, however, indicated that the neutral leads are not connected, and that the wiring for each redundant division is routed in separate conduit from the control room to the termination boxes at the hydraulic control units (HCU) for each rod group. This arrangement appears to be acceptable to the staff. Separation between redundant RPS divisions (as well as ESF divisions) will be reviewed during the ICSB site visit scheduled for October 1984. GE indicated that an electrical fault (e.g., short circuit)

at a HCU will not prevent a reactor scram provided that the RPS scram logic and contactors (located in the control room) function properly. The RPS logic channels and both the "A" solenoids and "B" solenoids for each rod group are powered from separately fused circuits (5 amp fuses for the logic circuits and 15 amp slow blow fuses for the solenoids). The logic and solenoids, however, are supplied from the same distribution breakers (CB2A and CB8A from RPS bus A; CB2B and CB8B from RPS bus B). These are 100 amp circuit breakers.

During a drawing review of the RPS distribution system, the staff asked GSU/GE to identify the safety related and non-safety related portions of the system. The EPAs and all circuitry downstream of the RPS bus distribution breakers were identified as safety related. The motor-generator (MG) sets, RPS distribution panels (P001 and P002), and distribution breakers (including CB2A&B and CB8A&B) were identified as non-safety related. The EPAs are located between the MG sets and the distribution panels. The staff expressed concern at the meeting that all components downstream of the EPAs are not safety related. GSU/GE indicated that the distribution panels and breakers are not seismically qualified, but that seismic qualification for these components was not necessary because the RPS is

designed to "fail-safe" (i.e., cause reactor scram) on a loss of power.

Subsequent staff review of this design has raised several additional concerns regarding the non-safety related distribution panels and breakers. The staff requires (10 CFR 50, App. A, GDC 2, and IEEE Std. 279) that protection system components be designed, installed, and maintained as safety related. Section 2.1 (Equipment Classification and Vendor Interface of Reactor Trip System Components) of Generic Letter 83-28 (Required Actions Based on Generic Implications of Salem ATWS Events; NUREG-1000 Vol. 2) requires that licensees and applicants confirm that all components whose functioning is required to trip (scram) the reactor are identified as safety related on documents, procedures, and information handling systems used in the plant to control safety related activities, including maintenance, work orders, and parts replacement. In response to this item (Letter RBG-18,521 dated August 3, 1984), GSU stated that the River Bend station's equipment classification program will ensure that all components of safety related systems necessary for accomplishing required safety functions are identified as safety related on documents, procedures, and information handling systems used in the plant to control safety related activities. Since the distribution

panels and breakers have been identified as non-safety related, the staff is concerned that they will not receive the same treatment as safety related components (e.g., during maintenance activities), which could lead to degradation of RPS performance. Furthermore, since these non-safety related components are located downstream of the EPAs, the staff is concerned that the function of the EPAs (i.e., to ensure that adequate voltage is supplied to RPS components) could be compromised.

GSU should provide adequate justification for using non-safety related equipment in the RPS downstream of the EPAs, or design, install, and classify these components as safety related. If justification for the existing design is provided, it should be demonstrated that all RPS bus loads are not required during or following any design basis event, in particular seismic events. Since the distribution panels and breakers are not seismically qualified, the staff is concerned that: 1) power cannot be restored to the RPS buses following a seismic event, and 2) faults resulting from a seismic event could degrade the RPS (if the MG sets remain on line during the event).

The adequacy of the separation provided between the safety related RPS alternate power supplies (Division 1 ESF bus 1EHS*MCC14A and

Division ? ESF bus 1EHS*MCC14B) and the non-safety related distribution panels is being reviewed by the Power Systems Branch (PSB).

STATUS:

Documentation of the information identified above is necessary to resolve this item.

Agenda Item M:

REACTOR MODE SWITCH

GSU stated that the existing mode switch will be replaced with the upgraded mode switch. A copy of the GE FDI issued to GSU (instructions for replacement of the mode switch) was provided to the staff (FDI #MCUQ dated April 13, 1984). The FDI does not include instructions for testing of the new switch. GSU stated that following installation of the new mode switch, the switch would be fully tested as part of the preoperational test program to ensure tha. it functions properly. However, during functional testing of the upgraded mode switch for Susquehanna Unit 1, problems were encountered regarding proper mode switch operation that resulted in further modifications to the switch. These modifications included cam identification markings, an improved torsion

bar/shaft, milled cam surfaces, and fixing external contacts in place with epoxy. Subsequently, the switch was tested successfully, and it was determined that the re-modified mode switch would function properly for up to 1000 cycles.

STATUS:

This item can be closed pending documentation from GSU that the new mode switch has been installed and successfully tested. GSU should confirm that the additional mode switch modifications found necessary as a result of functional testing performed on the Susquehanna mode switch, have been made to the River Bend mode switch.

Agenda Item N:

ADS ACTUATION

STATUS:

This item can be closed pending receipt of electrical schematic/elementary diagrams showing that the ADS logic has been modified to bypass the high drywell pressure initiation signals following a sustained reactor vessel low water level signal, and to include a manual switch that may be used to inhibit ADS actuation if necessary.

Agenda Item O:

ENGINEERED SAFETY FEATURES RESET CONTROLS

The staff reviewed revised NS^4 elementary/schematic diagrams showing that reactor water sample valves B33-F019 & B33-F020 will not revert to the open position upon a reset. Subsequent operator action is required to open the valves.

STATUS:

This item can be closed pending submittal of the revised drawings (for all modified valves) on the docket.

Agenda Item P:

REACTOR CORE ISOLATION COOLING SYSTEM

A recent concern raised regarding initiation of HPCI systems for BWRs was thought to be potentially applicable to RCIC systems as well. Specifically, in some HPCI designs the initiation signal is not sealed in. In order to inject HPCI flow into the vessel, the HPCI turbine steam supply valve, turbine stop (trip & throttle) valve, and HPCI pump discharge valve must open. The discharge valve is interlocked to prevent it from opening until both the steam supply valve and stop valve have started to open. At one BWR, the time required for the steam supply valve to move far enough to satisfy

this interlock was 13 seconds, thus requiring the initiation signal to persist for that amount of time. Otherwise, HPCI flow to the vessel would be prevented. This design does not satisfy the "go-to-completion" criteria (Section 4.16) of IEEE Std. 279-1971.

Our review of the RCIC design indicates that this concern may not be applicable to River Bend. This is because 1) the turbine stop valve is normally open, thus this portion of the interlock is satisfied (when this valve is closed, which will prevent RCIC system operation, system level inoperable status annunciation is provided in the control room); and 2) the actuation logic for the steam supply valve (E51-F045) is sealed in at the motor control center (MCC). Thus once the steam supply valve moves far enough to satisfy the interlock, the pump discharge valve (E51-F013) will open and RCIC flow will be initiated.

It is our understanding that the time required for the steam supply valve to move far enough to satisfy the interlock is roughly 2 seconds. For automatic initiation of RCIC to occur (i.e., go to completion), the initiation signal (reactor vessel low level, level 2) would have to persist for this amount of time. If the automatic initiation signal does not persist (i.e., reactor vessel

water level returns to above the RCIC initiation setpoint), then RCIC is not needed. However, for system level manual initiation of RCIC, this means that the operator would have to keep the RCIC manual initiation pushbutton switch depressed for the 2 second interval required to satisfy the interlock. The staff believes that an immediate seal in of the RCIC initiation signal (for automatic as well as manual initiation) is more desirable. However, it is also our understanding that the contacts providing the interlock function (on steam supply valve E51-F045 position) may be from the same limit switch providing valve position indication in the control room. If so, the operator may be able to determine when the interlock has been satisfied by observing the valve position indication status lights for E51-F045. The staff has determined that this design may be acceptable for the interim provided that 1) the River Bend procedures contain the appropriate precautions alerting the operators to keep the RCIC initiation pushbutton switch depressed until the interlock is satisfied, thus assuring that RCIC initiation will go to completion, and 2) that the operators are trained accordingly.

The staff is currently reviewing this concern generically for operating reactors. The River Bend RCIC design will be subject to any design modifications found necessary as a result of this review. It should be noted that other RCIC system valves (e.g., E51-F049, F010, F022, and F046) are actuated by the same initiation relays (K2 and K3) which are not sealed in. The staff is currently reviewing the acceptability of this design.

GSU indicated that the RCIC system has been modified to automatically restart if vessel level should decrease to the RCIC initiation setpoint (level 2) following termination at the high level setpoint (level 8). This satisfies the position of TMI Action Plan Item II.K.3.13. GSU also indicated that the RCIC system isolation logic has been modified to include Class 1E time delay relays to ensure that isolation is based on continuous high steam flow, thus preventing pressure spikes resulting from RCIC initiation from causing inadvertent isolation. This satisfies the position of TMI Action Plan Item II.K.3.15.

STATUS:

This item can be closed pending receipt of revised RCIC system electrical schematic/elementary diagrams and completion of the staff's review concerning RCIC system level manual initiation,

and RCIC system valves actuated by relays K2 and K3.

Agenda Item Q:

ELECTRICAL, INSTRUMENTATION, AND CONTROL SYSTEM DIAGRAMS

In order to resolve the majority of the Chapter 7 confirmatory items, revised electrical schematic/elementary diagrams are required. The diagrams submitted prior to the ICSB Chapter 7 OL review are, in general, outdated and do not accurately reflect the as installed River Bend design. GSU has agreed to provide a complete set of revised updated diagrams for the River Bend station.

STATUS:

This item will be closed pending receipt of the revised diagrams.

Agenda Item R:

POST-ACCIDENT MONITORING INSTRUMENTATION

GSU has provided information regarding compliance with the guidance of R.G. 1.97 Rev. 2 for River Bend in FSAR Section 1.8 and FSAR Tables 7.5-1 and 7.5-2. This information is currently being reviewed by our contractor (INEL). Based on the results of the INEL review, the staff will prepare an interim report addressing the acceptability of any deviations from R.G. 1.97 Rev. 2. The interim report will

then be sent to GSU for comment prior to issuance of the final SER. The interim report is tentatively scheduled to be issued in November, 1984.

STATUS:

The staff's scheduled completion date for the R.G. 1.97 Rev. 2 review for River Bend is March 1985.

Agenda Item S:

INSTRUMENTATION SETPOINTS

GSU is an active member of the Licensing Review Group (LRG) on instrument setpoint methodology formed to resolve staff concerns regarding the methodology used to establish protection system setpoints. The LRG has submitted to the staff (letter dated June 29, 1984) a program plan, including schedule, for resolution of these concerns. The program plan and attendant schedule have been approved by the staff. The staff is currently awaiting submittals from the LRG. The LRG effort will include all NSSS and BOP setpoints included in the transient and accident analyses (from FSAR Chapters 6 and 15). GSU must submit a letter on the docket committing to the program plan.

STATUS:

This item can be closed pending completion of the staff's review and approval of the setpoint methodology for River Bend.

Agenda Item T:

CAPABILITY FOR SAFE SHUTDOWN FOLLOWING THE LOSS OF A BUS SUPPLYING POWER TO INSTRUMENTS AND CONTROLS

Agenda Item U:

HIGH ENERGY LINE BREAKS AND CONSEQUENTIAL CONTROL SYSTEMS FAILURES

Agenda Item V:

MULTIPLE CONTROL SYSTEMS FAILURES

STATUS:

GSU is currently working on analyses to be provided to the staff addressing these three items (T, U, and V).

Agenda Item W:

PHYSICAL SEPARATION OF REDUNDANT RPS AND ESF SYSTEM CHANNELS

As part of the ICSB Chapter 7 (Instrumentation and Controls) review, a site visit is conducted to review the separation provided between redundant Class 1E circuits, and between Class 1E and non-Class 1E circuits within instrument cabinets. The River Bend site visit has been scheduled for October 23, 24, and 25, 1984. The ICSB will provide a list of items to be covered during the site visit. A trip report will be issued following the visit which will document the results of the onsite review, including the adequacy of the physical separation of instrument cables within control room cabinets/panels.

PROTECTION SYSTEM SURVEILLANCE TESTING

This item is addressed in Section 7.2.2.10 of the River Bend SER, but was not an item on the meeting agenda and was not discussed. It is listed in the SER (Section 7.1.4.3) as a technical specification item, and is mentioned here because of its overall importance. The SER states that the staff will verify that the Technical Specifications include appropriate surveillance requirements to require periodic (on-line) demonstration of the operability of the RPS and ESF instrument channels, logic, and actuation devices, and that the

staff will also verify that the surveillance test procedures conform to IEEE 338-1977 and R.G. 1.118 regarding the use of jumpers, lifting leads, pulling fuses, and racking out breakers during testing.

The staff position regarding lifting leads and pulling fuses is that 1) lifting leads and pulling fuses is not allowed during power operation, unless adequately justified; and 2) testing must be performed after the system/circuitry has been returned to normal which positively confirms that lifted leads have been correctly reconnected/ fuses have been replaced. Further information regarding the use of lifted leads and jumpers during maintenance or surveillance testing is provided in IE Information Notice 84-37. GSU will be required to identify each instance where leads are lifted, jumpers installed, or fuses pulled during testing. This information will not be available from the applicant until the surveillance and maintenance procedures are finalized, and will be reviewed as part of the ICSB technical specification review for River Bend.

ENCLOSURE 2

LIST OF ATTENDEES - MEETING OF AUGUST 7, 8, & 9, 1984 TO RESOLVE CHAPTER 7 OPEN & CONFIRMATORY ITEMS

NRC

Joe Joyce	DSI/ICSB
Rick Kendall	DSI/ICSB

GSU

John Price	Nuclear Licensing
David Robinson*	Nuclear Plant Engineering
Steve Davis*	Nuclear Plant Engineering

SWEC

Leif Dietrich*	Licensing
Pranab Guha*	Controls
Clem Littleton*	Controls

GE

George Darmohray	Licensing	R. Luoma**	C&IPDO
Arnold Koslow	C&IPDO	W. Jones**	C&IPDO
Cindy Tully	Licensing	L. Podrask**	C&IPDO
Paul Kinder	Licensing	Dave Bitter**	S&LO
Jim Kasik*	Licensing	Dave Reigel**	SED
Rob Schroeder	C&IPDO	John Leatherman**	S&LO
Bill Boehm**	C&IPDO	Monty Ross**	C&IPDO
M. Patel	C&IPDO	J. Quintel**	NTPSO
O. Foster**	SED	B. Simon**	C&IPDO
R. Siemer**	SED	S. Tang**	SED
K. Henrichsen**	C&IPDO	I. Klepper**	C&IPDO
N. Stephan**	SED	R. Kern**	C&IPDO

* August 7 & 8 Only
** August 8 Only