NEXTera ENERGY POINT BEACH

June 17, 2009

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
Renewed License Nos. DPR-24 and DPR-27

License Amendment Request 261 Supplement 1
Extended Power Uprate

References:
(1) FPL Energy Point Beach, LLC, Letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)
(2) NRC to NextEra Energy Point Beach, LLC, Draft Acceptance Review Questions on AFW Modification dated June 2, 2009 (ML091530604)

Pursuant to 10 CFR 50.90, NextEra Energy Point Beach, LLC (NextEra) hereby submits a supplement to License Amendment Request (LAR) 261 for Point Beach Nuclear Plant (PBNP) Units 1 and 2, respectively (Reference 1). This supplement provides responses to NRC questions transmitted on June 2, 2009 (Reference 2). This supplement also provides proposed Technical Specifications (TS) for the auxiliary feedwater pump suction transfer on suction pressure low setpoint and surveillance requirements (SR) for condensate storage tank level. These Technical Specification changes were identified as Regulatory Commitment 1 in Reference (1).

NextEra requests approval of this supplement on the same schedule as LAR 261. The supplement will be implemented on the same schedule as that of LAR 261. The new condensate storage tank surveillance requirements are based upon providing an adequate supply of water to remove decay heat at an EPU licensed core power of 1800 MWt. Therefore, the new requirements bound those required for current licensed core power. Accordingly, the condensate storage tank surveillance requirements will be implemented on both units at the same time.

Enclosure 1 provides the NextEra responses to the NRC staff's questions transmitted in Reference (2).

Enclosure 2 contains NexEra's evaluation of the proposed TS changes, including a determination that the proposed TS changes involve no significant hazards as defined in 10 CFR 50.92 and an evaluation that concludes that this change satisfies the criteria of 10 CFR 51.22 for categorical exclusion from the requirements for an environmental assessment. The determination that the proposed TS changes involve no significant hazards does not negatively impact the determination presented in LAR 261 (Reference 1).

Enclosure 3 provides a markup of proposed TS changes. Enclosure 4 provides a markup of proposed TS Bases changes. The Bases changes are provided for information only. Staff approval is not being requested.

Enclosure 5 contains drawings to support the response to Question 5 of Reference 2.

Enclosure 6 contains drawings to support the response to Question 7 of Reference 2.

The responses to several of the Reference (2) questions provide a summary in lieu of the actual calculations performed. As discussed with the NRC staff, NextEra believes that the best way to meet NRC needs for review of the calculations, given the voluminous nature of some, as well as other detailed design information for the auxiliary feedwater system, is to schedule an onsite audit. As part of that audit, NextEra would make available the calculations, drawings and assessments to the NRC, and would provide subject matter experts to facilitate the staff's review. NextEra could also support a field walkdown if an onsite audit is conducted by the NRC.

<u>Summary of Regulatory Commitments</u>

Enclosures 2, 3 and 4 of this letter fulfill Commitment 1 of Reference (1).

Additionally, this letter contains the following new Regulatory Commitments (numbered in series with commitments from Reference (1), Attachment 4) in response to Question 9 of Reference (2):

23. The scheduling of Motor-Driven Auxiliary Feedwater (MDAFW) pump replacement activities requiring entry into Technical Specification Action Conditions (TSACs) for the existing AFW system (i.e., tie-ins) will be avoided during periods when stressed grid conditions or severe weather is occurring or is forecasted. Adverse weather contingency procedures will be enacted for meteorological conditions that could potentially affect offsite power availability.

24. Prior to and during the MDAFW pump replacement activities requiring entry into TSACs for the existing AFW system (i.e., tie-ins), the Transmission System Operator will be contacted once per day to ensure no significant grid perturbations are expected.

25. During MDAFW pump replacement activities requiring entry into TSACs for the existing AFW system (i.e., tie-ins), component testing or maintenance of safety systems and important non-safety equipment, including offsite power systems (auxiliary and startup transformers), that increase the likelihood of a plant transient or loss of offsite power will be avoided.

The above one-time commitments will be fulfilled upon completion of the new auxiliary feedwater system installation.

In accordance with 10 CFR 50.91, a copy of this supplement has been provided to the designated State of Wisconsin Official. The proposed TS changes have been reviewed by the Plant Operations Review Committee.

Questions regarding the information in this submittal should be directed to Mr. Steve Hale, Point Beach Extended Power Uprate Licensing Manager, at 561/904-3205.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on June 17, 2009

Very truly yours,

NextEra Energy Point Beach, LLC

Larry Meyer
Site Vice President

Enclosures

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

ENCLOSURE 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1

RESPONSE TO STAFF QUESTIONS

Via an electronic mail dated June 2, 2009 (Reference 1), the NRC staff determined that additional information was required to enable the staff's review of the License Amendment Request 261 (LAR 261), Extended Power Uprate (Reference 2). The following information is provided by NextEra Energy Point Beach, LLC (NextEra) in response to the NRC staff's draft questions.

Question 1

Provide a detailed summary of the calculations and supporting documentation for the motor-driven auxiliary feedwater (MDAFW) design change such as the voltage drop, short circuit, switchgear ratings, breaker ratings, cable ampacity/design rating, and protective coordination. Also, provide details of the maximum pump and motor design load requirements assuming a single failure of the turbine-driven AFW pump including its nameplate ratings.

NextEra Response

NextEra performed electrical distribution system analyses and engineering evaluations to evaluate voltage drop, short circuit, switchgear ratings, and breaker ratings using the Electrical Transient Analysis Program (ETAP) to address the overall impact of the Extended Power Uprate (EPU), including the installation of the new motor-driven auxiliary feedwater (MDAFW) pumps, in Section 2.3.3, Attachment 5, to LAR 261. Cable ampacity/design ratings and protective coordination were also addressed. These calculations considered the maximum MDAFW pump and motor design load requirements as a result of an assumed single failure of the unit's turbine-driven auxiliary feedwater (TDAFW) pump, which will be the worst case electrical loading condition for the AFW system. The new 4160 V MDAFW motors have motor nameplate ratings of 350 hp, 4160 V, full load current 43 A and locked rotor current 558% (240 A) of full load current. The maximum running load will be the nameplate rating of 350 hp which was used in the calculations.

As the modified AFW system design evolved from replacing the existing MDAFW pumps with new pumps to installing new pumps in addition to the existing pumps for improved reliability and operational flexibility, changes were made to the final design as submitted in LAR 261. These changes included powering the new MDAFW pumps from different safety-related 4160 V buses, and locating the new pumps in the primary auxiliary building resulting in longer power cable lengths.

When the EPU auxiliary power system calculations were performed, the two existing shared MDAFW pumps and motors, powered from the 480 V buses, were to be replaced by two new unit-specific 4160 V MDAFW pumps fed from the same safety-related division as the existing motors (Bus 1A-05 and 2A-06). Additionally, the new pumps were to be physically located where the existing pumps are presently installed. The Train A MDAFW pump was to be moved from 480 V bus 1B-03 to 4160 V bus 1A-05 and the Train B MDAFW pump was to be moved from 480 V bus 2B-04 to 4160 V bus 2A-06. The operation of the new pumps would be the same as the existing pumps.

The planned approach now includes adding the two new 4160 V MDAFW pumps with the Unit 1 pump fed from Bus 1A-06 and the Unit 2 pump fed from bus 2A-05 along with keeping the two existing motor-driven pumps as Standby Steam Generator pumps (SSGs). These pumps will be used for startup, shutdown and as backup auxiliary feedwater pumps. As stated in Attachment 5 of LAR 261, LR Section 2.5.4.5, Auxiliary Feedwater, the SSG trains (including valves) will not have automatic start signals. In addition, the automatic AFW initiation signal will automatically trip the SSGs. This automatic trip signal will be safety-related. Therefore, the SSGs are not part of the diesel generator post accident load.

The new 4160 V pumps and motors will be located in the primary auxiliary building in the boric acid evaporator rooms. The new 4160 V pumps and motors fulfill the safety-related functions for the various design basis accidents. The new 4160 V motors and pumps are each dedicated to one unit. The Unit 1 MDAFW pump is used for Unit 1 design basis events and the Unit 2 MDAFW pump is used for Unit 2 design basis events. The two existing motor-driven pumps will be used for startup, shutdown, and beyond design basis scenarios as manually-operated backup auxiliary feedwater pumps should the 4160 V motor-driven pump and TDAFW pump fail to operate as an overall plant safety improvement.

Summaries of these calculations are provided in this response. The calculation summaries provided below address the changes.

Voltage Drop

The impact of the above change for the 4160 V MDAFW pumps is the increased voltage drop to the motor terminal due to the increased cable length between the 4160 V bus and the motor. For each motor, the estimated increase in cable length from what was evaluated in the original EPU calculations is 150 feet. For conservatism, the analysis used an additional 200 feet of cable for each motor.

The most limiting motor terminal voltage for steady-state running voltage and motor starting voltage were examined for each new MDAFW pump. The voltage drop from the 4160 V bus to the motor was recalculated using the new total cable length.

The resultant voltage drop is summarized below:

	MDAFW pump	Voltage Drop	New Motor Terminal Voltage	Acceptable (>3328 V)
Steady State Voltage	A MDAFW pump	4 V	3919 V	YES
Steady State Voltage	B MDAFW pump	7.4 V	3919.6 V	YES
Motor Starting Voltage	A MDAFW pump	12 V	3829 V	YES
Motor Starting Voltage	B MDAFW pump	30.7 V	3809.3 V	YES

The voltage drop performance when the Train B MDAFW pump motor is fed from 1A-06 instead of 2A-06 will be very similar to the calculated values above for 2A-06, because the loading and transformer impedances are nearly identical from Unit 2 to Unit 1. Based on the above, the new motor-terminal voltage is well above the acceptance criteria of 3328 V and is therefore acceptable.

As noted above, the existing MDAFW pumps are to become startup, shutdown and backup auxiliary feedwater pumps (Standby Steam Generator pumps [SSGs]). The electrical power configuration to these pumps is exactly the same as they exist in the plant today. The calculation of record for the existing configuration shows that these motor-driven pumps have adequate motor-terminal voltage. The minor changes to the safety-related portion of the AC system will not have a significant impact on these calculated results.

<u>Short Circuit Impacts and Equipment Ratings</u>

The impact of the new MDAFW pumps' location and changed 4160 V bus source for the 4160 V motors is to reduce the fault contribution for buses 1A-05 and 2A-06 and increase the fault contribution for buses 1A-06 and 2A-05. This impact is evaluated by adding the full short circuit contribution of the 4160 V motor to calculated available short circuit current at buses 1A-06 and 2A-05 in Calculation 2008-0026 and ignoring the reduction of fault current contribution for the original planned 4160 V buses 1A-05 and 2A-06.

The impact of the motors being moved is an increase of 240 A (sym) or 240 A * 1.6 = 384 A (Asym) locked rotor current (LRC) of short circuit current to buses 1A-06 and 2A-05. This is still within the short circuit ratings of each bus. The impact to the downstream 480 V buses (1B-04 and 2B-03) is negligible since the 1X-14 and 2X-13 transformers limit the fault current and this is a small portion of the fault current available at the 4160 V buses (1A-06 and 2A-05). The impact of the addition of the 4160 V MDAFW was originally presented in Table 2.3.3-6, 4160 V Switchgear Bus and Circuit Breaker Short Circuit Current, LR Section 2.3.3 of Attachment 5 of LAR 261. The resulting short circuit fault currents and associated bus and breaker ratings are shown in the table below and supersedes Table 2.3.3-6, Section 2.3.3, Attachment 5 of

LAR 261. The table demonstrates that the 4160 V switchgear and breaker ratings exceed the available short circuit fault currents.

4160 V Safety Bus	Worst case momentary SC from Calc 2008-0026 (Asym Amps)	Impact of 4160 V MDAFW pump move	New worst case momentary SC (Asym Amps)	Breaker and Bus Momentary Rating (Asym Amps)	Worst case interrupting SC from Calc 2008-0026 (Sym Amps)	Impact of 4160 V MDAFW pump move	New worst case interrupting SC (Sym Amps)	Breaker Interrupting Rating @ Maximum Voltage
1A-05	50,917 A (Case 20)	N/A	50,917 A	84,100 A and 80,000 A	32,669 A (Case 20)	N/A	32,669 A	49,500 A
1A-06	55,668 A (Case 17)	+ 384 A	56,052 A	80,000 A	35,216 A (Case 17)	+ 240 A	35,456 A	42,400 A
2A-05	50,292 A (Case 21)	+ 384 A	50,676 A	84,100 A and 80,000 A	32,246 A (case 21)	+ 240 A	32,486 A	49,500 A
2A-06	56,671 A (Case 19)	N/A	56,671 A	80,000 A	35,565 A (Case 19)	N/A	35,565 A	42,400 A

Cable Ampacity/Design Rating

Power cables connected between the new MDAFW pumps and their sources of electric power, 4160 V switchgear, are sized and protected consistent with PBNP FSAR, Section 8.0.1, Principal Design Criteria. The FSAR states that electrical cables are sized, and protected against overload in accordance with the National Electrical Code. A calculation was developed to evaluate the ampacity of cables supporting the new 4160 V MDAFW pumps. The 3-1/C No. 4/0-AWG, 8 kV copper cables that provide power to these pump motors are routed primarily through 4-inch conduit via several different fire areas. The calculation demonstrates that when installed in conduit, the derated cable ampacity, taking into consideration ambient room temperatures, external fire wrap barriers and internal fire stops, substantially exceeds the required ampacity of the motor at full load, including margin required to account for overcurrent protection devices. The calculated cable ampacity indicates an ampacity of 218 A, which is well in excess of the pump motors' required ampacity.

Protective Coordination

Protection of the new MDAFW pumps against motor overload is provided via protective relays installed in their 4160 V switchgear. Each switchgear breaker includes instantaneous and inverse time over current protection, as well as ground fault protection. In addition to the protection provided, the switchgear is further protected by a bus differential protection scheme. NextEra evaluated the electrical protection afforded the new MDAFW pumps. The results of the calculation show that both the motors and their power supply cables are protected against both overload and short circuit and that the MDAFW pump breakers properly coordinate with their upstream breakers.

Question 2

Describe the impact of the electrical design change on the Emergency Diesel Generator (EDG) and provide supporting calculations to show the electrical loads being added including maximum loading on the EDGs and the remaining margins available, changes required for the EDG sequencer, dynamic analysis to show motor starting/running conditions within the EDG design capabilities, and EDG fuel oil requirements.

NextEra Response

The evaluation of the EDGs for the EPU for PBNP is summarized in LAR 261, Attachment 5, Sections 2.3.3 and 2.5.7. The evaluation of diesel loading in Section 2.3.3, which included the addition of the new MDAFW pumps, concluded that the Train A EDGs will continue to operate within their 2000 hour rating of 2850 kW for the worst case design basis accident EDG electrical loading condition, and that the Train B EDGs will continue to operate within their 200 hour rating of 2951 kW for up to 24 hours and then remain within the 2000 hour rating of 2848 kW after that for the worst case design basis accident EDG electrical loading condition.

Recognizing that the EDG electrical loading assessment presented in LAR 261, Attachment 5, Section 2.3.3, discussed above is strictly a bounding assessment, additional calculations were performed to address EDG loading margin, EDG sequencer changes, and dynamic analysis.

Summaries of these calculations are provided in this response.

Maximum Loading On The EDGs:

In order to address EDG load margin as a result of the EPU, the evaluation used the current worst case design basis accident electrical loading as a starting point. For PBNP, the worst case electrical loading is based on a LOCA with loss of offsite power (LOOP) on one unit, and LOOP on the other unit in a cold shutdown condition.

These worst case loads were then adjusted to include new loading as a result of modifications associated with the EPU and AST LARs (LAR 261 and 241, respectively). These new loadings included the addition of the new MDAFW Pumps, automatic loading of the Control Room Ventilation System (AST LAR modification), more refined assessment of some of the existing loads, and removal of certain non-essential loads from the B Train buses.

The results of the analysis for the A and B Train Diesel loading are presented below:

	Train A		Train B	
	G-01	G-02	G-03	G-04
Worst Case Load	2801 kW	2800 kW	2877 kW	2874 kW
2000-hr rating	2850 kW	2850 kW	2848 kW	2848 kW
200-hr rating	-	-	2951 kW	2951 kW
Margin 2000-hr rating	49 kW	50 kW	-	-
Margin 200-hr rating	-	-	74 kW	77 kW

Based on the above, the conclusions reached in LAR 261, Attachment 5, Section 2.3.3 remain valid.

<u>Dynamic Loading Impact of the EPU and AST Modifications on the EDGs:</u>

There are essentially four start scenarios of a MDAFW pump on the respective EDG. One is sequencer based (LOOP/ Safety Injection (SI)) and occurs 10.5 seconds after the EDG breaker closes. The other three are process based (i.e., MDAFW pump starts when a process driven signal is received), and can occur anytime after the EDG output breaker has closed in on the bus (assumes LOOP has already occurred). Specifically:

- SI signal on associated unit (sequencer)
- Steam Generator low-low level (process)
- Loss of both 4.16kV busses supplying the Main Feedwater Pumps for associated unit (process)
- ATWS Mitigation System Activation Signal (AMSAC) on associated unit (process)

The four Control Room Ventilation Fans will auto-start on the EDGs upon receipt of a Containment Isolation signal or High Radiation signal.

For conservatism (analysis of worst case results) the MDAFW pump loads and Control Room Ventilation fan loads were evaluated to load onto their respective EDGs upon breaker closure. A second case MDAFW pump start impact was also evaluated for the EDGs and was identified at 25.75 seconds; however, MDAFW pump start time at EDG breaker closure remains the bounding case.

The following was evaluated in regards to EDG dynamic impacts:

- Worst Case/Maximum EDG Voltage Dip
- Evaluation of Motor Acceleration Times
- Generator Frequency Response
- Evaluation of 480V Switchgear (LOV) Relays
- Voltage Regulator Response/Impact Assessment
- EDG Tuning And Parameter Validation
- ETAP Voltage and Frequency Evaluation

The following discussion centers on the A Train EDGs (G01 and G02) and bound the performance associated with B Train EDGs (G03 and G04).

1. Worst Case/Maximum EDG Voltage Dip During MDAFWP Start

   The greatest impact to EDG voltage response is a MDAFW pump start at the time of EDG breaker closure (MDAFW pump start is concurrent with starts of the associated SI Pump, Component Cooling Water (CCW) Pump and Motor Control Center (MCC) Loads).The resulting worst case calculated transient voltage dip is approximately 48%. Previously this was approximately 54%. Based on ETAP results, this voltage dip has no adverse affect on the ability of G01 or G02 to accept and accelerate all auto-connected loads.

2. Evaluation of Motor Acceleration Times

   Motor acceleration times do increase as a result of the EPU and AST modifications; however, all remain below the established acceptance criteria. The most significant increase in motor acceleration time is associated with the new MDAFW pump, which is due to a worst case conservative lumped load of MDAFW pump/SI/CCW/MCC loads at EDG breaker closure. The increase is from 2.72 seconds to 3.84 seconds with an acceptance criteria of <5.0 seconds. Remaining margin is 1.16 seconds.

3. Generator Frequency Response

   The transient frequency response of all four EDGs remains above 57 Hz at all times.

4. Evaluation of 480 V Switchgear Loss of Voltage (LOV) Relays:

   The A Train LOV relay signals are blocked upon EDG breaker closure; and therefore, remain unaffected by this change. The B Train LOV relays do not drop out during the EDG loading sequence.

5. Voltage Regulator Response/Impact Assessment

   The G01 and G02 EDG voltage regulator (with static exciter) will operate as intended during the worst case transient/momentary voltage dip since the source of excitation power comes from the generator exciter potential transformers and power current transformers. As long as there remains EDG armature voltage and current, the source of excitation will remain and the voltage regulator will demand full excitation until EDG voltage recovers. Voltage regulator performance associated with G03 and G04 EDGs is also acceptable, since EDG transient voltage dips remain above 75%.

6. EDG Tuning And Parameter Validation

   The EPU and AST modifications do not impact or modify any of the EDG governor, excitation system, or voltage regulator subsystems. Therefore, EDG tuning and parameter validation was not required to be performed.

7. ETAP Voltage and Frequency Evaluation

   ETAP results based on the proposed EPU and AST modifications were compared to the previous ETAP results. The EPU and AST modifications have a relatively minor impact on the transient response performance of the EDGs. In all cases, the EDGs are capable of recovering back to nominal voltage while starting and accelerating the auto-connected motors.

Remaining Margins Available

The primary EDG dynamic margin that can be quantified is motor acceleration margin (time to rated speed) as compared to established acceptance criteria. The most significant increase in motor acceleration time is associated with the new MDAFW pumps, which is due to a worst case conservative lumped load of the MDAFW pump/SI/CCW/MCC loads at EDG breaker closure. The increase is from 2.72 seconds to 3.84 seconds with an acceptance criteria of <5.0 seconds, resulting in a margin of 1.16 seconds.

Changes Required for the EDG Sequencer

The existing motor driven auxiliary feedwater pumps are to be renamed the Standby Steam Generator (SSG) Feedwater pumps. As described in LAR 261, Attachment 5, Section 2.5.4.5.2:

- "all AFW system automatic start signals on the SSG trains will be removed. Instead, all the controls for the SSGs and their associated valves will be limited to manual operation."
- "The SSG pumps will not be automatically loaded to the EDG on a loss of AC and, if running, will be stripped upon an AFW initiation signal or diesel safeguards sequence signal for the associated unit. This feature is used to control loading on the EDG and 480V buses and to prevent excess flow to a faulted steam generator..."

Thus, the SSG pumps will not be automatically started onto either off-site power supplies or on-site EDG power supplies. If they are already running, they will be stripped off the bus via tripping their power supply circuit breaker upon an AFW initiation signal or diesel safeguards sequence signal. In addition, LAR 261, Attachment 5, Section 2.5.4.5.2 states, "to prevent inadvertent starting of an SSG pump while the new MDAFW pumps are operating, restart of a tripped SSG pump requires administrative controls and manual action by the operator."

The existing MDAFW (designated SSG) pumps will retain their existing trips and sequence starts until the new pumps and Technical Specifications are approved and implemented. This means that for a period of time both sets of pumps will be capable of being connected to the PBNP power systems. Until they are made operable under the revised Technical Specifications, the new pump breakers will be racked out except for test purposes. Energization of the new MDAFW pumps (for test purposes) will be controlled under existing PBNP Technical Specifications.

As described in LAR 261, Attachment 5, Section 2.5.4.5.2:

"Following AFW system modification, the automatic initiation signals for the TDAFW and MDAFW pump systems will be:

- Low-low water level in either steam generator

- Loss of both 4.16 kV buses supplying the main feedwater pump motors
- AMSAC signal is generated on a loss of normal feedwater at power levels above approximately 40%, or
- Safety Injection sequence"

Thus, the new MDAFW pumps are added to the EDG sequencer.

No other physical changes are required to the EDG auto-connected load sequencer. The analysis demonstrates that the MDAFW pump can acceptably start anywhere in the EDG auto-connected load sequence from breaker closure to 25.75 seconds and still accelerate to rated speed.

The dynamic loading evaluation also demonstrates that the CR ventilation system fans can acceptably start at EDG breaker closure (worst case).

Although no EDG sequence limitations were identified for the EPU and AST modifications, specific EDG sequence allocation for some of the loads and/or events, which will remain bounded by these evaluation results, may be considered.

<u>EDG Fuel Oil Requirements</u>:

In the evaluation of the impact of the EPU on the Emergency Diesel Engine Fuel Oil Storage and Transfer System in Section 2.5.7, it is concluded that no changes are required to the system.

<u>Question 3</u>

The license amendment request (LAR) states that the existing 460 Vac MDAFW pump (250 HP) is redesignated as Standby Steam Generator pump. Explain whether this additional load has been accounted in the EDG load. If not, provide basis for not considering this load. Is this load required to be added to the EDGs by any operating procedures?

<u>NextEra Response</u>

The additional load for the existing 460 VAC MDAFW (250 hp) pumps, designated as the Standby Steam Generator (SSG) pumps, will not be included in the EDG accident loading. As stated in LAR 261 Section 2.5.4.5.2, the SSG pumps will not be automatically loaded to the EDG on a loss of AC power and, if running, the SSG pump(s) will be stripped upon an AFW initiation signal or diesel safeguards sequence signal for the associated unit. This feature is used to control loading on the EDG and 480 V buses and to prevent excess flow to a faulted steam generator in a main steam line break or steam generator tube rupture event.

AFW System automatic start signals on the SSG pumps will be removed and controls for the SSG pumps and their associated valves will be limited to manual operation. To prevent inadvertent starting of an SSG pump while the new MDAFW pumps are operating, restart of a tripped SSG pump requires administrative controls and manual operator action. The SSG pumps will not have a physical interlock to prevent starting and running the SSG pumps while the new MDAFW pumps are running. However, the administrative controls with manual operator action allow the SSG pumps to be credited in the probabilistic risk assessment (PRA) to improve the overall reliability of emergency feedwater to the steam generators for events beyond the design basis.

The SSG load will not be required to be added to the EDGs by operating procedures. The SSG pumps will not have a safety-related function, but will be used for normal plant startup and shutdown. The SSG pumps will remain powered from their present power sources. However, the AFW modification will automatically strip the SSG loads on an AFW initiation signal or diesel safeguards sequence signal, since the SSG loads are non-essential. Operation of the SSG pumps is not required for response to design basis plant transients or accidents.

Question 4

Describe the changes required for Section 3.8 of the Technical Specifications (TS) to verify the capability of the EDGs as a result of the design change. Explain why an EDG endurance and load margin test (24 –hr) is not performed to demonstrate the capability of the EDGs to carry the emergency loads above the continuous rating.

NextEra Response

The changes required for TS 3.8.1 are provided as Supplement 2 for LAR 261. The proposed changes will enable demonstration of the capability of the EDGs to carry emergency loads above the continuous rating.

Question 5

Provide an electrical one-line diagram and schematics that include the newly configured electrical design. Also, explain how the MDAFW cables are routed and how it meets the electrical separation and independence requirements.

NextEra Response

PBNP electrical three line diagrams E-11 Sheet 4 and E-2011 Sheet 3 are provided in Enclosure 5. These drawings illustrate the connections of MDAFW pumps 1P53 and 2P53 to their associated power supply switchgear, 1A06 and 2A05, respectively. Modification in-process revisions of schematic drawings representing the current state of the design for the Unit 2 MDAFW pump 2P-53, and Standby Steam Generator (SSG) pump P38B of Unit 2 Trains A and B, respectively, are also provided.

The PBNP design is for the new MDAFW cables to be routed primarily in conduit (see Figure 1, MDAFW Power Cable Routing in Enclosure 5). Electrical separation and independence requirements are confirmed through documentation reviews and plant inspections as part of the modification process. In addition, the circuits are reviewed on a Fire Area basis to preclude challenges to the electrical separation of MDAFW power and control circuits with existing safe shutdown circuits to identify the need for rerouting or application of fire barriers. Compliance with 10 CFR 50 Appendix R separation and protection requirements is confirmed as part of the modification process.

Specific routing information is as follows:

The new Unit 1 MDAFW pump 1P-53 will receive power from 4.16 kV switchgear 1A06 located in the Diesel Generator Building. New power cables and associated switchgear control cables have already been routed in ductbank to the power block through the Unit 2 Turbine Building to the pull box located on El. 8' of the Control Building near the existing remote transfer panel N-02 for existing MDAFW Pump P38B. From there, the power cable has already been routed out of the pullbox in cable tray, and then installed in conduit to the existing MDAFW pump room for P-38A. From the existing P-38A pump room, new power and control cables will be installed to the new Unit 1 Train B MDAFW pump 1P-53 room in the Primary Auxiliary Building (PAB). New control cables associated with 1P-53 will be routed to the control and logic cabinets located in various other locations in the plant, primarily in conduit, but also in sections of existing cable tray that present a more reasonable alternative.

The new Unit 2 MDAFW pump 2P-53 will receive power from 4.16 kV switchgear 2A05 located in the Vital Switchgear Room on El. 8' of the Control Building. New power cables have already been installed in conduit from the switchgear to the existing MDAFW pump room for existing MDAFW Pump P-38B. From the existing P-38B pump room, new power cable and control cables will be routed in conduit to the new Unit 2 Train A MDAFW pump 2P-53. New control cables associated with 2P-53 will be routed to the control and logic cabinets located in various other locations in the plant, primarily in conduit, but also in sections of existing cable tray where that presents a more reasonable alternative.

The Unit 1 1P-53 Train B power cables will be routed in conduit to the new MDAFW pump room, Fire Area A01-A Fire Zone 139. The power and control cables for 1P-53 are new. The power cables exit the pull box in the north end of the corridor in the Control Building, Fire Area A23N in a combination of cable tray and conduit. The conduit may be protected by external fire barrier (wrap) commensurate with a fire rating of 3 hours. The Unit 1 Train B power conduit will pass through the fire area containing the passage between Units 1 and 2 Turbine Buildings on Elevation 8', and through the Unit 2 Train B Auxiliary Feedwater Pump Rooms, Fire Area A23N. The conduit will be wrapped in this area because of the close proximity to circuits of the redundant Train A circuits or other Appendix R safe shutdown circuits. The conduit will pass west through available penetration space in the double walls of the Control Building and Primary Auxiliary Building. Because the conduit will pass from the Halon protected AFW Pump Room, the conduit raceway will be internally sealed at that juncture with an approved 3-hour fire stop. The conduit will continue west in the PAB along the north side of the passage way, Fire Area A01-A Fire Zone 142, to an area north of the new MDAFW pump room for 1P-53, at Fire Area A01-A Fire Zone 139, where it will turn south and enter the pump room. This conduit will be fire wrapped the entire length in the PAB with a 3-hour fire barrier. Associated control cable and instrument cable will similarly follow this conduit route, as required, and will also be protected with a 3-hour fire barrier.

The Unit 2 2P-53 Train A power cables will be routed in conduit to the new MDAFW pump room, Fire Area A01-A Fire Zone 138, from the Vital Switchgear Room in the Control Building, Fire Area A24. This conduit will then be routed through the Auxiliary Feedwater Pump Room Fire Area A23S, and will be protected by external fire barrier (wrap) with a fire rating of 3 hours. Because the conduit will pass from the Halon Protected Vital Switchgear Room, the conduit raceway will be internally sealed at the switchgear room boundary with an approved 3-hour fire stop. The Unit 2 Train A power conduit will pass through the fire area containing the passage between Units 1 and 2 Turbine Buildings on Elevation 8', and through the Unit 1 Train A Auxiliary Feedwater Pump Rooms, Fire Area A23S. The conduit will be wrapped in this area because of the close proximity to redundant Train B circuits or other Appendix R safe shutdown circuits. The conduit will pass west either through existing available penetration space in the west double walls of the Control Building and Primary Auxiliary Building, or will follow along the path of newly installed piping and be routed through the piping systems new penetration. Because the conduit will pass from the Halon protected AFW Pump Room, the conduit raceway will be internally sealed at that juncture with an approved 3-hour fire stop. The conduit will continue west in the PAB along the south side of the passage way, Fire Area A01-A Fire Zone 142, to an area south of the new MDAFW pump room for 2P-53, at Fire Area A01-A Fire Zone 138, where it will turn north and enter the pump room. This conduit will be fire wrapped the entire length in the PAB with a 3-hour fire barrier. Associated control cable and instrument cable will similarly follow this conduit route, as required, and will also be protected within a 3-hour fire barrier.

Additionally, it may be necessary to re-route or protect the cable and raceway associated with certain support systems of the new MDAFW pump system. One example of this is the source of 125 V DC control power to Unit 2 Train A switchgear 2A05. This is a Train A control power source from 125 V DC Switchboard D-03 via Distribution Panel D-31, located on El. 8' of the Primary Auxiliary Building, Fire Area A15. Output Train A DC control power conduit is currently routed through Fire Area A01-A Fire Zone 150, through the Auxiliary Feedwater Pump room Fire Area A23N, and into the Vital Switchgear room Fire Area A24. It is in proximity to Train B circuits in the PAB and AFW pump room. If it is not possible to install a fire barrier around this existing control power circuit's conduit, the circuit will be rerouted to obtain adequate spatial separation or redesigned to provide separation between the redundant safe shutdown circuits.

Enclosure 5 contains the following current electrical three line and schematic drawings for the Unit 2 Extended Power Uprate Project Auxiliary Feedwater Upgrade modifications:

- E-11, Sheet 4, Three Line Diagram Relay and Metering EDG G-03 4160 V Bus 1-A06
- E-2011, Sheet 3, Schematic Meter & Relay Diagram 4160 V Auxiliary System
- 499B466, Sheet 201H, Elementary Wiring Diagram Motor Driven Auxiliary Feedwater Pump 2P-53 Cubicle 2A52-68
- 499B466, Sheet 231, Elementary Wiring Diagram 4160 V Swgr 2A05 Cubicle 68 2P-53 Auxiliary FW Pump
- 499B466, Sheet 363, Elementary Wiring Diagram Auxiliary Feedwater Pump 2P-53 Suction Pressure Trip
- 499B466, Sheet 369B, Elementary Wiring Diagram Power To P-038B-M Standby Steam Generator Feed Pump
- 499B466, Sheet 370B, Elementary Wiring Diagram Standby Steam Generator Feed Pump P-38B Automatic Actuation
- 499B466, Sheet 372B, Elementary Wiring Diagram Standby Steam Generator Feed Pump P-38B Control Circuit For Feeder Breaker
- 499B466, Sheet 373B, Elementary Wiring Diagram Standby Steam Generator Feed Pump P-38B Suction Pressure Trip
- 499B466, Sheet 812D, Elementary Wiring Diagram P-38B SSG Feedwater Pump Discharge to 1HX-1B Steam Generator AF-4021
- 499B466, Sheet 812F, Elementary Wiring Diagram P-38B SSG Feedwater Pump Discharge to 2HX-1B Steam Generator AF-4020
- 499B466, Sheet 868, Elementary Wiring Diagram Steam to Turbine Driven Auxiliary Feed Pump 2MOV2019 (2MOV2020)

- 499B466, Sheet 1302, Elementary Wiring Diagram Auxiliary Feed Pump 2P-53 Control Circuit for Feeder Breaker
- 499B466, Sheet 1303, Elementary Wiring Diagram Auxiliary Feed Pump 2P-53 Automatic Actuation
- 499B466, Sheet NEW, Elementary Wiring Diagram Turbine Driven Auxiliary Feedwater Pump Discharge (2MOV4001)
- Figure 1, MDAFW Power Cable Routing

Question 6

If the MDAFW pumps are credited in the Point Beach Units 1 and 2 station blackout mitigation strategy, explain any impacts of increased loading on the station blackout gas turbine generator.

NextEra Response

Station Blackout (SBO) is defined as the complete loss of alternating current electric power to the essential and nonessential switchgear buses in a nuclear power plant (i.e., loss of offsite electric power system concurrent with a turbine trip and the unavailability of the onsite emergency AC power system). The required coping duration is defined as the time between the onset of SBO and the restoration of off-site AC power to safe shutdown buses. As documented in FSAR Section A.1., Station Blackout (SBO), PBNP has been determined to have a required coping duration category of four (4) hours. PBNP utilizes a SBO coping methodology of "Alternate AC."

With four emergency diesel generators (EDGs), the SBO minimum redundancy requirements of emergency AC (EAC) power supplies for normal safe shutdown of both units is exceeded and utilization of an EDG as an Alternate AC (AAC) source for SBO is allowed. By definition, a unit with an available EAC power supply is not blacked out. However, an EDG credited as an AAC source must be capable of handling the safe shutdown loads in both the blacked out and non-blacked out units. The PBNP EDGs meet this requirement. Therefore, the PBNP coping methodology utilizes the on-site Gas Turbine Generator (GTG) G-05 or an EDG from the non-blacked out unit as AAC sources. Note that the GTG G-05 is peaking unit for the off-site power grid located on site, that can supply power to the safe shutdown buses through the 13.8 kV electrical distribution system. G-05 is not a dedicated SBO gas turbine generator. An EDG and GTG G-05 will start or be manually started, accelerate to rated frequency and voltage, and be available to power the safe shutdown loads within 10 minutes and 1 hour of SBO initiation, respectively. Since PBNP continues to use the GTG as one of the AAC sources, a one hour coping assessment has been retained and is described in FSAR, Section A.1.3, Station Blackout Coping Analyses.

The AAC source (GTG G-05 or EDG from non-blacked out unit) is utilized to restore AC power to the safe shutdown buses within one hour into the four hour SBO required coping duration. During a station blackout scenario, only the TDAFW pump system is credited for decay heat removal via the steam generators. The turbine-driven pumps are capable of supplying feedwater to the steam generators without an AC power source. The Technical Specification minimum amount of water in the Condensate Storage Tanks (see response to Question 10 for Technical Specification changes to support EPU) provides adequate makeup to the steam generators to maintain each unit in a hot shutdown condition for at least one hour concurrent with the loss of AC power. When AAC power is restored and the water in the CSTs is depleted, suction for the turbine-driven AFW pumps is shifted to the safety-related service water system to provide makeup water from Lake Michigan for an indefinite period, including the remaining time of the SBO-required coping duration. The turbine-driven AFW pump is credited for all four hours of the PBNP SBO required coping duration.

The MDAFW pumps are not credited in the PBNP station blackout mitigation strategy. The required EPU modifications, including the AFW System upgrades, will not change the existing SBO coping duration category, coping methodology, or SBO mitigation strategy described above. Therefore, there are no impacts from the new MDAFW pumps of increased loading on the station blackout AAC sources (i.e., GTG G-05 or EDG from non-blacked out unit).

Question 7

TS SR3.3.4.3 identifies changes to the time delay relays for 4.16 kV and 480 V loss of voltage relays and the EDG breaker close delay relay. Provide supporting calculations and bases for the change including your evaluations to show the accident analysis assumptions remain the same. Also, provide schematics and logic diagram for the undervoltage protection scheme.

NextEra Response

The changes to the time delay relays for 4.16 kV and 480 V loss of voltage relays and the EDG breaker close delay relay are documented in a PBNP calculation.

A summary of the calculation follows: The purpose of the calculation is to determined that the proposed time delay settings for the loss of voltage (LOV) relays for safety related buses 1/2-A05/06 (4.16 kV) and 1/2-B03/04 (480 V) of 2.0 seconds and 1.5 seconds, respectively, are acceptable considering drift, uncertainty and loop errors. The proposed time delays settings are selected to support minimum offsite power grid transient ride-through times of 1.4 seconds for the 4.16 kV buses and 1.0 second for the 480 V buses.

The acceptance criteria of the calculation require that the time delays must allow the EDG output breakers to close within 14 seconds or less. This time bounds the delay time from initiation of the LOV signal to closure of the EDG output breaker assumed in the accident analyses described in the EPU Accident Analysis. As documented in the PBNP calculation, the acceptance criteria is satisfied since the total calculated time is 13.3 seconds, which is less than the acceptance criteria of 14 seconds.

The calculation concludes that the impact of the longer durations of the ride through times due to the transients of the offsite power supply require changes to the time delay settings for each of the LOV relays for buses A05/A06, B03/B04 and the EDG close timer (follower relay). The new settings prevent spurious actuation resulting in separation of these buses from the preferred offsite power supply. The relay settings support the actuation times used in the EPU accident analyses. Time delay settings for the EDG close timer meet the criteria for being long enough to ensure that safe closure thresholds are reached and for 4.16 kV bus stripping initiated before the EDG breaker close permissive occurs, while being short enough to ensure that the EDG breaker close permissive occurs in time to support actuation times used in the EPU accident analyses.

The analysis provided in the PBNP calculation demonstrates that the revised time delays for LOV relays for the safety related buses 1/2-A05/06 (4.16 kV) and 1/2-B03/04 (480 V) of 2.0 seconds and 1.5 seconds are adequate, based on minimum required time delays of

1.4 seconds and 1.0 second for the 4160 V and 480 V buses. The calculation results support the proposed time delay changes to the TS SR 3.3.4.3 contained in LAR 261.

As requested, the following schematics and wiring diagram for the undervoltage protection scheme are included in Enclosure 5:

- Drawing 883D195 Sheet 6, Logic Diagram Emergency Generator Starting
- Drawing 883D195 Sheet 4, Logic Diagram 4160 V Bus Schemes
- Drawing 883D195 Sheet 5, Logic Diagram 480 V Bus Schemes
- Drawing 499B466 Sheet 266B, Elementary Wiring Diagram 4160 V Switchgear Bus 1A05 Undervoltage & Differential L.O Relays
- Drawing 499B466 Sheet 296B, Elementary Wiring Diagram 4160 V Switchgear Bus 2A05 Undervoltage & Differential L.O. Relays
- Drawing 499B466 Sheet 225, Schematic Diagram 4160 V Switchgear Bus 1-A06 (2-A06) Undervoltage & Differential L.O. Relays (Sheet 1)
- Drawing 499B466 Sheet 225A, Schematic Diagram 4160 V Switchgear Bus 1-A06 (2-A06) Undervoltage & Differential L.O. Relays (Sheet 2)

Question 8

Describe the post-maintenance testing for the MDAFW pump replacement. Include the surveillances that will be performed to demonstrate that the MDAFW pump is OPERABLE. Also include any post-maintenance testing of the electrical power system. Describe the plant conditions under which the post-maintenance testing will be performed. Are there approved procedures to perform the post-maintenance testing?

NextEra Response

As part of the modification process, procedures will be developed to perform post-maintenance testing for each of the Engineering Changes (ECs) being implemented for the Auxiliary Feedwater (AFW) Margin Improvement project. A modification testing plan has been developed to provide the approach for testing the modifications. This plan includes a description of the functional requirements for the AFW System and identification of testing requirements (pre-modification, construction, pre-operational, and operational) to be used to determine that the equipment and system are performing as designed. The plan also includes guidance to address attributes such as plant conditions required for testing, system parameters required for testing, acceptance criteria, precautions and limitations, etc. in the post-maintenance testing procedures.

This testing plan provides the guidance to be used in developing the individual Test Plans for each of the ECs for the AFW Margin Improvements to ensure that system functionality has been properly demonstrated. The Test Plan includes such attributes as:

- Identify the specific type(s) of testing to be performed. (i.e., Pre-Modification, Construction, Pre-operational, and Operational Testing)
- Identify when the testing will be conducted (e.g. during installation, post- installation, pre-operational, post- operational). Identify the testing required to support turnover (partial and full)
- Identify system parameters, set points, and tolerances that must be inspected or examined to verify proper installation. Examples are: continuity checks, termination checks, automatic

trip settings and tolerances, allowable deadband, torque switch settings, limit switch settings, calibration range and tolerance, torque values, hydrostatic test pressures and duration, alignment specifications, and vibration data

- Identify the specific acceptance criteria, if any, that will demonstrate that the design intent has been accomplished
- Consider the affects on redundant trains and divisions and identify requirements for returning equipment to service, including a plan for partial turnovers
- Identify if existing test procedure(s) will be used to implement the testing, if testing will be conducted via Work Order tasks, or if new test procedures must be developed
- Identify applicable precautions and limitations
- Identify potential effects of jumpers, lifted leads, and other than normal configurations of plant equipment and systems
- Identify critical characteristics in procurement specifications and vendor manuals
- Identify prerequisites that need to be satisfied prior to testing
- Identify special test equipment or calibration of test equipment
- Determine if mock-up testing (simulator modeling, physical models) should be performed in cases where testing may be difficult to perform, or may introduce significant impact/ risk

LAR 261 and other design documents (e.g., procurement specifications) were reviewed to identify the following basic functional requirements for the upgraded AFW system design:

1. Existing valves 1MS-02020, 1AF-04000, 2MS-02019 and 2AF-04001 must be capable of meeting the stroke time requirements defined in the PBNP IST Program after the power supplies have been realigned.

2. The TDAFW and MDAFW pump systems must automatically initiate flow based on the following signals:
   - Low-low water level in either steam generator,
   - Loss of both 4.16 kV buses supplying the main feedwater pump motors,
   - ATWS Mitigation System Activation (AMSAC) signal. An AMSAC signal is generated on a loss of normal feedwater at power levels above approximately 40%, or
   - Safety Injection sequence

3. Each of the two discharge lines for each MDAFW pump shall be capable of supporting the flow rates assumed in the accident analyses.

4. Flow to the steam generators must be initiated within the assumed ramp-up rates in the accident analysis.

5. The flow through an MDAFW supply line to a faulted steam generator must be less than that assumed in the accident analysis.

6. The MDAFW pump coastdown time must be within the required time.

7. Recirculation flow capability of 100 gpm for each of the two MDAFW pumps is required to meet vendor recommendations.

8. The MDAFW pump recirculation valves shall open when the pump starts and shall close within the predetermine time delay of the pump forward flow rate reaching the established setpoint.

9. The MDAFW discharge flow control valves shall close when the pump stops and shall start to control the pump flow to the steam generator when the pump starts.

10. Service Water (SW) suction supply valve for the MDAFW and TDAFW pumps must start to open within the specified time delay setting (and associated tolerance).

11. SW suction supply valve for the MDAFW and TDAFW pumps must start to open when the Condensate Storage Tank (CST) level reaches the established setpoint.

12. To minimize the transient flow perturbations at the suction of pumps 1P-029, 2P-029, 1P-053 and 2P-053 during the transition of suction supply to SW, valves 1AF-04006, 2A-04006, 1AF-04067 and 2AF-04067 must stroke to the full open position within 10 seconds.

13. SW suction supply must be capable of supporting the maximum flow rate for each of the AFW pumps.

14. The MDAFW and TDAFW pumps must trip within the specified time delay setting (and associated tolerance) of receipt of the low suction pressure setpoint, when the pumps have not been automatically started.

15. The MDAFW and TDAFW pumps must trip within the specified time delay setting (and associated tolerance) of the low suction pressure setpoint, if the SW Supply fails to increase the suction pressure above the setpoint when the pumps have been automatically started.

16. Each of the MDAFW pneumatic back-up supplies shall be capable of supporting operation of one flow control valve and one recirculation valve for the required time with no reliance on instrument air.

17. The pneumatic supply system air boosters shall be capable of maintaining the pressure in the pneumatic supply tanks to the required pressure.

18. The MDAFW suction piping upstream of check valve 1AF-00191 and 2AF-00191 must be capable of operation at a maximum pressure of 50 psig at 100°F.

19. The MDAFW suction piping downstream of check valve 1AF-00191 and 2AF-00191 must be capable of operation at a maximum pressure of 130 psig at 100°F.

20. The MDAFW discharge piping up through and including containment isolation valves 1AF-0195A, 1AF-0195B, 2AF-0195A and 2AF-0195B must be capable of operation at a maximum pressure of 1600 psig at 100°F.

21. The MDAFW recirculation piping up through and including the isolation valve must be capable of operation at a maximum pressure of 1600 psig at 100°F.

22. The MDAFW recirculation piping downstream of isolation valve must be capable of operation at a maximum pressure of 50 psig at 100°F.

23. The MDAFW test piping up through and including the throttle valve must be capable of operation at a maximum pressure of 1600 psig at 100°F.

24. The MDAFW test piping downstream of the throttle valve must be capable of operation at a maximum pressure of 50 psig at 100°F.

25. Stroke tests must demonstrate that containment isolation valves 1AF-00195A, 1AF-00195B, 2AF-00195A and 2AF-00195B can be manually closed.

To demonstrate that the above AFW System upgrade functional requirements have been met, the following pre-modification, construction, pre-operational, and operational testing is required at these different stages of the AFW system upgrade installation:

A. Pre Modification Testing

- Factory Acceptance Testing of new pumps and motors
- Non-Destructive Examination (NDE) of new pre-fabrication shop piping welds
- Shop calibration of flow orifices
- NDE/pressure testing of new restriction devices and cavitating venturis
- Shop calibration of flow restriction devices
- Shop calibration of cavitating venturis
- Shop testing of new valve motors
- NDE, pressure testing and seat leakage testing of new valves
- Breaker and relay checkouts

B. Construction Testing

- NDE of new field piping welds
- NDE of new field pipe support welds
- Megger new 600 V rated control cables at 1000 V for 60 seconds to demonstrate that resistance is greater than 1.6 Mohms
- High potential (hi-pot) test 8000 V rated cables at 35,000 V for 15 minutes and record the leakage current at one minute intervals. If leakage current decreases or remains steady after leveling off, the test is considered satisfactory.
- Continuity tests of control and instrumentation cables
- Voltage verification at select locations in the control circuit
- Instrument loop calibrations to verify functionality of instrument loops and to demonstrate that bistables that open the SW Suction Supply valves, trip the AFW pumps on low suction pressure, and close the MDAFW pump recirculation valve on MDAFW pump forward flow actuate properly
- Motor rotation test with cables connected to motor and motor uncoupled from pump to ensure that motor spins in the direction as labeled on the pump. Energization of the new MDAFW pumps (for test purposes) will be controlled under existing PBNP Technical Specifications
- During motor uncoupled run, perform initial electrical testing and record voltage, current, kW input, horsepower output, starting profile (time vs. current) and perform initial motor vibration checks.

C. Pre-Operational Testing

- Pneumatic system pressure initial pressurization and air booster performance verification to demonstrate system can be pressurized and maintained at required pressure.
- Operational leak check and pneumatic backup supply pressure drop test to demonstrate ability to meet the required storage requirement.
- Flow scan of MDAFW pump discharge flow control valves and MDAFW pump recirculation valves to validate valve performance.
- Motor Operated Valve (MOV) benchmark tests for MDAFW and TDAFW SW supply isolation valves, including stroke time tests.
- MDAFW Pump Recirculation Flow Run:
    - Initial Seal Flow to demonstrate that pump seal cooling flow not spraying on any equipment. Since the test will involve supply and return of water from a Condensate Storage Tank and will involve connection of the pump motors to the 4.16 kV bus, the tests will be controlled under existing PBNP Technical Specifications.
    - Verification that the recirculation valve opens when the pump starts.
    - Verification that the recirculation flow rate is 50 gpm (-0 gpm/+10 gpm) per recirculation line.
    - Pump vibration check to demonstrate the vibrations are below acceptable limits.
    - Pump run until bearing stabilization temperature is established.
- MDAFW Pump Full Flow Test Run:
    - Pump full flow testing will be performed through the test lines using a Point Beach Test Procedure (PBTP) developed specifically for this test. The testing shall include controller tuning and set-up instructions, based on the direction provided by the controller manufacturer literature. Tuning parameters in the flow controllers (e.g. proportional and integral adjustments) should be adjusted to ensure stable flow at design total pump flow with flow split roughly evenly between the two flow loops. Additionally, data should be gathered to review the performance of the flow control loop at lower flow rates (down to 40 gpm). Since the test will involve supply and return of water from a Condensate Storage Tank and will involve connection of the pump motors to the 4.16 kV bus, the tests will be controlled under existing PBNP Technical Specifications.
    - Pump suction pressure verification – Suction pressure to exceed required suction pressure at design flow rate.
    - Pump performance data gathering - Head at total pump flow of 100 gpm, 150 gpm, 200 gpm, 250 gpm, 275 gpm and approximately 300 gpm
    - Verification that the recirculation valves close within the predetermined time delay of the pump flow rate reaching the established setpoint.
    - Verification that the pump forward flow increases within ramp-up rates assumed in the accident analyses.
    - Pump vibration check to demonstrate the vibrations are below acceptable limits and establish vibration base line for new pumps and motors.
    - Pump run until bearing stabilization temperature is established.
    - Simulated pump trip with coastdown flow to verify that the pump coastdown time within the required time.
    - Two pump start test to demonstrate that the minimum time delays are adequate to prevent initiation of automatic opening of the Service Water Suction valve on low suction pressure.

- System Leakage Test performed during system recirculation flow run.
- Electrical motor data gathering during pump full flow and recirculation tests to obtain voltage, current, kW input, horsepower output, starting profile, (time versus current), speed, torque produced, (steady state). Motor parameters to be within the manufacturer's rating and operating design specifications.
- Pump automatic start logic testing using simulated logic inputs to demonstrate that the relays actuate properly and that contacts in the 4.16 kV switchgear close. This testing meets the sequential and overlapping testing guidance of Generic Letter 96-01 to demonstrate functionality of automatic start logic.
- Service Water suction supply isolation valve opening logic testing using simulated logic inputs to demonstrate that the relays actuate properly and that valves receive signal to open. This testing meets the sequential and overlapping testing guidance of Generic Letter 96-01 to demonstrate functionality of valve open logic circuit.

D. Operational Testing

To demonstrate that the AFW Functional Requirements have been met, the following operational testing is required to demonstrate operability in accordance with Technical Specification (TS) surveillance SR 3.7.5.1:

- Pump performance testing – Discharge head at set flow to be verified with pump on test flow path
- Pump performance testing and system timing tests with flow to steam generators
- MDAFW Pump Discharge flow control valve, MDAFW Pump recirculation valve and AFW pump SW suction supply isolation valve stroke tests
- Verification that seal flow is adequate and stable during pump operation and stuffing box temperature is warm to the touch
- Leakage tests to demonstrate pressure integrity of Condensate, AFW and SW isolations
- Testing to demonstrate proper operation of delay logic for the MDAFW and TDAFW pump automatic start logic and the Standby Steam Generator feed pump stripping logic during Operations Refueling Test ORT 3 (Safety Injection Actuation with Loss of AC)

Sequential and overlapping testing of the new pumps and motors are performed per the guidance of Generic Letter 96-01 combined with the results of EDG steady state and transient loading calculations to demonstrate proper operation of the Standby Emergency power sources under Loss of Offsite Power conditions in conjunction with an ESF actuation signal. This satisfies TS SR 3.8.1.5 and 3.7.5.4, respectively.

Voluntary entry into Technical Specification Action Conditions (TSACs) to perform the above testing will be required in some instances, but the use of TSACs will be minimized and application of the precautions of the Regulatory Commitments 23, 24 and 25 discussed in the response to Question 9 and in the cover letter will be utilized to minimize the risk of loss of offsite power during these TSAC entries. The installation of full flow test lines for the new MDAFW pumps allows much of the testing of these pump trains to be performed without a significant impact on operable systems. In addition, much of the testing will be performed in series during unit refueling outages or system outages well in advance of the scheduled date for making the new MDAFW pump trains operable. This will minimize the impacts of this testing on operable plant systems.

Question 9

In addition to the Regulatory Commitments provided in the LAR, the staff finds that the following compensatory measures should be officially docketed as NRC Regulatory Commitments if the modifications are done during operating Modes 1,2, and 3.

- *The scheduling of the MDAFW pump replacement will be avoided during seasons when the probability of severe weather or grid stress conditions is high or forecasted to be high. Adverse weather contingency procedures will be enacted for meteorological conditions that could potentially affect offsite power availability.*
- *Prior to and during the MDAFW pump replacement, the Transmission System Operator will be contacted once per day to ensure no significant grid perturbations are expected.*
- *Component testing or maintenance of safety systems and important non-safety equipment, including offsite power systems (auxiliary and startup transformers), that increase the likelihood of a plant transient or loss of offsite power will be avoided.*

NextEra Response

The compensatory measures prescribed above have been added to the Summary of Regulatory Commitments (previously provided in Attachment 4 of Reference 2) as Items 23, 24 and 25.

The installation of the majority of the AFW equipment modifications are scheduled during on-line periods. Tie-ins of the AFW system modifications are scheduled during both planned system outage windows although some portions of the process will require entry into Technical Specification Action Conditions (TSACs). The estimated time to accomplish these tie-ins is well within the allowed TSAC. It is expected that the compensatory measures provided by new Regulatory Commitments 23, 24 and 25 will be applicable for a minimum amount of time.

Question 10

In their description of TS changes, the licensee states that the new minimum condensate storage tank (CST) level to support the EPU is not available. The CST is credited as a source of water for the AFW system. Standard Review Plan (SRP) Section 10.4.9 acceptance criteria reference the AFW system meeting the criteria of GDC 5 for shared systems and GDC 19 for maintaining reactor shutdown. SRP requires staff to confirm that the AFW system provide minimum flow under all flow conditions, regardless of the water source. The licensee will have to provide an acceptable CST level based upon any impact from the newly installed AFW pump system.

Note: on page 2.5.4.5-21, the licensee describes the CST as part of the AFW system, and proposes a new CST level of 15,410 gallons assuming both CSTs are available, and 30,820 gallons if only one CST is available.

NextEra Response

The water supply to the PBNP AFW system is redundant. The normal source is by gravity feed from two nominal capacity 45,000 gallon CSTs, which are shared by both units. The safety-related seismic Class I supply is taken from the plant service water system, whose pumps are powered from the emergency diesel generators if station power is lost. The proposed TS and associated TS Bases changes to support the new minimum condensate storage tank (CST) volume are presented in Enclosures 2, 3 and 4.

The CSTs can be aligned into different configurations to support the AFW system and unit operation. The proposed TS for CST level contain different values of required volume for these different configurations. Note that these values are different from and supersede the CST required water inventory of 15,410 gallons discussed in LAR Licensing Report Sections 2.3.5, Station Blackout, 2.5.4.5, Auxiliary Feedwater, and 2.13.1, Risk Evaluation of EPU. The 15,410 gallons represents the water inventory required to be supplied by the AFW system to the steam generators of one unit for reactor core decay heat removal for one hour under EPU conditions following a loss of all AC as required by 10 CFR 50.63 (Station Blackout Rule), as described in NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," and as described in Regulatory Guide 1.155, "Station Blackout." These volumes also afford sufficient time to align the alternate AC (AAC) source. Note that Station Blackout is the only licensing basis scenario that credits the CSTs at PBNP. The proposed CST TS values represent the water inventory to meet this same supply requirement of 15,410 gallons, but adjusted to take into account AFW pump suction piping losses, instrument uncertainties, vortexing, AFW pump net positive suction head, and unusable tank volume.

Based on the above and the information provided in Enclosures 2, 3 and 4, the proposed TS provides acceptable CST levels to address the impact of the upgraded AFW system at EPU conditions, and confirms that the AFW system will supply the required flow under design flow conditions, regardless of water source.

Question 11

In their description of TS changes, the licensee states that the AFW pump suction transfer low pressure setpoint to support the EPU is not available. On page 2.5.4.5-21, the licensee describes the alternate service water (SW) supply as a part of the AFW system. The SW system is credited as the safety-related source of water. SRP Section 10.4.9 requires the staff to confirm that design features provide for automatic switch-over to the safety-related water supply without an interruption in water flow. The licensee has to provide an acceptable CST level based upon any impact from the newly installed AFW pump system.

NextEra Response

The TS changes to support the new AFW pump suction transfer pressure-low setpoint are presented in Enclosures 2, 3 and 4. NextEra has confirmed that the proposed TS setpoint considers the suction piping losses, the AFW pump net positive suction head available, and associated instrument uncertainties. These enclosures provide information necessary to confirm that the AFW system design features provide for automatic switch-over to the safety-related water supply without an interruption in water supply, assuming total loss of the CSTs and the unprotected portion of the suction piping to the auxiliary feedwater pumps.

In addition, the AFW pump suction from Service Water motor-operated valves (MOVs) are tested quarterly in accordance with the PBNP Inservice Testing (IST) Program to verify that the full stroke open times meet the IST acceptance criteria.

As discussed with the staff, the operating experience outlined in Palisades Licensee Event Report (LER) 255-08-007 (ML090220188) concerning tornado missiles as well as other industry operating experience has been evaluated and addressed in the design of the AFW system modifications including the CST automatic transfer to the safety-related service water system.

As an additional reliability design feature for other scenarios including probabilistic risk assessments, level instrumentation is being installed on the CSTs to provide a diverse signal for automatic switchover from the CSTs to the safety-related water supply without an interruption in water supply.

Question 12

On page 2.5.4.5-22, the licensee describes net positive suction head (NPSH) available for the AFW system. The licensee has not completed their evaluation of the limiting available NPSH condition that occurs when the suction to the AFW pumps is from the CSTs. The licensee states that the CST is assumed to be available for AFW pump supply for LOCA or MSLB accidents in the SW system model. SRP Section 10.4.9 requires staff to confirm that design features provide for automatic switch-over to the safety-related water supply without an interruption in water flow. The licensee still has to confirm that adequate NPSH is maintained to the AFW pumps.

NextEra Response

LAR 261 Page 2.5.4.5-22 states that NextEra will confirm that adequate NPSH is available to the AFW pumps as part of the modification process. The calculations now completed confirm discussions in this section that the limiting available NPSH condition occurs when the suction is from the CSTs since it relies only on static head. The calculations show that adequate NPSH is available to the AFW pumps with the water level well below the centerline of the CST nozzle elevation. The SW alignment to the suction of the AFW pumps is not limiting, since the AFW suction is then from a SW pump discharge header.

LAR 261 Figure 2.5.4.5-1 shows that the TDAFW and MDAFW pumps use different CST suction headers. The original CST suction header will serve the two TDAFW pumps and a new CST suction header will serve the two MDAFW pumps. With separate suction headers for the TDAFW pump and the MDAFW pump, the EPU flow per header will be lower than the pre-EPU flow in each single header, thus reducing the pressure drop due to flow.

Section 2.5.4.5.2 states the EPU modification will automatically open the SW supply valves to the AFW pump suctions on low AFW suction pressure. Calculations demonstrate that at the switchover point, the AFW pumps have adequate NPSH available for the scenarios considered. The TS changes to support the new AFW pump suction transfer pressure-low setpoint are presented in Enclosures 2, 3 and 4. Additionally, a low suction pressure trip will still protect the pump if the automatic switchover does not occur.

Question 13

On page 2.5.4.5-25, the licensee describes the AFW room ventilation for the location of the new MDAFW pumps in the 8' elevation of the primary auxiliary building (PAB). The licensee states that there is a large opening to the general area of the PAB, but the EPU modification design process has to verify that adequate cooling is provided to the AFW pump room to ensure operability and confirm that the licensing basis of the PAB ventilation is still met. SRP Section 10.4.9 acceptance criteria reference the AFW system meeting the criteria of GDC 5 for shared systems. The licensee still has to confirm that the PAB ventilation system is adequate to support the AFW pumps.

NextEra Response

FSAR Section 1.3 states that the general design criteria (GDC) used during the licensing of PBNP predates those provided today in 10 CFR 50, Appendix A. The equivalent shared systems GDC for PBNP is described in PBNP GDC 4, which states, "Reactor facilities may share systems or components if it can be shown that such sharing will not result in undue risk to the health and safety of the public." The PAB ventilation system is a shared system for the new MDAFW pump rooms.

Each of the new MDAFW pump rooms has a 12'-3" wide by 15'-6" tall opening to the general area of the primary auxiliary building and a return air register to pull air into the room from the general area of the PAB. NextEra has performed an assessment of the temperatures within the rooms assuming a complete loss of PAB ventilation during a DBA with a LOOP condition. This assessment concluded that these rooms will not exceed their maximum allowable temperature limits during a DBA concurrent with a LOOP, prior to the pre-established proceduralized time (2 hours) for restoring the PAB ventilation exhaust fans. Once the PAB exhaust fans are restored, the PAB ventilation system prevents the rooms from exceeding their maximum allowable temperature limits. Therefore, the PAB ventilation system ensures the new AFW pump rooms remain within temperature limits.

Question 14

On page 2.5.4.5-20, the licensee describes the design verses the operating pressures and temperatures of AFW system. The licensee states that the pressure rating on the discharge side of the AFW pumps will be subject to the shutoff head of the new MDAFW pumps. The new piping and valves will require a higher pressure rating. The licensee states that the existing AFW discharge piping and valves will remain bounded by the original design pressure. However, the new AFW pump discharge does tie into the existing MDAFW piping; hence the existing AFW piping will be subject to the new pump's discharge pressure.

The licensee states that the final piping design will be established during the modification process ensuring adequate pressure rating of all new piping and components. SRP Section requires the system pumps, valves, and piping are compatible with the expected service conditions. The licensee still has to confirm that the new and existing AFW system is adequate to support operation of the new AFW pumps.

NextEra Response

NextEra has confirmed the existing AFW system and the new piping, valves, and components selected for the Motor Driven Auxiliary Feedwater (MDAFW) pumping system are compatible with the expected service conditions. Design conditions for the new MDAFW pump discharge piping, valves and components up and including the new containment isolation valves (CIVs) are 1600 psig at 100°F. The pressure class ratings of the new piping, valves and components have been selected to meet or exceed these design service conditions. Service conditions downstream of the new CIVs are based on the lower design pressure of the secondary side of the steam generators (1085 psig at 556°F). Although the new AFW system discharge piping ties into the existing AFW discharge piping, the tie-ins are downstream of the existing AFW system CIVs (valves AF-18. -19, -31, and -44 on Unit 1, and valves AF-32, -45, -56, and -57 on Unit 2), as shown on Figure 2.5.4.5-1 of LAR 261, Attachment 5. Downstream of the existing AFW system CIVs, the design rating of the existing AFW discharge piping is based on the design rating of the steam generators, which will not exceed pressures corresponding to the main steam safety valve setpoints. Therefore, the "design rating" of the existing AFW system at the tie-in location (1440 psig at 100ºF, as listed in LAR 261, Table 2.5.4.5-3) is not affected by the installation of the new MDAFW pumps. Based on the above, the new and existing AFW system is adequate and compatible with the expected service conditions to support operation of the new MDAFW pumps

Question 15

The staff noted sections of the amendment where the license makes a statement that they do not have to perform an analysis of a particular accident because they claim it is not part of their licensing basis. These sections include:

a. On page 2.8.5.1.1-5, under the section 2.8.5.1.1.2.2, Increase in Feedwater Flow, the licensee states that this event is not part of the Point Beach licensing basis.

b. On page 2.8.5.2.4-1, under the section 2.8.5.2.4, Feedwater System Pipe Breaks Inside and Outside Containment, the licensee states that feedwater system pipe breaks are not required to be analyzed per the Point Beach current licensing basis.

Appendix B and C of SRP Section 3.6.1, Plant Design for Protection against Postulated Piping Failures in Fluid System outside Containment, Branch Technical Position SPLB 3-1, licensees had to evaluate double ended rupture of the largest pipe in the feedwater system. In addition, since the feedwater line is classified as a "high energy line", then the licensee is required to evaluate for a feedwater rupture in their, high energy line break analysis. These type accidents are among the list of accidents listed in Appendix A, Safety Evaluation Report Compliance, of their application, A.3 - RETRAN for Non-LOCA Safety Analysis, and A.4 - LOFTRAN for Non-LOCA Safety Analysis. Therefore, the license should analyze the feedwater system for pipe breaks.

Additionally, a failure in the main feedwater control system can cause a steam generator overfill condition. As a result of Generic Letter 89-19 the staff concluded that all pressurized water reactor plants should provide automatic steam generator overfill protection to mitigate main feedwater overfeed events during reactor power operation. Therefore, the licensee should evaluate accidents that involve an increase in feedwater flow.

NextEra Response

a. As noted in Question 15.a, LAR 261, Attachment 5, Page 2.8.5.1.1-5 (Section 2.8.5.1.1.2.2, Increase in Feedwater Flow), stated that the Increase in Feedwater Flow event is not part of the PBNP licensing basis. As stated in the NRC Safety Evaluation Report dated July 15, 1970, for the licensing of PBNP Units 1 and 2, the analyses required for consequences of various transients and postulated accidents did not include analysis of Increase in Feedwater Flow. PBNP Units 1 and 2 received their Operating Licenses prior to publication of NUREG-0800, Standard Review Plan, Revision 0, in 1975. This event is not explicitly analyzed in the PBNP Final Safety Analysis Report, Chapter 14, Safety Analysis.

LAR 261 was prepared consistent with the Office of Nuclear Reactor Regulation Review Standard for Extended Power Uprates, RS-001, Revision 0, December 2003. RS-001 under Purpose indicates that "the staff will review plants against their design basis ...The staff does not intend to impose the criteria and/or guidance in this review standard on plants whose design bases do not include these criteria and/or guidance. No backfitting is intended or approved in connection with the issuance of this review standard."

As noted in the question, however, a failure in the main feedwater control system can cause a steam generator overfill condition. The NRC staff issued Generic Letter 89-19, Request for Action Related to Resolution of USI A-47, "Safety Implications of Control Systems in LWR Nuclear Power Plants" , dated September 20, 1989, pursuant to 10 CFR 50.54(f). Generic Letter 89-19 concluded that all PWR plants should provide automatic steam generator overfill protection...and that plant procedures and technical specifications for all plants should include provisions to verify periodically the operability of the overfill protection and to assure that automatic overfill protection is available to mitigate main feedwater overfeed events during reactor power operation." PBNP responded to Generic Letter 89-19 describing the PBNP steam generator overfill protection features. These features include use of the steam generator (SG) narrow range level instruments to close the main feedwater control valves on a 2/3 high SG level signal, by isolating and venting instrument air from the feedwater control valve air operator for the associated SG. The bistables for overfill protection are functionally tested monthly and the level transmitters are calibrated and feedwater control valves tested at refueling intervals. PBNP requested to add the SG overfill bistable testing and calibration to the Technical Specifications. Subsequently, the NRC issued "Safety Evaluation ...Related to Licensee Response to Generic Letter 89-19 and Proposed Technical Specification Upgrades...Point Beach Nuclear Plant, Unit Nos 1 and 2...," dated December 8, 1994. This SE contained the following conclusions regarding the PBNP response to Generic Letter 89-19, "the licensee's overfill protection system design is acceptable...Therefore, the staff concludes that the licensee's response to GL 89-19 is acceptable."

The steam generator overfill protection design and associated procedures and Technical Specifications remain in effect and are valid under EPU conditions. Note that neither Generic Letter 89-19 nor the subsequent NRC SE concluded that there was a need for any explicit transient analysis for a postulated Increase in Feedwater Flow event. Based on the above, no further evaluation of events that involve an increase in feedwater flow are required.

b. As noted in Question 15.b, LAR 261, Attachment 5, Page 2.8.5.2.4-1 (Section 2.8.5.2.4, Feedwater System Pipe Breaks Inside and Outside Containment), stated that feedwater system pipe breaks are not required to be analyzed per the PBNP licensing basis. Although this event is not explicitly analyzed in the FSAR Chapter 14, Safety Analysis for transient analysis of core response, feedwater line breaks are addressed in the PBNP licensing basis for high energy line breaks (HELBs) outside containment, and feedwater line breaks inside containment are enveloped by steam line break analysis for EPU conditions, as discussed further below. As noted in the Question 15,.a response above, RS-001 indicates that "the staff will review plants against their design basis ...The staff does not intend to impose the criteria and/or guidance in this review standard on plants whose design bases do not include these criteria and/or guidance. No backfitting is intended or approved in connection with the issuance of this review standard."

From a core response (DNB) perspective for the EPU evaluations, it was concluded that the cooldown resulting from a break in a feedwater line will be less severe than the cooldown resulting from a break in a steam line. The core response analyses for EPU conditions due to a steam line break are described in LAR 261, Attachment 5, Section 2.8.5.1.2, Steam System Piping Failures Inside and Outside Containment. For core response of feedwater line breaks outside containment at EPU conditions, due to the existence of feedwater line check valves inside containment, the core and reactor protection response would be similar to the loss of normal feedwater event. The loss of normal feedwater (LONF) event for EPU conditions is described in the LAR 261, Attachment 5, Section 2.8.5.2.3, Loss of Normal Feedwater.

The EPU impact on High Energy Line Breaks (HELB) is addressed in LAR 261, Attachment 5, Licensing Report Sections 2.6.1, Primary Containment Functional Design, and 2.6.2, Subcompartment Analyses, for feedwater line breaks inside containment. For inside containment, the analysis of the rupture of a Reactor Coolant pipe and rupture of a Main Steam pipe are considered for the effects of the break on the containment atmospheric pressure and temperature and containment integrity. As a result of the EPU evaluations, it was concluded regarding secondary system pipe breaks inside containment that the steam line break is the limiting rupture of a secondary pipe with respect to the peak containment pressure analysis. The mass and energy releases for steam line breaks inside containment for EPU conditions are described in LAR 261, Attachment 5, Licensing Report Section 2.6.3.2, Mass and Energy Release Analysis for Secondary System Pipe Ruptures.

Outside containment high energy line breaks including feedwater line breaks are described in LAR 261, Attachment 5, Section 2.5.1.3, Pipe Failures. The effects of these breaks on the areas outside the containment on local atmospheric pressure and temperature are based on the analysis of bounding main steam line breaks. Note that these analyses are performed specifically to determine the pressure and temperature profiles for which equipment required for safe shutdown following a postulated line break are to be environmentally qualified (EQ) and for the impact on the building compartments. EPU impact on Equipment Qualification (EQ) as a result of these analyses is addressed in LAR 261, Attachment 5, Section 2.3.1, Environmental Qualification of Electrical Equipment. In addition, as noted in Section 2.2.1, Pipe Rupture Locations and Associated Dynamic Effects, potential high energy feedwater line breaks were evaluated for pipe whip dynamic effects, jet thrust, and impingement and the results are acceptable for EPU.

The Safety Evaluation Report Compliance Matrix for the RETRAN and LOFTRAN non-LOCA transient analysis codes listed in the LAR 261, Attachment 5, Appendix A, Safety Evaluation Report Compliance, lists feedwater line ruptures as transients within the capabilities of these codes for use by Westinghouse, as approved by the NRC in the SE for each code. As stated in this matrix, these codes were only used to analyze a subset of these transients for evaluation of EPU conditions at PBNP and feedwater line ruptures were not among the PBNP transients analyzed. The SE list of transients for each code only represents code capabilities for use of the codes by Westinghouse for transient analyses at various plants. There is no implication in the matrix or the code SEs that each of the transients listed must be analyzed for a given application at a specific plant. Based on the above, no further evaluation of feedwater system pipe breaks is required.

Question 16

Regulation 10 CFR 50 Appendix A, Criterion 57--Closed system isolation valves, states that each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve. The licensee currently credits the feedwater check valves as a feedwater line containment isolation valve. However, Criterion 57 also states that a simple check valve may not be used as the automatic isolation valve.

The licensee is installing new fast closing (5 second) air operated MFIVs to the feedwater system to limit the feedwater flow to the containment during a main steam line break event. These valves are classified as safety related and will be evaluated for addition to the IST program. However, the licensee is not crediting them as containment isolation valves. Even though the licensing of PBNP predates the adoption of the GDCs in 10 CFR 50 Appendix A, the licensee corresponding reference in their UFSAR is Criterion 53, Containment Isolation Valves. Since the licensee is installing these new MFIVs for having the safety-related function of main feedwater isolation, then the licensee should incorporate the MFIVs as having the function for main feedwater line containment isolation.

NextEra Response

The licensing basis for PBNP regarding containment isolation is presented in Section 5.2 of the PBNP FSAR. As noted above, General Design Criterion 53 is cited in this section and states:

"Criterion: Penetrations that require closure for the containment function shall be protected by redundant valving and associated apparatus. (GDC 53)"

FSAR Section 5.2.2, Item 4, states:

"A check valve qualifies as an automatic trip valve in certain incoming lines."

FSAR Figures 5.2-3 and 5.2-4 present the containment isolation configurations for the feedwater lines. Additional information provided in these figures states that the feedwater lines are incoming lines connected to a closed system inside containment and that the lines have a low probability of rupture and therefore may have an automatic valve external to containment. These figures reiterate Item 4 of Section 5.2-2 regarding check valves qualifying as automatic trip valves for these incoming lines.

The new Main Feedwater Isolation Valves (MFIVs) are being installed upstream of the current containment isolation valves and outside the existing containment isolation boundary. The new MFIVs do not impact or modify the existing containment isolation boundary. As discussed in LAR 261, Attachment 5, Section 2.5.5.4, Condensate and Feedwater, the new MFIVs are being installed specifically to limit mass and energy releases for main steam line breaks inside containment and are not credited for containment isolation purposes. The MFIVs are not credited in other accident analyses, including the dose analyses.

LAR 261 was prepared consistent with the Office of Nuclear Reactor Regulation Review Standard for Extended Power Uprates, RS-001, Revision 0, December 2003. RS-001 under

Purpose indicates that "the staff will review plants against their design basis. The staff does not intend to impose the criteria and/or guidance in this review standard on plants whose design bases do not include these criteria and/or guidance. No backfitting is intended or approved in connection with the issuance of this review standard."

Since installation of the new MFIVs will not impact or modify the existing containment isolation boundary for the main feedwater lines to containment, the current licensing basis is maintained and inclusion of the new MFIVs as containment isolation valves is not necessary.

Question 17

The licensee failed to provide the Failure Mode and Effects Analysis for the new AFW system.

NextEra Response

NextEra has performed a failure mode and effects analysis for the new auxiliary feedwater (AFW) system and the results show that the failure or malfunction of any single active component will not prevent the system from performing its emergency function. The results are presented below.

Component	Failure Mode	Effect
Isolation valve for AFW safety-related suction supply	Fails to open	Two AFW pumps are provided. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.
Auxiliary Feedwater Pump	Failure to start, failure to run, pump trip	Two AFW pumps are provided. Either one of the two AFW pumps provides the required auxiliary feedwater flow to remove sufficient decay heat.
Auxiliary Feedwater Pump	Failure to trip on low suction pressure	Two AFW pumps are provided. Each AFW pump is provided with low suction pressure protection. Separate suction supply headers are provided for motor-driven versus the turbine-driven AFW pumps. Either one of the two AFW pumps provides the required auxiliary feedwater flow to remove sufficient decay heat.
MDAFW Pump recirculation valve	Fails to open	Two recirculation paths are provided per MDAFW pump. Either recirculation path has sufficient capacity to support short term pump operation.

Component	Failure Mode	Effect
MDAFW Pump recirculation valve	Fails to close	Two AFW pumps are provided. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.
MDAFW Pump discharge control valve on either of the steam generator supply lines	Fails to control flow	Redundant flow path from TDAFW pump is available. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.
MDAFW Pump discharge control valve on line leading to faulted steam generator	Fails to close	Operator trips pump. Two AFW pumping systems are provided. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.
TDAFW Pump recirculation valve	Fails to open	Two AFW pumps are provided. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.
TDAFW Pump recirculation valve	Fails to close	Two AFW pumps are provided. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.
TDAFW Pump discharge throttle valve on line leading to faulted steam generator	Fails to close	Operator trips pump. Two AFW pumps are provided. Either one of the two AFW pumping systems provides the required auxiliary feedwater flow to remove sufficient decay heat.

References

1. NRC to FPL Energy Point Beach, LLC dated June 2, 2009 from J. Poole to S. Hale, Draft Questions from the Staff on Missing Information to the AFW Modification

2. FPL Energy Point Beach, LLC, Letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564).

ENCLOSURE 2

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1
EXTENDED POWER UPRATE

EVALUATION OF CHANGES

11 pages follow

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," NextEra Energy Point Beach, LLC, (NextEra) proposes additional changes to Technical Specifications for Point Beach Nuclear Plant (PBNP) Units 1 and 2, in support of License Amendment Request (LAR) 261 (Reference 1).

This supplement proposes to add Function Item 6.e., AFW Pump Suction Transfer on Suction Pressure-Low, Technical Specification (TS) Table 3.3.2-1 (page 3 of 3), Engineered Safety Feature Actuation System Instrumentation, and to revise the condensate storage tank level for Surveillance Requirement (SR) 3.7.6.1. This supplement fulfills Regulatory Commitment 1 in Attachment 4 of LAR 261 (Reference 1), to provide the auxiliary feedwater pump (AFW) Pump Suction Transfer on Suction Pressure-Low value and the Condensate Storage Tank SR value by July 30, 2009.

2.0 DETAILED DESCRIPTION

PBNP Units 1 and 2 are being modified to include a unitized AFW pump system. Details of the system are contained in Section 2.5.4.5, Auxiliary Feedwater, of LAR 261, Attachment 5. The new pump system for each unit will have increased flow capacity to ensure adequate margin is available for removal of decay heat from the core. The normal source is by gravity feed from two 45,000 gallon condensate storage tanks while the safety-related Seismic Class I supply is taken from the plant service water system. The Service Water pumps are powered by the emergency diesel generators (EDGs) if a loss of AC occurs.

In addition, an automatic suction transfer on low suction pressure will be implemented from the condensate storage tanks to the safety-related service water system. TS Table 3.3.2-1, Function 6.e, AFW Pump Suction Transfer on Suction Pressure-Low, is being added to Function 6, Auxiliary Feedwater, to enable that automatic transfer. This function will eliminate the need to credit a manual transfer of the AFW pump suction from the condensate storage tanks (CSTs) to the safety-related service water source implementing the automatic suction transfer upon a low suction pressure signal.

The required levels for the CSTs proposed for TS SR 3.7.6.1.A, 3.7.6.1.B, and 3.7.6.1.C have been calculated for different combinations of tank and unit operation alignments to provide adequate water to provide decay heat removal.

PBNP has two condensate storage tanks shared by both units, each with a nominal 45,000 gallon capacity. New level values are proposed based upon a licensed core power level of 1800 MWt for each unit. Considering the new CST values are based on providing an adequate supply of water to remove decay heat at an EPU licensed core power of 1800 MWt, the new CST level values bound the values required for the current licensed core power. Accordingly, the CST level SR will be implemented on both units at the same time.

A detailed description of the associated proposed TS changes is provided below for each change. Proposed markups for TS Table 3.3.2-1 and SR 3.7.6.1 are provided in Enclosure 3. Additionally, proposed markups for the Bases for Section 3.7.6.1 are provided in Enclosure 4 for NRC staff information.

This license amendment request supplement proposes to add an LSSS value for TS Table 3.3.2-1 Function Item 6.e., AFW Pump Suction Transfer on Suction Pressure-Low of

≥ 5.7 psig. The supplement also proposes revising SR 3.7.6.1 from "Verify the CST level is ≥13,000 gallons." to "Verify the CST level is ≥21,150 gallons (2 CSTs, either cross-tied or individually aligned), ≥35,837 gallons (1 CST supplying two units), or ≥ 14,100 gallons (2 CSTs supplying one unit)."

2.1 Proposed TS Table 3.3.2-1 Function 6.e. Addition

This supplement proposes to incorporate a new setpoint for AFW Pump Suction Transfer on Suction Pressure-Low.

To clarify text that was provided in LAR 261, one channel of the AFW Pump Suction Transfer on Suction Pressure-Low is required to be OPERABLE in MODES 1, 2 and 3. There is one channel of this function per individual auxiliary feedwater pump with two pump systems per unit. If one channel on an individual auxiliary feedwater pump is not OPERABLE , a new CONDITION J. applies. The REQUIRED ACTION for CONDITION J is the restoration of the channel to OPERABLE status within 48 hours or declare the associated Auxiliary Feedwater Pump not OPERABLE. The LSSS for Function 6.e. is proposed to be ≥5.7 psig.

CONDITION J. is proposed to be added as follows:

CONDITION	REQUIRED ACTION		COMPLETION TIME
---------------NOTE--------------- Separate Condition entry is allowed for each AFW pump ---------------------------------------	J.1	Restore channel to OPERABLE status.	48 hours
	OR		
J. One channel inoperable.	J.2.	Declare associated AFW pump out of service	

To ensure OPERABILITY of the channels is maintained, SR 3.3.2.1, 3.3.2.3 and 3.3.2.8 must be performed. This requires a CHANNEL CHECK to be performed every 12 hours, a COT to be performed every 92 days, and a CHANNEL CALIBRATION to be performed every 18 months.

The TS Table 3.3.2-1 Function 6.e. is proposed to be added as follows:

	FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTING
e.	AFW Pump Suction Transfer on Suction Pressure - Low	1,2,3	1 per pump	J	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≥5.7 psig

2.2 Proposed TS SR 3.7.6.1 Changes

This supplement proposes revising SR 3.7.6.1 from "Verify the CST level is ≥13,000 gallons" to "Verify the CST level is ≥21,150 gallons (2 CSTs, either cross-tied or individually aligned), ≥35,837 gallons (1 CST supplying two units) or ≥ 14,100 gallons (2 CSTs supplying one unit)." The surveillance requirements are being expanded from one to three values to ensure an adequate supply of water is maintained for various combinations of CSTs and units in operation.

SR 3.7.6.1 is proposed to be revised as follows:

SURVEILLANCE	FREQUENCY
SR 3.7.6.1.A Verify the CST level is ≥ 21,150 gallons. (2 CSTs, either cross-tied or individually aligned) OR SR 3.7.6.1.B Verify the CST level is ≥ 35,837 gallons (1 CST supplying two units) OR SR 3.7.6.1.C Verify the CST level is ≥ 14,100 gallons (2 CSTs supplying one unit)	12 hours

3.0 TECHNICAL EVALUATION

The AFW system is being upgraded to have unit-specific, motor-driven AFW pumps and to increase the flow capability of the system. A description of associated AFW TS changes is provided in the proposed markups for LAR 261 Enclosure 3, TS 3.7.5, Auxiliary Feedwater (Reference 1). The AFW system upgrade adds a provision for automatic switchover of pump suction to service water on low suction pressure. This switchover changes the suction source from the CST to safety related, Class I service water.

A new separate suction header is being added from the Condensate Storage Tanks (CSTs) to the new motor-driven AFW pumps. Therefore, the motor-driven AFW pump and the turbine-driven AFW pump for each unit will have a separate suction header from the CST. Each individual AFW pump will have one suction pressure instrumentation channel to perform the AFW Pump Suction Transfer on Suction Pressure-Low. Each individual AFW pump has its own service water suction supply motor-operated valve (MOV) controlled by the suction pressure instrumentation channel for that associated pump.

The LSSS setpoint value for this automatic switchover is proposed to be ≥ 5.7 psig. The low pressure setpoint is based upon the capability of the pump to maintain flow to the steam generators with an adequate suction head from its suction source. This setpoint considers the suction piping losses, the net positive suction head available from the condensate storage tank and associated instrument uncertainties.

A time delay relay is proposed to actuate after the low suction pressure automatic switchover to service water bistable actuates. This relay will have a time delay after the switchover setpoint is reached. The switchover and pump trip time delay relay setpoint will also ensure that low suction pressure supply switchover or trip does not occur during a normal pump startup transient. This time delay will also minimize the potential for a spurious supply switchover or trip due to the normal low suction pressure startup transient. These setpoints take into account suction piping losses, instrument uncertainties and net positive suction head associated with the AFW pumps. These setpoints were developed using the methodology described in Appendix E, Setpoint Methodology, Attachment 5 of Reference (1).

PBNP has two condensate storage tanks, each with a nominal 45,000 gallon capacity that are shared between the units. These tanks are normally cross-tied and provide a supply of water to the Motor-Driven and Turbine-Driven Auxiliary Feedwater Pumps for both units. Figure 2.5.4.5-1 on Page 2.5.4.5-14 of Reference (1) provides a piping diagram of the CSTs and modified Auxiliary Feedwater System. Because the water supply is cross-tied, one or both of the CSTs can be aligned to one or both of the units' auxiliary feedwater pumps. Accordingly, the possible combinations of CSTs and unit operation need to be addressed in the Technical Specifications to ensure an adequate supply of water is maintained.

The CST levels of $\geq$ 21,150 gallons in one CST for single unit operation, $\geq$ 21,150 gallons in both CSTs for 2-unit operation, $\geq$ 35,837 gallons in one CST for 2-unit operation, or $\geq$ 14,100 gallons in both CSTs for single unit operation to be listed in the SR 3.7.6.1 ensure that adequate volume is provided to the steam generators for decay heat removal. The volumes are based on maintaining each unit in hot shutdown for one hour following a loss of all AC as required by 10 CFR 50.63 (Station Blackout Rule), as described in NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," and as described in Regulatory Guide 1.155, "Station Blackout." These volumes also afford sufficient time to align the alternate AC (AAC) source. Note that Station Blackout is the only licensing basis scenario that credits the CSTs at PBNP.

In addition to the volumes required for decay heat removal, these levels take into account suction piping losses, instrument uncertainties, vortex prevention, net positive suction head, and the unusable volumes (portion below the suction nozzles) in the CSTs. After restoration of AAC, service water is available as a source of water to feed the steam generators. The service water source at PBNP is from Lake Michigan. The automatic function will occur if AFW suction pressure reaches the low suction pressure setpoint due to the loss of the CST suction source.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

PBNP was designed and constructed to comply with the intent of the draft AEC General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967 (ML003674718) (Reference 2). PBNP was not licensed to 10 CFR 50, Appendix A.

The GDC used during the licensing of PBNP predates those provided today in 10 CFR 50, Appendix A. The origin of the PBNP GDC relative to the Atomic Energy Commission proposed GDC is discussed in FSAR Section 1.3. The parenthetical numbers following the criterion description indicate the numbers of the Atomic Industrial Forum version of the proposed General Design Criteria.

The following engineered safety features (ESF)-related PBNP GDCs were evaluated relative to the AFW system design during the EPU review:

Criterion: Those systems and components of reactor facilities which are essential to the prevention, or the mitigation of the consequences of nuclear accidents which could cause undue risk to the health and safety of the public shall be identified and then designed, fabricated, and erected to quality standards that reflect the importance of the safety function to be performed. Where generally recognized codes and standards pertaining to design, materials, fabrication, and inspection are used, they shall be identified. Where adherence to such codes or standards does not suffice to assure a quality product in keeping with the safety function, they shall be supplemented or modified as necessary. Quality assurance programs, test procedures, and inspection acceptance criteria to be used shall be identified. An indication of the applicability of codes, standards, quality assurance programs, test procedures, and inspection acceptance criteria used is required. Where such items are not covered by applicable codes and standards, a showing of adequacy is required. (PBNP GDC 1)

The AFW System is designated a Seismic Class I System, but the CSTs (normal suction source to AFW pumps) are not Seismic Class I. The quality requirements of each AFW component is controlled by the Quality Assurance Program.

Criterion: Those systems and components of reactor facilities which are essential to the prevention or to the mitigation of the consequences of nuclear accidents which could cause undue risk to the health and safety of the public shall be designed, fabricated, and erected to performance standards that enable such systems and components to withstand, without undue risk to the health and safety of the public, the forces that might reasonably be imposed by the occurrence of an extraordinary natural phenomenon such as earthquake, tornado, flooding condition, high wind, or heavy ice. The design bases so established shall reflect: (a) appropriate consideration of the most severe of these natural phenomena that have been officially recorded for the site and the surrounding area and (b) an appropriate margin for withstanding forces greater than those recorded to reflect uncertainties about the historical data and their suitability as a basis for design. (PBNP GDC 2)

The AFW system is designated a Seismic Class I system. As a Class I system, AFW system components are designed so there is no loss of function in the event of the maximum hypothetical earthquake. Measures are also taken in the design to protect against high winds, flooding and other phenomena, such as the effects of a tornado.

Criterion: Instrumentation and controls shall be provided as required to monitor and maintain within prescribed operating ranges essential reactor facility operating variables. (PBNP GDC 12)

This criterion is applicable to the instrumentation and control systems provided to monitor and maintain within prescribed operating ranges the temperatures, pressures, flows, and levels in the reactor coolant systems, steam systems, containments, and other auxiliary systems.

Criterion: Engineered safety features shall be provided in the facility to back up the safety provided by the core design, the reactor coolant pressure boundary, and their protection systems. Such engineered safety features shall be designed to cope with any size reactor coolant piping break up to and including the equivalent of a circumferential rupture of any pipe in that boundary, assuming unobstructed discharge from both ends. (PBNP GDC 37)

The AFW system is required to provide high pressure feedwater to the steam generators in the event of an accident.

Criterion: All engineered safety features shall be designed to provide such functional reliability and ready testability as is necessary to avoid undue risk to the health and safety of the public. (PBNP GDC 38)

The AFW system components are tested and inspected in accordance with Technical Specification surveillance criteria and frequencies. Testing verifies MDAFW pump operability, TDAFW pump operability including a cold start, and operability of all required MOVs. Control circuits, starting logic, and indicators are verified operable by their respective functional test.

Criterion: Adequate protection for those engineered safety features, the failures of which could cause an undue risk to the health and safety of the public, shall be provided against dynamic effects and missiles that might result from plant equipment failures other than a rupture of the Reactor Coolant System piping. An original design basis for protection of equipment against the dynamic effects of a rupture of the Reactor Coolant System piping is no longer applicable. (PBNP GDC 40)

This criterion is applicable to the AFW system Class I components both inside and outside containment. The AFW system safety-related functions will not be impaired as a result of a missile or dynamic effects of a pipe rupture.

Criterion: Engineered safety features, such as the emergency core cooling system and the containment heat removal system, shall provide sufficient performance capability to accommodate the failure of any single active component without resulting in undue risk to the health and safety of the public. (PBNP GDC 41)

The AFW system is designed with sufficient mechanical and electrical redundancy such that a single failure of an active component, either in the system or in a supporting system, can be accommodated without loss of the overall AFW system safety-related functions.

Criterion: Engineered safety features shall be designed so that the capability of these features to perform their required function is not impaired by the effects of a loss of coolant accident to the extent of causing undue risk to the health and safety of the public. (PBNP GDC 42)

The AFW system is designed to function following a loss-of-coolant accident. AFW System safety-related functions can be accomplished in the harsh environments resulting from the loss-of-coolant accident. The AFW system also performs the following augmented quality functions. As discussed in FSAR, Appendix A.1, *Station Blackout (SBO)*, in the event of a station blackout, the AFW system is capable of automatically supplying sufficient feedwater to remove decay heat from both units without reliance on AC power for one hour. To support this capability, the minimum required volume in the condensate storage tank was determined to be adequate, the temperature in the AFW pump room would not increase above the maximum temperature for equipment reliability, and there is sufficient capacity in the safety-related batteries to support operation of the safety-related loads. In the event of plant fires, including those requiring evacuation of the control room, the AFW system shall be capable of manual initiation to provide feedwater to a minimum of one steam generator per unit at sufficient flow and pressure to remove decay and sensible heat from the reactor coolant system over the range from hot shutdown to cold shutdown conditions. The AFW system shall support achieving cold shutdown within 72 hours. In the event of an Anticipated Transient Without Scram (ATWS), the AFW system shall be capable of automatic actuation by use of equipment that is diverse from the reactor trip system. This is accomplished by the ATWS Mitigation System Actuation Circuitry (AMSAC) system required by 10 CFR 50.62 and is described in FSAR Section 7.4, Other Actuation Systems. AMSAC trips the main turbine and will start the motor-driven AFW pump and the unit-specific turbine driven AFW pump on loss of main feedwater when the main turbine is above 40% nominal power. The auxiliary feedwater system has no functional requirements during normal, at power plant operation.

The FSAR provides that the service water system shall provide a long-term makeup water source to the suction of the auxiliary feedwater (AFW) pumps when the normal makeup source (the CST) is not available.

10 CFR 50.63, "Loss of all alternating current power"

The applicable regulatory requirement for this supplement is 10 CFR 50.63, which includes requirements that "the reactor core and associated coolant, control, and protection systems, including station batteries and any other necessary support systems, must provide sufficient capacity and capability to ensure that the core is cooled and appropriate containment integrity is maintained in the event of a station blackout for the specified duration."

NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors"

NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," (Reference 3) provides the criteria that following an hour of station blackout, AAC may be credited for supplying the power necessary to use service water as a long-term source of water to the suction of the auxiliary feedwater system to remove decay heat from the core.

NRC Regulatory Guide 1.155, "Station Blackout"

NRC Regulatory Guide 1.155, "Station Blackout," (Reference 4) provides the criteria that following an hour of station blackout, AAC may be credited for supplying the power necessary to use service water as a long-term source of water to the suction of the auxiliary feedwater system to remove decay heat from the core.

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

NextEra has determined that the proposed changes do not require any exemptions or relief from regulatory requirements and do not affect conformance with any General Design Criterion (GDC) differently than described in the Final Safety Analysis Report (FSAR).

Thus, with the changes proposed in this supplement as described above, the plant Technical Specifications will continue to provide the basis for safe plant operation.

4.2 Significant Hazards Consideration

NextEra has evaluated whether or not a significant hazard is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   This supplement to LAR 261 proposes to incorporate a new setpoint for AFW Pump Suction Transfer on Suction Pressure-Low.

   As discussed in LAR 261, one channel of the AFW Pump Suction Transfer on Suction Pressure-Low is required to be OPERABLE in MODES 1, 2 and 3. If one channel on an individual Auxiliary Feedwater Pump is not OPERABLE, a new CONDITION J applies. The REQUIRED ACTION for CONDITION J is the restoration of the channel to OPERABLE status within 48 hours or declare the associated Auxiliary Feedwater Pump not OPERABLE. The Limiting Safety Systems Setting (LSSS) for Function 6.e. is proposed to be ≥ 5.7 psig.

   To ensure that OPERABILITY of the channels is maintained, surveillances SR 3.3.2.1, 3.3.2.3 and 3.3.2.8 must be performed. This requires a CHANNEL CHECK to be performed every 12 hours, a CHANNEL OPERATIONAL TEST (COT) to be performed every 92 days, and a CHANNEL CALIBRATION to be performed every 18 months.

   The setpoint for automatic suction transfer of the AFW pumps' suction from the condensate storage tank to service water does not contribute to the consequences of an accident or increase the probability of an accident. The completion of channel checks and channel calibrations also do not contribute to the consequences of an accident. Therefore, this proposed Technical Specification change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   This supplement to LAR 261 proposes revising SR 3.7.6.1 from "Verify the CST level is ≥ 13,000 gallons" to "Verify the CST level is ≥ 21,150 gallons (2 CSTs, either cross-tied or individually aligned), ≥ 35,837 gallons (1 CST supplying two units), or ≥ 14,100 gallons (2 CSTs supplying one unit)".

   An acceptable level of water in the condensate storage tanks does not contribute to the consequences of, nor significantly increase the probability of an accident. Therefore, this proposed Technical Specification change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The changes proposed in this supplement do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

This supplement to LAR 261 proposes to incorporate a new setpoint for AFW Pump Suction Transfer on Suction Pressure-Low.

As discussed in LAR 261, one channel of the AFW Pump Suction Transfer on Suction Pressure-Low is required to be OPERABLE in MODES 1, 2 and 3. If one channel on an individual Auxiliary Feedwater Pump is not OPERABLE, a new CONDITION J applies. The REQUIRED ACTION for CONDITION J is the restoration of the channel to OPERABLE status within 48 hours or declare the associated Auxiliary Feedwater Pump not OPERABLE. The Limiting Safety Systems Setting (LSSS) for Function 6.e. is proposed to be ≥ 5.7 psig.

To ensure OPERABILITY of the channels is maintained, surveillances SR 3.3.2.1, 3.3.2.3 and 3.3.2.8 must be performed. This requires a CHANNEL CHECK to be performed every 12 hours, a COT to be performed every 92 days, and a CHANNEL CALIBRATION to be performed every 18 months.

There are physical changes being made to the plant. New unit-specific AFW pumps are being installed on each unit. This change is limited to the establishment of a low suction pressure automatic transfer from the condensate storage tanks to the safety-related Class I service water system with applicable mode applicabilities and required surveillances for that setpoint. No new modes of plant operation are being introduced. The configuration, operation and accident response of the structures or components are changed only in that now there will be an automatic transfer of the AFW suction upon low suction pressure. Analyses of transient events have confirmed that no transient event results in a new sequence of events that could lead to a new accident scenario. The parameters assumed in the analysis are within the design limits of existing plant equipment.

The design of the AFW motor-driven system for each unit has been changed so each unit has dedicated Auxiliary Feedwater Pumps. No new equipment or systems will be installed which could potentially introduce new failure modes or accident sequences. No changes are being made to the reactor protection system. A new automatic AFW low suction pressure transfer from the condensate storage tank to the safety-related service water system emergency safeguards features instrumentation actuation setpoint has been established. Neither the new configuration nor the change to the Technical Specification is an accident initiator.

Based upon a review of these changes no new accident scenarios, failure mechanisms or limiting single failures are introduced as a result of the proposed changes.

This supplement to LAR 261 proposes revising SR 3.7.6.1 from "Verify the CST level is ≥ 13,000 gallons" to "Verify the CST level is ≥ 21,150 gallons (2 CSTs, either cross-tied or individually aligned), ≥ 35,837 gallons (1 CST supplying two units), or ≥ 14,100 gallons (2 CSTs supplying one unit)."

There are no physical changes being made to the plant to accommodate the change in the CST volume. No new modes of plant operation are being introduced. The configuration, operation and accident response of the systems, structures and/or components are not changed to accommodate the change in the new surveillance requirements for the CSTs. Analyses of transient events have confirmed that no transient event results in a new sequence of events that could lead to a new accident scenario as a result of this TS change. The parameters assumed in the analysis are within the design limits of existing plant equipment.

Based on a review of these changes, no new accident scenarios, failure mechanisms or limiting single failures are introduced as a result of the proposed changes.

The proposed TS changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response: No

This supplement to LAR 261 proposes to incorporate a new setpoint for AFW Pump Suction Transfer on Suction Pressure-Low.

As discussed in LAR 261, one channel of the AFW Pump Suction Transfer on Suction Pressure-Low is required to be OPERABLE in MODES 1, 2 and 3. If one channel on an individual Auxiliary Feedwater Pump is not OPERABLE, a new CONDITION J applies. The REQUIRED ACTION for CONDITION J is the restoration of the channel to OPERABLE status within 48 hours or declare the associated Auxiliary Feedwater Pump not OPERABLE. The Limiting Safety Systems Setting (LSSS) for Function 6.e. is proposed to be ≥ 5.7 psig.

To ensure OPERABILITY of the channels is maintained, surveillances SR 3.3.2.1, 3.3.2.3 and 3.3.2.8 must be performed. This requires a CHANNEL CHECK to be performed every 12 hours, a COT to be performed every 92 days, and a CHANNEL CALIBRATION to be performed every 18 months.

Margins of safety are not being changed by implementing this proposed LSSS setpoint implementation and associated surveillances are being put in place to assure maintenance of the setpoint. Therefore, there will not be a significant reduction in the margin of safety as a result of this change.

This supplement to LAR 261 proposes revising SR 3.7.6.1 from "Verify the CST level is ≥ 13,000 gallons" to "Verify the CST level is ≥ 21,150 gallons (2 CSTs, either cross-tied or individually aligned), ≥ 35,837 gallons (1 CST supplying two units), or ≥ 14,100 gallons (2 CSTs supplying one unit)."

The changes in the required CST surveillance requirements are being made to accommodate the proposed increase in the reactor power level for the EPU, to account for suction piping losses, instrument uncertainties, vortex prevention, net positive suction head, and the unusable volumes (portion below the suction nozzles) in the CSTs, and to ensure adequate cooling water is being maintained under various combinations of CSTs and plant units in operation. As a result, these changes do not result in a significant reduction in the margin of safety.

Therefore, there will not be a significant reduction in the margin of safety.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

The Plant Operations Review Committee has reviewed the proposed changes and concurs with this conclusion.

5.0 ENVIRONMENTAL CONSIDERATION

NextEra has evaluated the proposed changes and has concluded that the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. FPL Energy Point Beach, LLC, Letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564).

2. AEC General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967 (ML003674718).

3. NUMARC 87-00, Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors.

4. NRC Regulatory Guide 1.155, Station Blackout, August 1988 (ML003740034).

ENCLOSURE 3

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1
EXTENDED POWER UPRATE

PROPOSED TECHNICAL SPECIFICATION CHANGES

3 pages follow

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
---------------NOTE--------------- Separate Condition entry is allowed for each AFW pump ------------------------------------- J. One channel inoperable.	J.1 Restore channel to OPERABLE status. OR J.2. Declare associated AFW pump out of service	48 hours

Table 3.3.2-1 (page 3 of 3)
Engineered Safety Feature Actuation System Instrumentation

LIMITING SAFETY SYSTEM SETTING

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	~~ALLOWABLE VALUE~~
5. Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1,2(e),3(e)	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	NA
b. SG Water Level—High	1,2(e),3(e)	3 per SG	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	NA
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	G	SR 3.3.2.2	NA
b. SG Water Level— Low Low	1,2,3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≥ 20%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
d. Undervoltage Bus A01 and A02	1,2	2 per bus	H	SR 3.3.2.6 SR 3.3.2.8	≥ 3120 V
~~e. AFW Pump Suction Transfer on Suction Pressure - Low~~	~~1,2,3~~	~~1 per pump~~	~~J~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.3~~ ~~SR 3.3.2.8~~	~~≥ 5.7 psig~~
7. Condensate Isolation					
a. Containment Pressure—High	1,2(e),3(e)	3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 6 psig
b. Automatic Actuation Logic and Actuation Relays	1,2(e),3(e)	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	N/A
8. SI Block-Pressurizer Pressure	1,2,3	3	I	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 1800 psig

(e) Except when all MFRVs and associated bypass valves are closed and de-activated.

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Restore CST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 4, without reliance on steam generator for heat removal.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.6.1.A Verify the CST level is ≥ ~~13,000~~ 21,150 gallons. (2 CSTs, either cross-tied or individually aligned) OR SR 3.7.6.1.B Verify the CST level is ≥ 35,837 gallons (1 CST supplying two units) OR SR 3.7.6.1.C Verify the CST level is ≥ 14,100 gallons (2 CSTs supplying one unit)	12 hours

ENCLOSURE 4

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1
EXTENDED POWER UPRATE

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

(FOR INFORMATION ONLY)

7 pages follow

ENCLOSURE 4

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1
EXTENDED POWER UPRATE

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

(FOR INFORMATION ONLY)

7 pages follow

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY (continued)

the event of an accident. In MODES 3, 4, and 5, the MFW pumps may be normally shut down, and thus a pump trip is not indicative of a condition requiring automatic AFW initiation.

e. AFW Pump Suction Transfer on Suction Pressure-Low.

A low pressure signal in the AFW pump suction lines protects the AFW pumps against a loss of the normal supply of water for the pumps. The pressure switches are located on the AFW pump suction lines from the CSTs. A low pressure signal sensed by the pump suction switches will cause the safety-related source of water, Service Water, to be automatically aligned to the AFW pumps. The alignment of the Service Water System to maintain at least one of the SGs per unit as the heat sink for reactor decay heat and sensible heat removal.

This Function must be OPERABLE in MODES 1, 2, and 3 to ensure a safety grade supply of water for the AFW System to maintain the SGs as the heat sink for the reactor. In MODE 4, AFW automatic suction transfer does not need to be OPERABLE because RHR will already be in operation, or sufficient time is available to place RHR in operation, to remove decay heat.

Table 3.3.2-1 Notes 1 and 2 are applicable.

7. Condensate Isolation

The Condensate Isolation Function serves as a backup protection function in the event of a Main Steam Line Break inside containment with a failure of the Main Feedwater lines to isolate. An evaluation of IE Bulletin 80-04 showed that a single failure of a MFRV to close on a SI signal could allow feedwater addition to the faulted SG, leading to containment overpressure.

a. Containment Pressure-Condensate Isolation (CPCI)

The Condensate Isolation Function is actuated when containment pressure exceeds the high setpoint, and performs the following functions:

- Trips the condensate pumps; and
- Trips the heater drain pumps.

BASES

BASES

ACTIONS (continued) H.1 and H.2

Condition H applies to the Undervoltage Bus A01 and A02 Function.

If one channel is inoperable, 6 hours are allowed to restore one channel to OPERABLE status or place it in the tripped condition. If placed in the tripped condition, this Function is then in a partial trip condition where one-out-of-two logic will result in actuation. The 6 hours to place the channel in the tripped condition is necessary due to plant design requiring maintenance personnel to effect the trip of the channel outside of the control room. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit to be placed in MODE 3 within the following 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, this Function is no longer required OPERABLE.

I.1, I.2.1 and I.2.2

Condition I applies to the Pressurizer Pressure SI Block.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the block. Determination must be made within 1 hour. The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. If the block is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of the Pressurizer Pressure SI block.

~~J.1 and J.2~~

~~Condition J applies to the AFW Pump Suction Transfer on Suction Pressure-Low.~~

~~If one channel on an individual Auxiliary Feedwater pump is inoperable, 48 hours are allowed to restore the channel to OPERABLE status or declare the associated AFW pump inoperable. The 48 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required~~

ACTIONS (continued)

feature. Additionally, the 48 hour Completion Time takes into account the capacity of the remaining AFW sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. If the out of service time for the channel extends beyond 48 hours, then the automatic transfer of the safety-related water source is considered inoperable, making the associated AFW pump inoperable. The AFW pump LCO 3.7.5.B would then apply.

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing channel I, train A and train B must be examined. Similarly, train A and train B must be examined when testing channel II,

B 3.7 PLANT SYSTEMS

B 3.7.6 Condensate Storage Tank (CST)

BASES

BACKGROUND

The CST is the preferred source of water to the steam generators for removing decay and sensible heat from the Reactor Coolant System (RCS). The CST provides a passive flow of water, by gravity, to the Auxiliary Feedwater (AFW) System (LCO 3.7.5). The steam produced is released to the atmosphere by the main steam safety valves or the atmospheric dump valves. The AFW pumps operate with a continuous recirculation to the CST at low flows.

The CST is non-safety related, because the tanks are not located in a Safety Related Seismic Category I structure. Each of the two CSTs has a capacity of 45,000 gallons, and is shared by both units. As such, a single CST has sufficient capacity to supply the required ~~13,000~~ gallon per unit volume to the AFW System for the configurations described in these Bases. The safety related source of water to the AFW System is the Service Water System (LCO 3.7.8). An AFW pump system can be considered OPERABLE with an inoperable CST based on the OPERABILITY of its associated service water suction supply valve with service water available from either leg of the plant service water system. ~~CST low level alarms and AFW pump low suction pressure alarms and trips are provided to prevent pump damage and to alert personnel that the AFW pump suction supply must be manually swapped.~~ CST low level alarms alert personnel that the AFW suction supply must be monitored. The pump suctions are automatically transferred to the Service Water system if the AFW low suction pressure setpoint is reached.

The Applicable Safety Analyses section of Bases 3.7.5 also applies to this Bases section.

A description of the CST is found in the FSAR, Section 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The CST provides the preferred source of water to the AFW pump systems to remove decay heat and to cool down a unit following various accidents as discussed in the FSAR, Chapter 14 (Ref. 2). The safety related source of water to the AFW pump systems is the Service Water System. Motor operated valves are provided to allow the suction supply for the AFW pumps to be manually transferred to the SW system. The Applicable Safety Analyses section of Bases 3.7.5 also applies to this Bases section.

The limiting event for CST volume is the Station Blackout event (Ref. 3). The minimum amount of water in the CST assures the capability to maintain the unit in MODE 3 for at least one hour concurrent with a loss of all AC power, while then allowing sufficient

BASES

APPLICABLE SAFETY ANALYSES (continued)

operator action time ~~to~~ for automatic transfer of AFW suction to the service water system. The minimum CST level is consistent with NRC recommendations made in the Station Blackout Safety Evaluation (Ref. 4), which was calculated in accordance with the recommendations contained in NUMARC 87-00, Section 7.2 (Ref. 5). Once the suction source is transferred to the service water system, an unlimited supply of water is available from the lake via either leg of the plant service water system.

The CST satisfies Criteria 2 and 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii).

LCO

The CST level requirement is for a usable volume of ≥ ~~13,000~~ 14,100, 21,150 or 35,837 gallons, respectively, dependent upon the specific configuration of the tanks which assures the capability to maintain the unit in MODE 3 for at least one hour concurrent with a loss of all AC power~~, while then allowing sufficient operator action time to transfer AFW suction to the service water system~~. The basis for this limit is established in Reference 4. Since the CSTs are common to both units, this LCO may be satisfied by a single, or multiple, CST(s) containing the required combined volume. The safety related source of water to the AFW system is the service water system.

The OPERABILITY of the CST is determined by maintaining the tank level at or above the minimum required level. In addition, system piping and valves required to function during accident conditions that are directly associated with the CST must be OPERABLE.

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when the steam generators ~~is~~ are being relied upon for heat removal, the CST is required to be OPERABLE.

In MODE 5 or 6, the CST is not required because the AFW System is not required.

ACTIONS

A.1

If the CST is not OPERABLE, the CST must be restored to OPERABLE status within 7 days, to re-establish the preferred source of water to the AFW pump systems. The 7 day Completion Time is reasonable, based on the OPERABILITY of the service water system as a readily available safety related source of water to the AFW pump systems, and the low probability of an event occurring during this time period.

ACTIONS (continued)

B.1 and B.2

If the CST cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on the steam generator for heat removal, within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

This SR verifies that the CST contains the required volume of cooling water. ~~The minimum CST volume limit (13,000 gallons) does not include instrument uncertainty. The Surveillance Requirement is met when indicated CST level is ≥ 9.75 feet with both CSTs cross-tied supplying both units, ≥ 15.25 feet for a single tank supplying both units, or ≥ 7.0 feet with both CSTs cross-tied supplying one unit.~~ The 12 hour Frequency is based on operating experience and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. Also, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal deviations in the CST level.

SR 3.7.6.1.A

This SR verifies the CST level is ≥ 21,150 gallons, when 2 CSTs are providing a passive flow of water to the Auxiliary Feedwater System of both units. The required volume is the same whether the two tanks are cross-tied or are individually aligned to each unit's Auxiliary Feedwater System.

SR 3.7.6.1.B

This SR verifies that the CST level is ≥ 35,837 gallons when 1 CST is providing a passive flow of water to the Auxiliary Feedwater Systems of both units.

SR 3.7.6.1.C

This SR verifies that the CST level is ≥ 14,100 gallons when 2 CSTs are providing a passive flow of water to the Auxiliary Feedwater System of one unit.

BASES (continued)

REFERENCES

1. FSAR. Section 10.2.
2. FSAR. Chapter 14.
3. 10 CFR 50.63.
4. NRC Safety Evaluation of the Point Beach rResponse to the Station Blackout Rule, dated October 3, 1990.
5. Guidelines and Technical Bases for NUMARC Incentives Initiatives Addressing Station Blackout at Light Water Reactors, Section 7.2, dated November, 1987.

ENCLOSURE 5

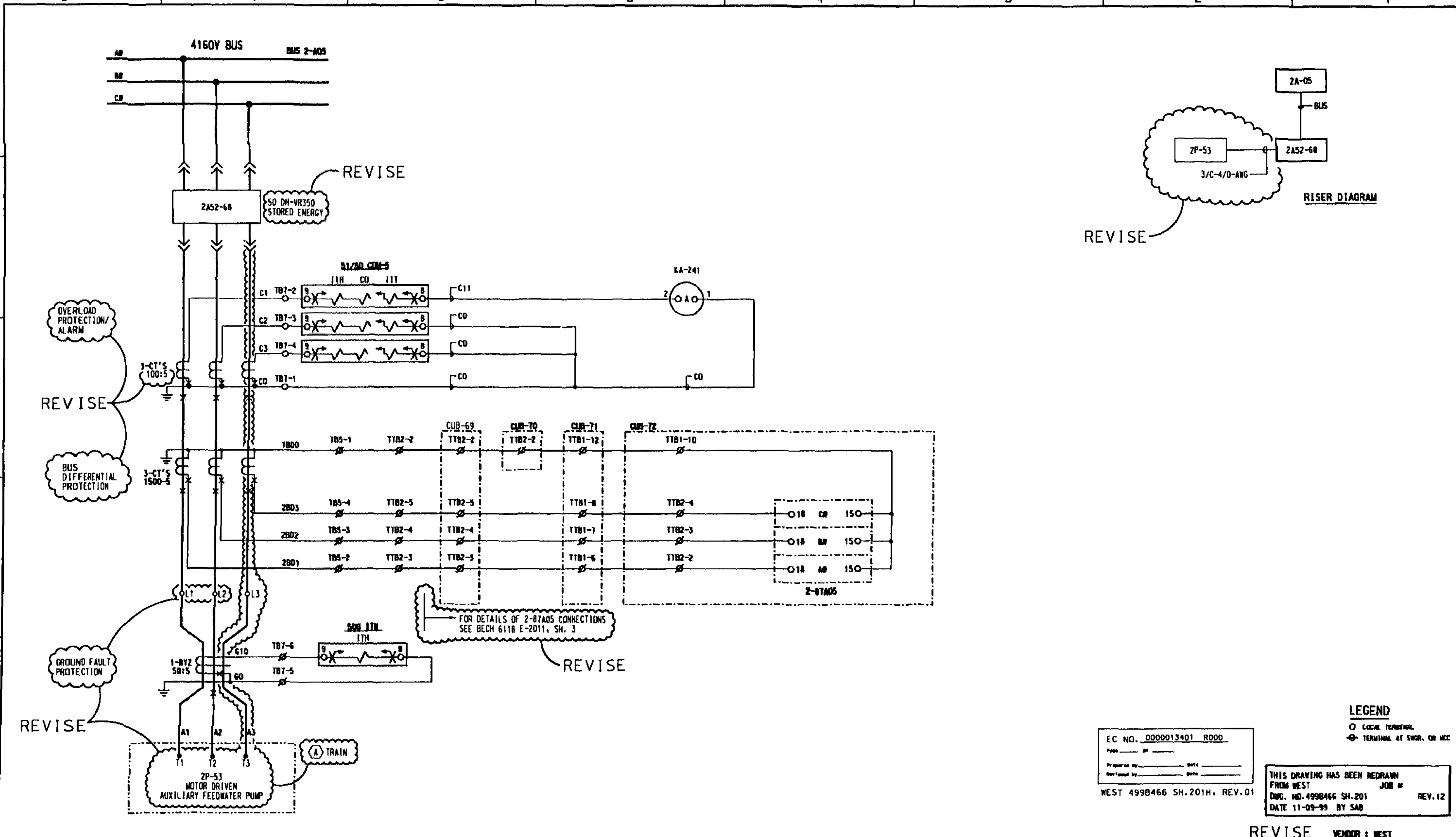
NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1
EXTENDED POWER UPRATE

ENCLOSURE 1, QUESTION 5 DRAWINGS

(FOR INFORMATION ONLY)

16 pages follow



LEGEND

○ LOCAL TERMINAL
⊖ TERMINAL AT SWGR. OR MCC

EC NO. 0000013401 R000

WEST 499B466 SH.201H, REV.01

THIS DRAWING HAS BEEN REDRAWN
FROM WEST JOB #
DWG. NO.499B466 SH.201 REV.12
DATE 11-09-99 BY SAB

REVISE

VENDOR : WEST
T.F.I. T4.1
MOD. REQ. : NONE

© We Energies 2002

WEST 499B466 SH.201H

REFERENCE DRAWINGS	
WIRING DIAGRAM, 2A52-68	WEST 499B466 SH.223B
CONNECTION DIAGRAM, CUBICLE 68	BECH 6118 E-2090 SH.8B
CONNECTION DIAGRAM, CUBICLE 72	BECH 6118 E-2090 SH.7A
CONNECTION DIAGRAM, CUBICLE 71	BECH 6118 E-2090 SH.8E
M & R DIAGRAM	BECH 6118 E-2011 SH.3
SWGR & PROTECTION RELAY INTERNALS	WEST 594F054

REV	DATE	REVISION DESCRIPTION	ECN	DRAWN	CHK'D	APPR'D
01	10-25-02	REVISED PER BCH NE002-1441	2064	EJB1	BER	BER
00	02-12-00	INC. INTO POS PER MEMO NEX3-2000-0002	T505	OLG	SHP	ORL

MICROFILM NO. 322067

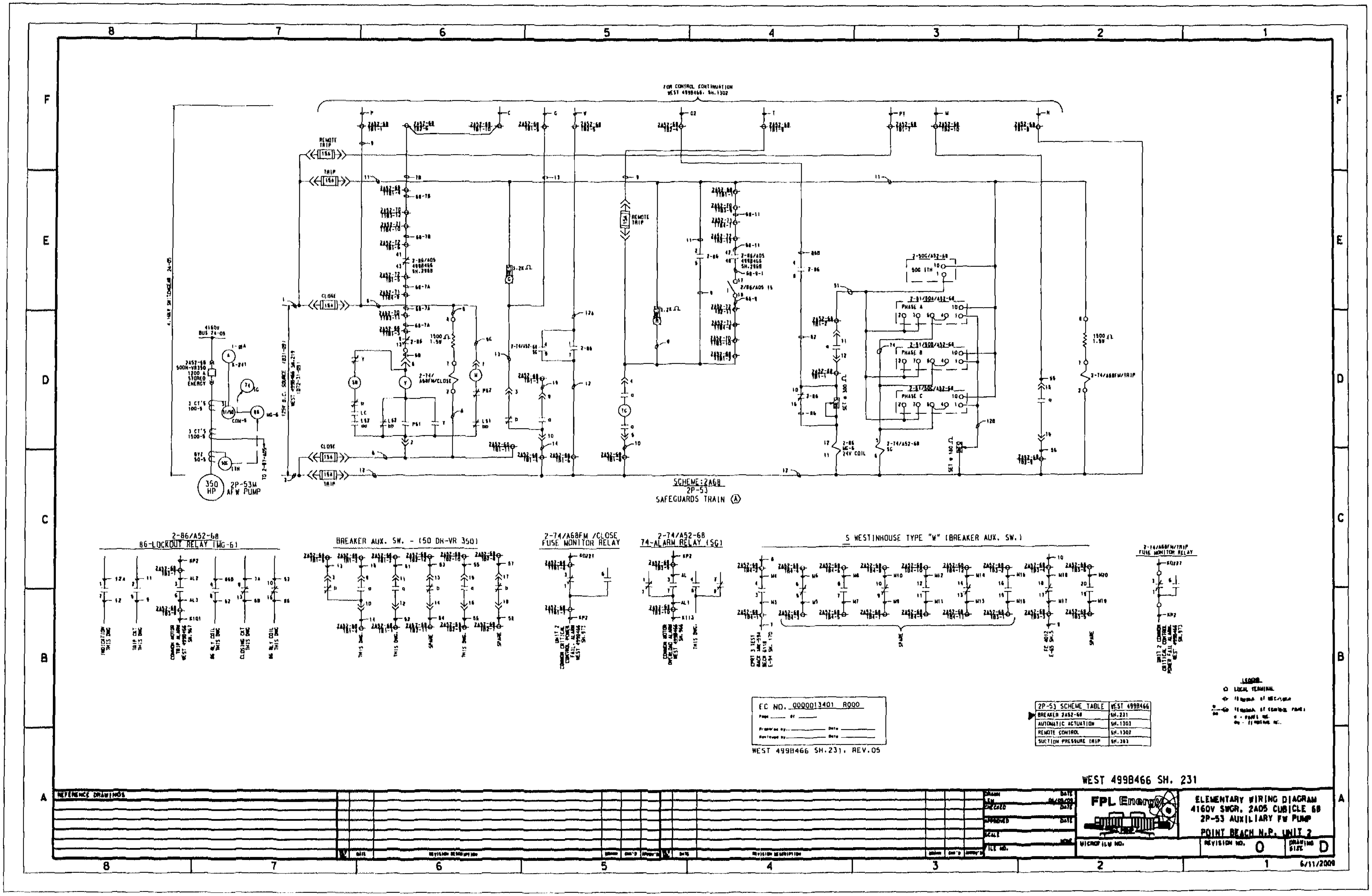
We Energies

CSS NO. 8262B

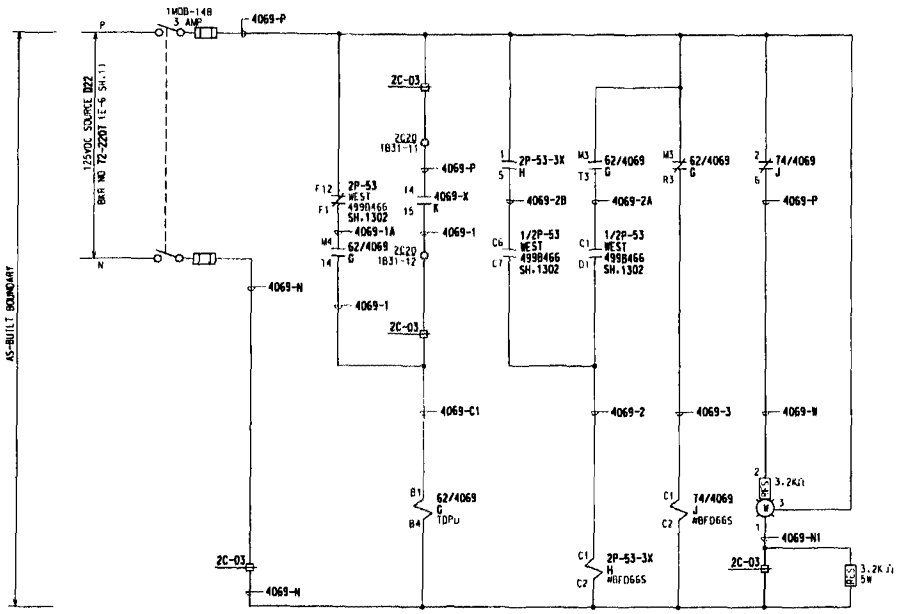
ELEMENTARY WIRING DIAGRAM
MOTOR DRIVEN AUXILIARY
FEEDWATER PUMP 2P-53
CUBICLE 2A52-68
POINT BEACH N.P. UNIT 2

DPB 02 EANS000012 01

24-OCT-2002

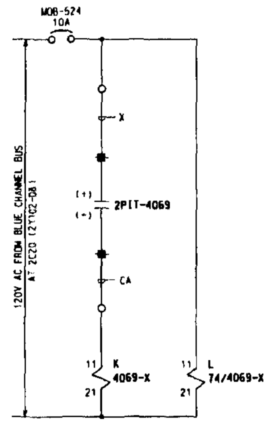


FOR CONTROL CONTINUATION WEST 499B466 SH.1302
SCHEME:2A6B
2P-53
SAFEGUARDS TRAIN (A)
350 HP
2P-53M AFW PUMP
2-86/A52-6B
86-LOCKOUT RELAY (MG-6)
BREAKER AUX. SW. - (50 DH-VR 350)
2-74/A6BFM /CLOSE
FUSE MONITOR RELAY
2-74/A52-6B
74-ALARM RELAY (SG)
5 WESTINHOUSE TYPE "W" (BREAKER AUX. SW.)
EC NO. 0000013401 R000
WEST 499B466 SH.231, REV.05
2P-53 SCHEME TABLE
WEST 499B466
BREAKER 2A52-6B
SH.231
AUTOMATIC ACTUATION
SH.1303
REMOTE CONTROL
SH.1302
SUCTION PRESSURE TRIP
SH.383
WEST 499B466 SH. 231
REFERENCE DRAWINGS
ELEMENTARY WIRING DIAGRAM
4160V SWGR. 2A05 CUBICLE 6B
2P-53 AUXILIARY FW PUMP
POINT BEACH N.P. UNIT 2
REVISION NO. 0
DRAWING SIZE D
6/11/2009



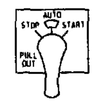
SCHEME: 4069

SAFEGUARDS TRAIN (A)



SCHEME: 214069

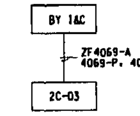
CONTROL SWITCH		1/2P-53				
LOCATION	CONTACT	POSITION				
		PULL	STOP	AUTO STOP	AUTO START	START
[illegible]	A11-B11	X	X			
[illegible]	A12-B12			X	X	
[illegible]	A1-B1					X
SPARE	A5-A6	X	X	X		
SPARE	A6-A7				X	X
SPARE	B5-B6	X	X	X		
SPARE	B6-B7				X	X
SPARE	C11-D11	X	X			
[illegible]	C12-D12			X	X	
THIS DWG.	C1-D1					X
SPARE	C5-C6	X	X	X		
THIS DWG.	C6-C7				X	X
SPARE	D5-D6	X	X	X		
[illegible]	D6-D7				X	X
[illegible]	E12-E1	X				
THIS DWG.	F12-F1		X	X	X	X
[illegible]	E6-E7	X				
SPARE	F6-F7		X	X	X	X



1/2P-53

CONTROL SWITCH, TYPE "W2"
(3 POSITION SPRING
RETURN TO CENTER)
S# 508A162G01

SWITCH DEVELOPMENT



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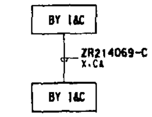


SCHEME: 214069
(NOTE 1)

2P-53 SCHEME TABLE	WEST 499B466
BREAKER 2A52-68	SH. 231
AUTOMATIC ACTUATION	SH. 1303
REMOTE CONTROL	SH. 1302
▶ SUCTION PRESSURE TRIP	SH. 363

NOTE:

1. CABLES WR214069-A & XR214069-B ARE USED FOR INDICATOR AND SENSOR CONNECTIONS. SEE BECH 6118 E-2094 SH.113 FOR DETAILS.
2. COMPOSITE CABLE RISER DIAGRAM IS SHOWN ON WEST 499B466 SH.223B

EC NO. 0000013401 R000

Page ____ Of ____

Prepared by ____ Date ____

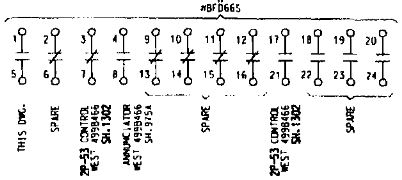
Reviewed by ____ Date ____

WEST19 499B466 SH.363.REV.0

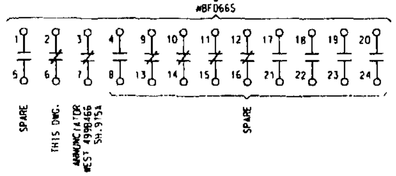
LEGEND

- PENETRATION TERMINAL
- LOCAL TERMINAL
- TERMINAL AT LOAD CENTER
- TERMINAL AT CONTROL PANEL DISCONNECTING (SLIDER) TYPE
  - * - PANEL NO.
  - ** - TERMINAL NO.
- TERMINAL AT CONTROL PANEL PERMANENT (FIXED) TYPE
  - * - PANEL NO.
  - ** - TERMINAL NO.

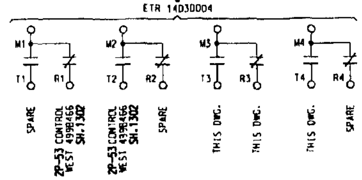
2P-53 AFP LOW SUCTION PRESSURE TRIP DISABLED ALARM RELAY
2P-53-3X
H
#BFD66S



2P-53 AFP LOW SUCTION PRESSURE TRIP ALARM RELAY
74/4069
J
#BFD66S

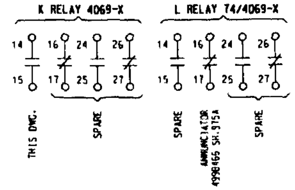


2P-53 AFP LOW SUCTION HDR PRESSURE TIME DELAY RELAY
62/4069
G
ETR 14D3D004



K RELAY 4069-X

L RELAY 74/4069-X

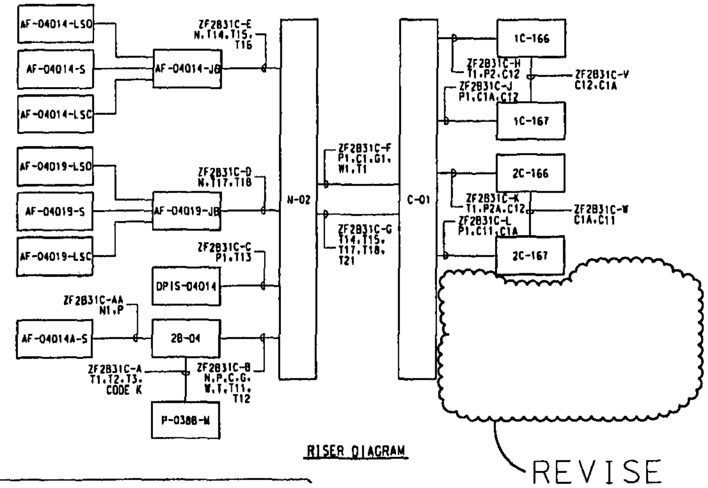


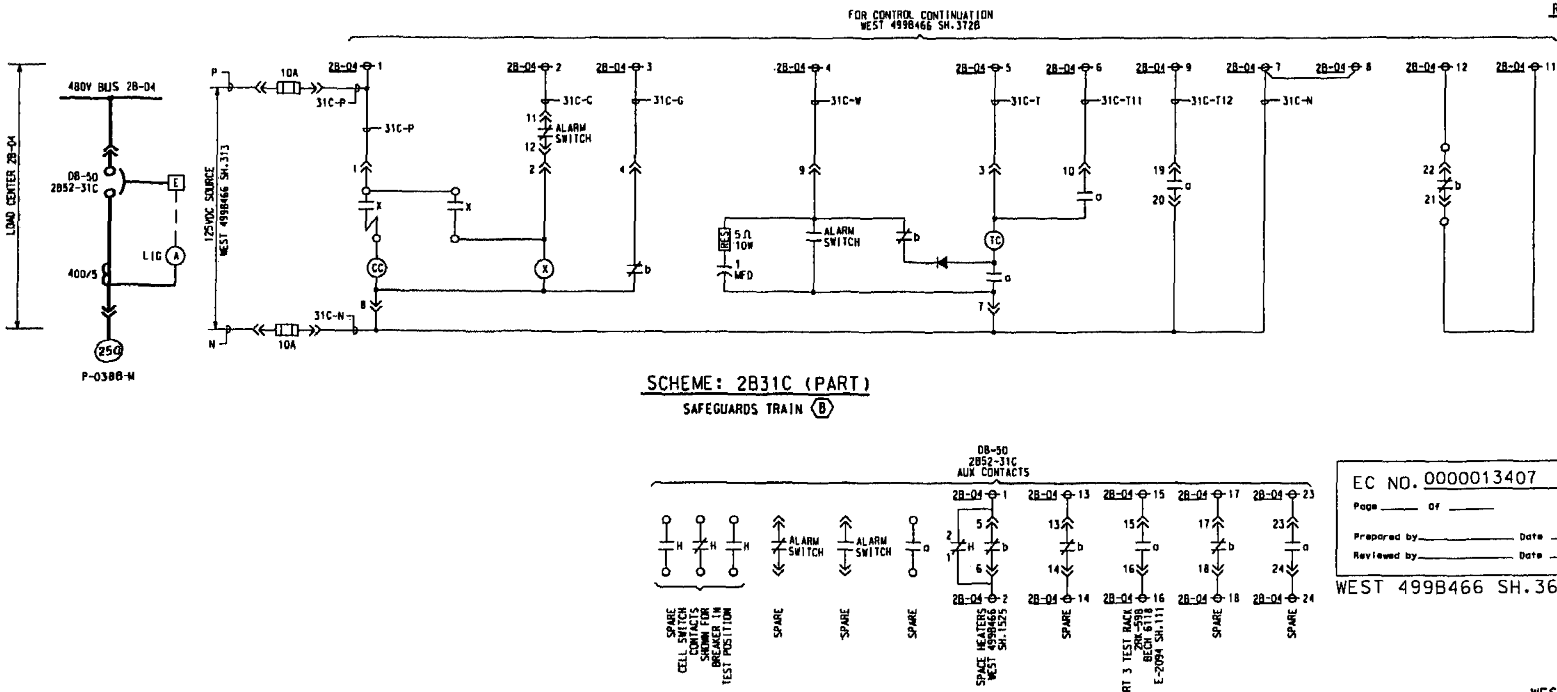
WEST19 499B466 SH.363

REFERENCE DRAWINGS

FPL Energy	ELEMENTARY WIRING DIAGRAM AUXILIARY FEEDWATER PUMP 2P-53 SUCTION PRESSURE TRIP POINT BEACH N.P. UNIT 2
MICROFILM NO.	REVISION NO. 0 — DRAWING SIZE D

6/11/2009





P-038B SCHEME TABLE	WEST 499B466
BREAKER 2B52-31C	SH.369B
AUTOMATIC ACTUATION	SH.370B
REMOTE CONTROL	SH.372B
SUCTION PRESSURE TRIP	SH.373B

NOTES:
1. 2B52-31C RETROFITTED W/AMPTECTOR OVERLOAD KIT #6472C21G10
2. COMPOSITE CABLE RISER DIAGRAM SHOWN THIS DRAWING. SEE P-038B SCHEME TABLE

LEGEND
- PENETRATION TERMINAL
- LOCAL TERMINAL
- TERMINAL AT LOAD CENTER
- TERMINAL AT CONTROL PANEL DISCONNECTING (SLIDER) TYPE
  - * - PANEL NO.
  - ** - TERMINAL NO.
- TERMINAL AT CONTROL PANEL PERMANENT (FIXED) TYPE
  - * - PANEL NO.
  - ** - TERMINAL NO.

EC NO. 0000013407 R000
Page ____ of ____
Prepared by ____ Date ____
Reviewed by ____ Date ____

WEST 499B466 SH.369B, REV.01

THIS DRAWING HAS BEEN REDRAWN FROM WEST JOB #
DWG. NO. 499B466 SH.369 REV.19
DATE 07-11-02 BY MRW1

REVISE

VENDOR : WEST
T.F.I. 13.3
MOD. REQ. : NONE

WEST 499B466 SH.369B

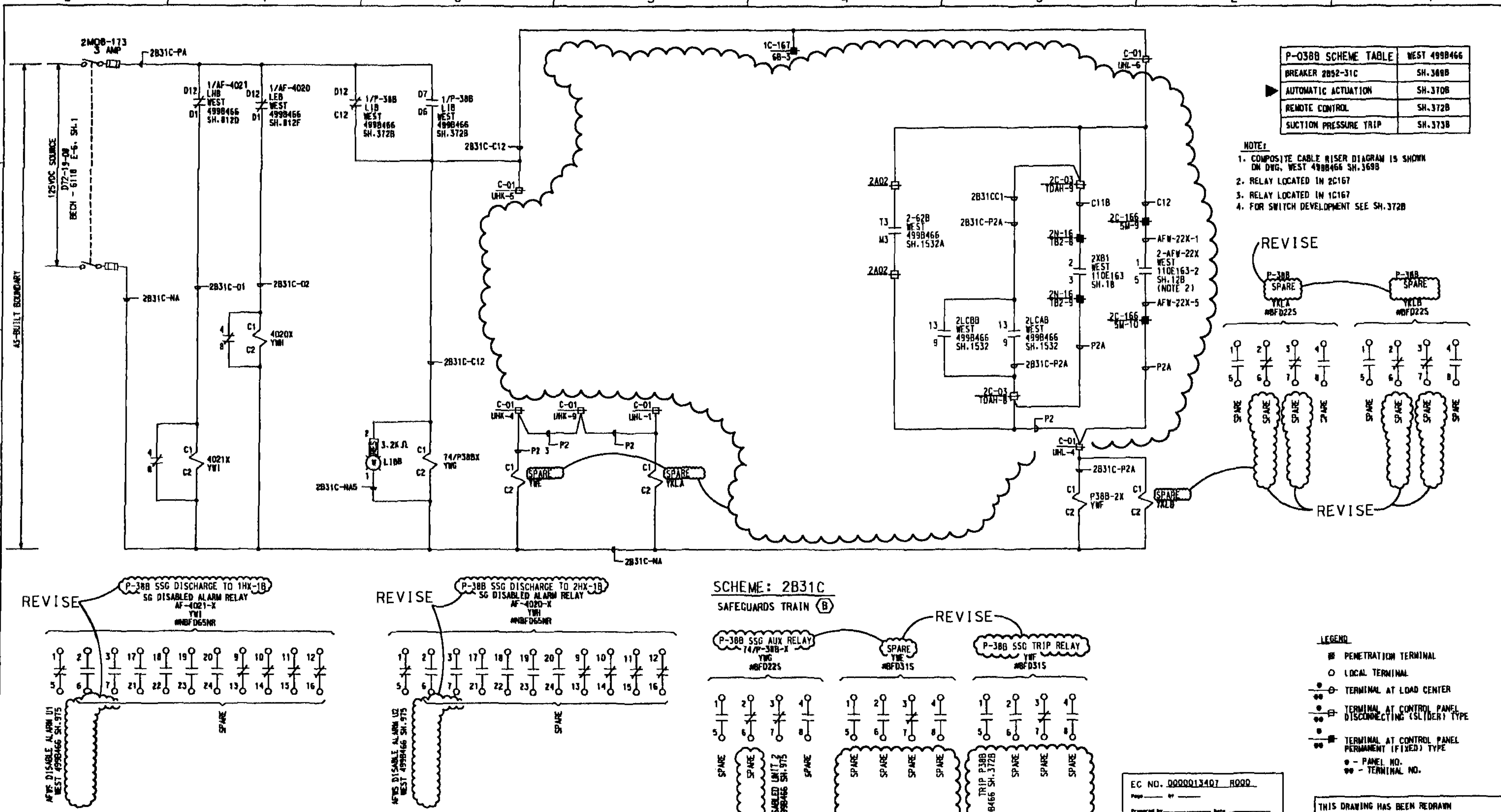
REFERENCE DRAWINGS	
ONE-LINE DIAGRAM, 2B-04	BECH 6118 E-2004 SH.4
CONNECTION DIAGRAM, 2B-04	BECH 6118 E-2091 SH.6
CONNECTION DIAGRAM, N-02	BECH 6118 E-98 SH.17

REV	DATE	REVISION DESCRIPTION	ACT	DRAWN	CHK'D	APPROV'D
01	12-15-04	REVISED PER DCN #2004-2136		BER	MRW1	MRW1
00	08-06-03	INC. INTO PDS PER MEMO #PB-DWG-2002-048	2064	CEK	BER	BER

MICROFILM NO. 344546
DRAWN MRW1 DATE 07-11-02
CDS NO. 69842
SCALE NONE

ELEMENTARY WIRING DIAGRAM
POWER TO P-038B-M
STANDBY STEAM GENERATOR FEED PUMP
POINT BEACH N.P. UNIT 2

DPB 02 EF WS 165 009 01



P-038B SCHEME TABLE	WEST 499B466
BREAKER 2B52-31C	SH.369B
AUTOMATIC ACTUATION	SH.370B
REMOTE CONTROL	SH.372B
SUCTION PRESSURE TRIP	SH.373B

NOTE:
1. COMPOSITE CABLE RISER DIAGRAM IS SHOWN ON DWG. WEST 499B466 SH.369B
2. RELAY LOCATED IN 2C167
3. RELAY LOCATED IN 1C167
4. FOR SWITCH DEVELOPMENT SEE SH.372B

LEGEND
- PENETRATION TERMINAL
- LOCAL TERMINAL
- TERMINAL AT LOAD CENTER
- TERMINAL AT CONTROL PANEL DISCONNECTING (SLIDER) TYPE
- TERMINAL AT CONTROL PANEL PERMANENT (FIXED) TYPE
- * - PANEL NO.
- ** - TERMINAL NO.

EC NO. 0000013407 R000
Page ___ of ___
Prepared by ___ Date ___
Reviewed by ___ Date ___
WEST 499B466 SH.370B, REV.01

THIS DRAWING HAS BEEN REDRAWN
FROM WEST JOB #
DWG. NO. 499B466 SH.370 REV.17
DATE 10-23-01 BY VCC/RJJ

VENDOR : WEST
T.F.I. T3.3
MOD. REQ. : 85-213

REVISE

WEST 499B466 SH.370B

REFERENCE DRAWINGS	
CONNECTION DIAGRAM, C-01- RISER 22	WOLFEN E-1618E-A
CONNECTION DIAGRAM, C-01	WOLFEN E-1620E-B
CONNECTION DIAGRAM, C-01	WOLFEN E-1623E-A
CONNECTION DIAGRAM, C-01	WOLFEN E-1631E-A
CONNECTION DIAGRAM, C-01	WOLFEN E-1632E-A
CONNECTION DIAGRAM, 1C-03	WOLFEN E-1257E-A
CONNECTION DIAGRAM, 1C-03	WOLFEN E-1259E-B
CONNECTION DIAGRAM, 1C-03	WOLFEN E-1267E-A
CONNECTION DIAGRAM, 2C-03	WOLFEN E-1594E-B
CONNECTION DIAGRAM, 2C-03	WOLFEN E-1603E-A
CONNECTION DIAGRAM, 2C-03	WOLFEN E-1603E-B
CONNECTION DIAGRAM, 2N-16	BECH 6118 E-2094 SH.110
CONNECTION DIAGRAM, 1N-16	BECH 6118 E-94 SH.166

REV	DATE	REVISION DESCRIPTION				
01	10-23-03	REVISED PER DCN 0003-1933	2004	CEA	MRV	MRW
00	12-20-01	INCORP. INTO PDS PER MEMO PB-DWB-0001-000	2064	VCC	RJJ	JLM

MICROFILM NO. 334229

COG NO. 59431

DRAWN VCC DATE 12-20-01
CHECKED RJJ DATE 12-20-01
APPROVED JLM DATE 12-20-01
SCALE NONE

ELEMENTARY WIRING DIAGRAM
STANDBY STEAM GENERATOR
FEED PUMP P-38B
AUTOMATIC ACTUATION
POINT BEACH N.P. UNIT 2

DPB 02 EFWS 165 008 01

24-OCT-2003

WAS: PB 31 EAPS000060

(VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		AF-04014-LSC			
LOCATION	CONTACT	SYMBOL	VALVE POSITION FULL CLOSED	INTMD.	FULL OPEN
THIS DWG.	A-B	oo			
SPARE	C-D	bc			
SPARE	E-F	bo			
SPARE	G-H	oc			

(VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		AF-04014-LSO			
LOCATION	CONTACT	SYMBOL	VALVE POSITION FULL CLOSED	INTMD.	FULL OPEN
SPARE	A-B	oo			
THIS DWG.	C-D	bo			
SPARE	E-F	bo			
SPARE	G-H	oo			

LIMIT SWITCH DEVELOPMENT

(VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		AF-04019-LSO			
LOCATION	CONTACT	SYMBOL	VALVE POSITION FULL CLOSED	INTMD.	FULL OPEN
SPARE	A-B	oo			
THIS DWG.	C-D	bo			
SPARE	E-F	bo			
SPARE	G-H	oo			

(VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		AF-04019-LSC			
LOCATION	CONTACT	SYMBOL	VALVE POSITION FULL CLOSED	INTMD.	FULL OPEN
THIS DWG.	A-B	oc			
SPARE	C-D	bc			
SPARE	E-F	bc			
SPARE	G-H	oc			

LIMIT SWITCH DEVELOPMENT

SELECTOR SWITCH 43/P-38B			
LOCATION	CONTACT	POSITION REMOTE	POSITION LOCAL
THIS DWG.	A11-B11		X
THIS DWG.	A12-B12	X	
THIS DWG.	A1-B1		X
THIS DWG.	A5-B5		X
THIS DWG.	A6-B6	X	
499B466 SH.998	A7-B7		X
THIS DWG.	C11-D11	X	
SPARE	C12-D12		X
THIS DWG.	C1-D1	X	
THIS DWG.	C5-D5	X	
SPARE	C6-D6		X
THIS DWG.	C7-D7	X	

REMOTE LOCAL

43/P-38B
SELECTOR SWITCH, TYPE "W2"
S# 505A621G01
WITH MAINTAINED HANDLE
STYLE # 501B787H01

SWITCH DEVELOPMENT

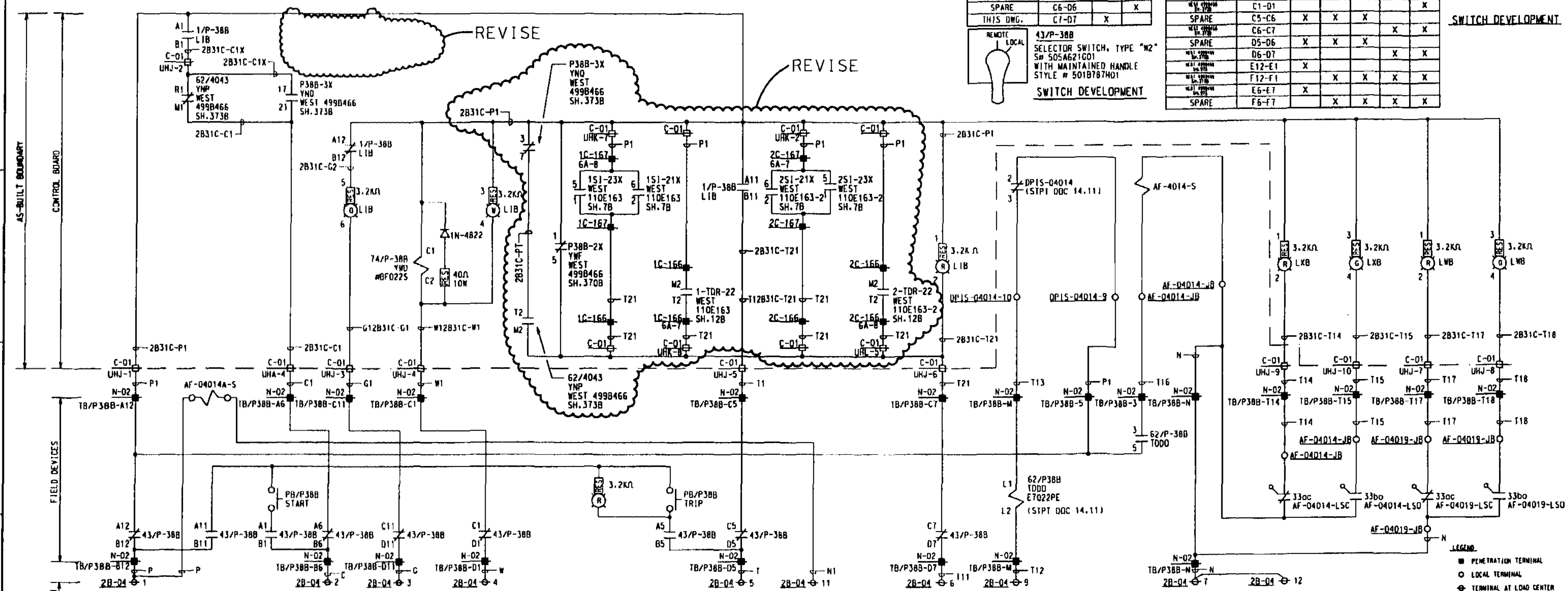
CONTROL SWITCH 1/P-38B						
LOCATION	CONTACT	PULL	STOP	OFF AFTER STOP	OFF AFTER START	START
THIS DWG.	A11-B11	X	X			
THIS DWG.	A12-B12			X	X	
THIS DWG.	A1-B1					X
SPARE	A5-A6	X	X	X		
SPARE	A6-A7				X	X
SPARE	B5-B6	X	X	X		
SPARE	B6-B7				X	X
SPARE	C11-D11	X	X			
[illegible]	C12-D12			X	X	
[illegible]	C1-D1					X
SPARE	C5-C6	X	X	X		
[illegible]	C6-C7				X	X
SPARE	D5-D6	X	X	X		
[illegible]	D6-D7				X	X
[illegible]	E12-E1	X				
[illegible]	F12-F1		X	X	X	X
[illegible]	E6-E7	X				
SPARE	F6-F7		X	X	X	X

AUTO STOP START PULL OUT

1/P-38B
L1B

CONTROL SWITCH, TYPE "W2"
(3 POSITION SPRING RETURN TO CENTER)
S# 508A162G01

SWITCH DEVELOPMENT



EC NO. 0000013407 R000
Page ___ of ___
Prepared by ___ Date ___
Reviewed by ___ Date ___

WEST 499B466 SH.372B, REV.03

74/P-38B YWD #BF0225 CONTACTS

62/P-38B TDDO #2422PF CONTACTS

62/P-38B TDDO # E7022 PE CONTACTS

COMMON BKR TRIP WEST 499B466 SH.36? — SPARE — SPARE — SPARE — SPARE — SPARE — SPARE — THIS DWG — SPARE

SCHEME: 2B31C (PART)

SAFEGUARDS TRAIN (B)

P-038B SCHEME TABLE	WEST 499B466
BREAKER 2B52-31C	SH.369B
AUTOMATIC ACTUATION	SH.370B
REMOTE CONTROL	SH.372B
SUCTION PRESSURE TRIP	SH.373B

LEGEND
- PENETRATION TERMINAL
- LOCAL TERMINAL
- TERMINAL AT LOAD CENTER
- TERMINAL AT CONTROL PANEL DISCONNECTING (SLIDER) TYPE
- TERMINAL AT CONTROL PANEL PERMANENT (FIXED) TYPE

THIS DRAWING HAS BEEN REDRAWN
FROM WEST JOB #
DWG. NO.499B466 SH.372 REV.20
DATE 07-11-02 BY MRW1

NOTES:
1. COMPOSITE CABLE RISER DIAGRAM IS SHOWN ON DWG. WEST 499B466 SH.369B

VENDOR : WEST
T.F.I. T3.3
MOD. REQ. : NONE

WEST 499B466 SH.372B

REFERENCE DRAWINGS	
CONNECTION DIAGRAM, C-01	WOLFEM E-1618E-A
CONNECTION DIAGRAM, C-01	WOLFEM E-1620E-A
CONNECTION DIAGRAM, C-01	WOLFEM E-1632E-A
CONNECTION DIAGRAM, C-01	WOLFEM E-1632E-B
CONNECTION DIAGRAM, C-01	WOLFEM E-1633E-A
CONNECTION DIAGRAM, C-01	WOLFEM E-1633E-B
CONNECTION DIAGRAM, N-02	BECH 6118 E-98 SH.17
CONNECTION DIAGRAM, DPIS-04014	FOXBORO WA3713 SH.1
CONNECTION DIAGRAM, AF-04014-LSO,-LSC,-JB	BECH 6118 E-98 SH.4
CONNECTION DIAGRAM, AF-04019-LSO,-LSC,-JB	BECH 6118 E-98 SH.4

REV	DATE	REVISION DESCRIPTION	ACT	DRAWN	CHK'D	APPRV'D
03	01-11-05	REVISED PER DCN #2005-0075		JLF	BER	BER
02	04-16-04	REVISED PER DCN #2004-0457		BER	MRW1	MRW1
01	12-15-03	REVISED PER DCN #2003-2196		CEK	BER	BER
00	05-06-03	INC. INTO PDE PER MEMO #PB-DWG-2002-048	2064	CEK	BER	BER

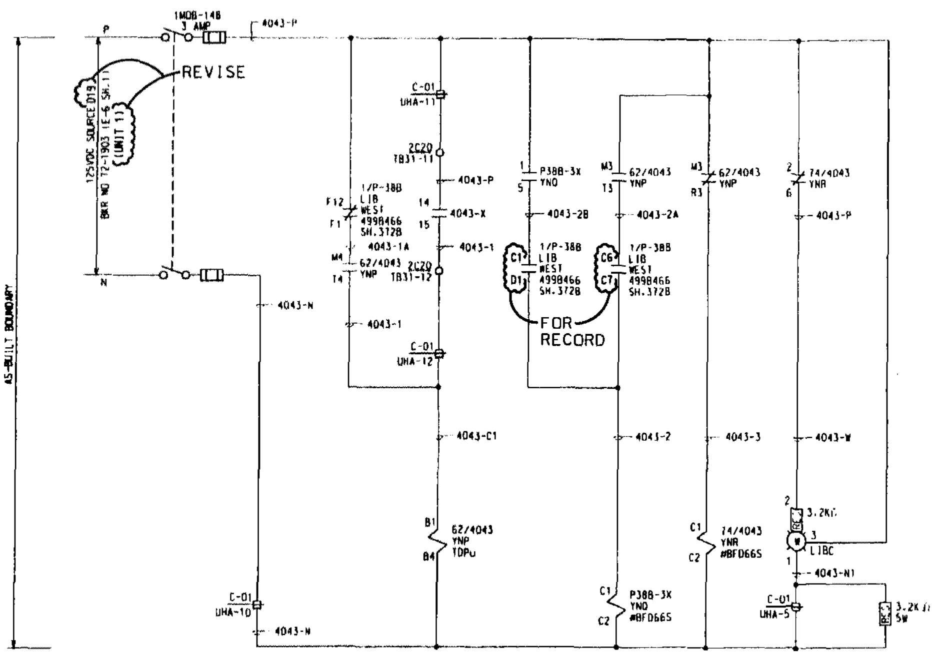
MICROFILM NO. 344585

COS NO. 59435

ELEMENTARY WIRING DIAGRAM
STANDBY STEAM GENERATOR
FEED PUMP P-38B
CONTROL CIRCUIT FOR FEEDER BREAKER
POINT BEACH N.P. UNIT 2

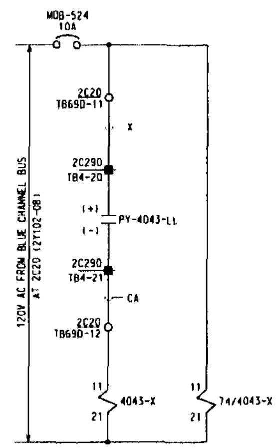
DPB 02 EFWS 165 010 03

WAS: PB 31 EAPS000023



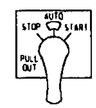
SCHEME: 4043

SAFEGUARDS TRAIN (B)



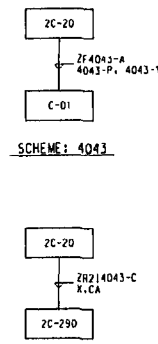
SCHEME: 214043

CONTROL SWITCH		1/P-38B				
LOCATION	CONTACT	POSITION				
		PULL	STOP	AUTO STOP	AUTO START	START
WEST 499B466 SH.372B	A11-B11	X	X			
WEST 499B466 SH.372B	A12-B12			X	X	
WEST 499B466 SH.372B	A1-B1					X
SPARE	A5-A6	X	X	X		
SPARE	A6-A7				X	X
SPARE	B5-B6	X	X	X		
SPARE	B6-B7				X	X
SPARE	C11-D11	X	X			
WEST 499B466 SH.370B	C12-D12			X	X	
THIS DWG.	C1-D1					X
SPARE	C5-C6	X	X	X		
THIS DWG.	C6-C7				X	X
SPARE	D5-D6	X	X	X		
WEST 499B466 SH.370B	D6-D7				X	X
WEST 499B466 SH.975	E12-E1	X				
THIS DWG.	F12-F1		X	X	X	X
WEST 499B466 SH.975	E6-E7	X				
SPARE	F6-F7		X	X	X	X



1/P-38B
L1B
CONTROL SWITCH, TYPE "W2"
(3 POSITION SPRING
RETURN TO CENTER)
S# 508A162G01

SWITCH DEVELOPMENT



P-038B SCHEME TABLE	WEST 499B466
BREAKER 2B52-31C	SH.369B
AUTOMATIC ACTUATION	SH.370B
REMOTE CONTROL	SH.372B
▶ SUCTION PRESSURE TRIP	SH.373B

NOTE:

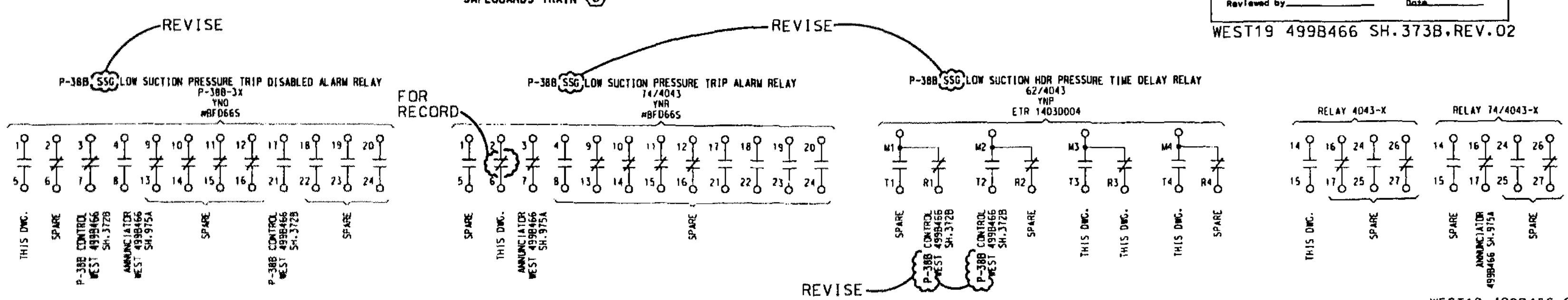
1. CABLES WR214043-A & XR214043-B ARE USED FOR INDICATOR AND SENSOR CONNECTIONS. SEE BECH 6118 E-2094 SH.113 FOR DETAILS.
2. COMPOSITE CABLE RISER DIAGRAM IS SHOWN ON WEST 499B466 SH.369B

EC NO. 0000013407 R000
Page ____ Of ____
Prepared by ____________ Date ________
Reviewed by ____________ Date ________

WEST19 499B466 SH.373B,REV.02

LEGEND

- ⊠ PENETRATION TERMINAL
- ○ LOCAL TERMINAL
- ⊖ TERMINAL AT LOAD CENTER
- TERMINAL AT CONTROL PANEL DISCONNECTING (SLIDER) TYPE
  * - PANEL NO.
  ** - TERMINAL NO.
- TERMINAL AT CONTROL PANEL PERMANENT (FIXED) TYPE
  * - PANEL NO.
  ** - TERMINAL NO.



UPDATE PRI: 1
SUB TYPE: CWO
CBD: NO
MOD. REQ. : IC-327

REVISE

WEST19 499B466 SH.373B

REFERENCE DRAWINGS	
CONNECTION DIAGRAM, C-01	WOLF E-1618E-A
CONNECTION DIAGRAM, C-01	WOLF E-1620E-B
INT. CONNECTION DIAGRAM 2C-290	FOXB PW-7 JOB 62550
EXT. CONNECTION DIAGRAM 2C-290	BECH E-2094 SH.113
CONNECTION DIAGRAM, 2C-290	FOXB CD2-31
CONNECTION DIAGRAM, 2C-20	BECH E-2096 SH.7

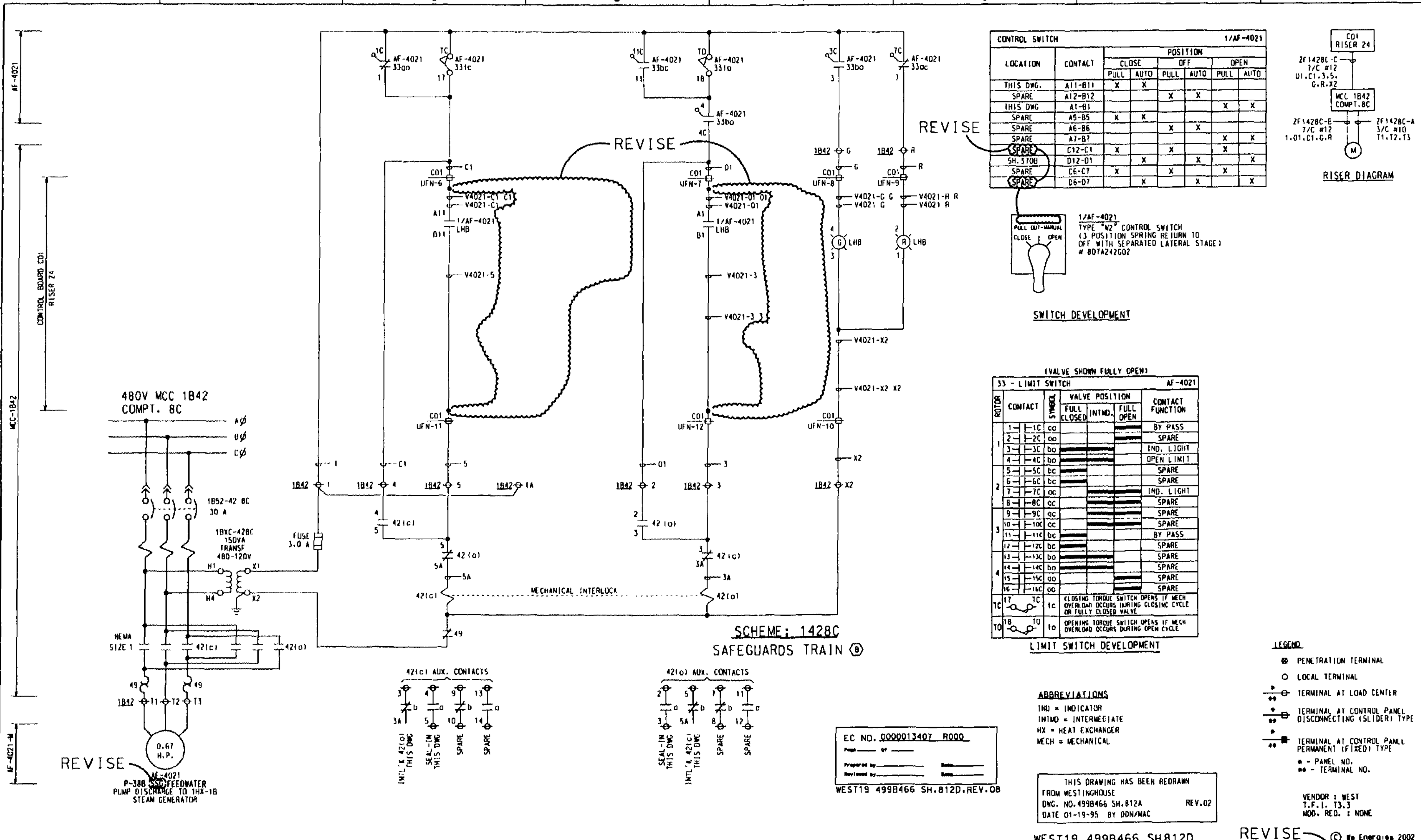
REV. NO.	DATE	REVISION DESCRIPTION	DRAWN	CHK'D	APPRV'D
02	09-25-08	REVISED PER EC #1567	JLF	KJB	DTJ
01	04-24-04	REVISED PER DCN #2004-0399	BER	MRW1	MRW1
00	02-07-04	INCORPORATED INTO PDS PER PB-DWG-2004-004	KJB1	BER	MRW1

DRAWN KJB1	DATE 02-07-04
CHECKED BER	DATE 02-11-04
APPROVED MRW1	DATE 02-11-04
MOD NO.	NONE
CGS NO.	59437

FPL

ELEMENTARY WIRING DIAGRAM
STANDBY STEAM GENERATOR
FEED PUMP P-38B
SUCTION PRESSURE TRIP
POINT BEACH N.P. UNIT 2

MICROFILM NO. 346307 | REVISION NO. 02 | DRAWING SIZE D



CONTROL SWITCH — 1/AF-4021

LOCATION	CONTACT	CLOSE PULL	CLOSE AUTO	OFF PULL	OFF AUTO	OPEN PULL	OPEN AUTO
THIS DWG.	A11-B11	X	X				
SPARE	A12-B12			X	X		
THIS DWG	A1-B1					X	X
SPARE	A5-B5	X	X				
SPARE	A6-B6			X	X		
SPARE	A7-B7					X	X
SPARE	C12-C1	X		X		X	
SH.370B	D12-D1		X		X		X
SPARE	C6-C7	X		X		X	
SPARE	D6-D7		X		X		X

THIS DRAWING HAS BEEN REDRAWN
FROM WESTINGHOUSE
DWG. NO.499B466 SH.812A REV.02
DATE 01-19-95 BY DDN/MAC

WEST19 499B466 SH812D

REFERENCE DRAWINGS	
ONE LINE DIAGRAM, MCC 1B42	BECH 6118-E5 SH.2B
CONNECTION DIAGRAM, MCC 1B42	BECH 6118-E92 SH.14
P & ID DIAGRAM	BECH 6118-M217 SH.1
CONNECTION DIAGRAM, C01 RISER 24	WOLFEM E1621E-A
CONNECTION DIAGRAM, AF-4021 MOTOR VALVE	BECH 6118-E98 SH.10
CONNECTION DIAGRAM, C01	WOLFEM E1621E-A

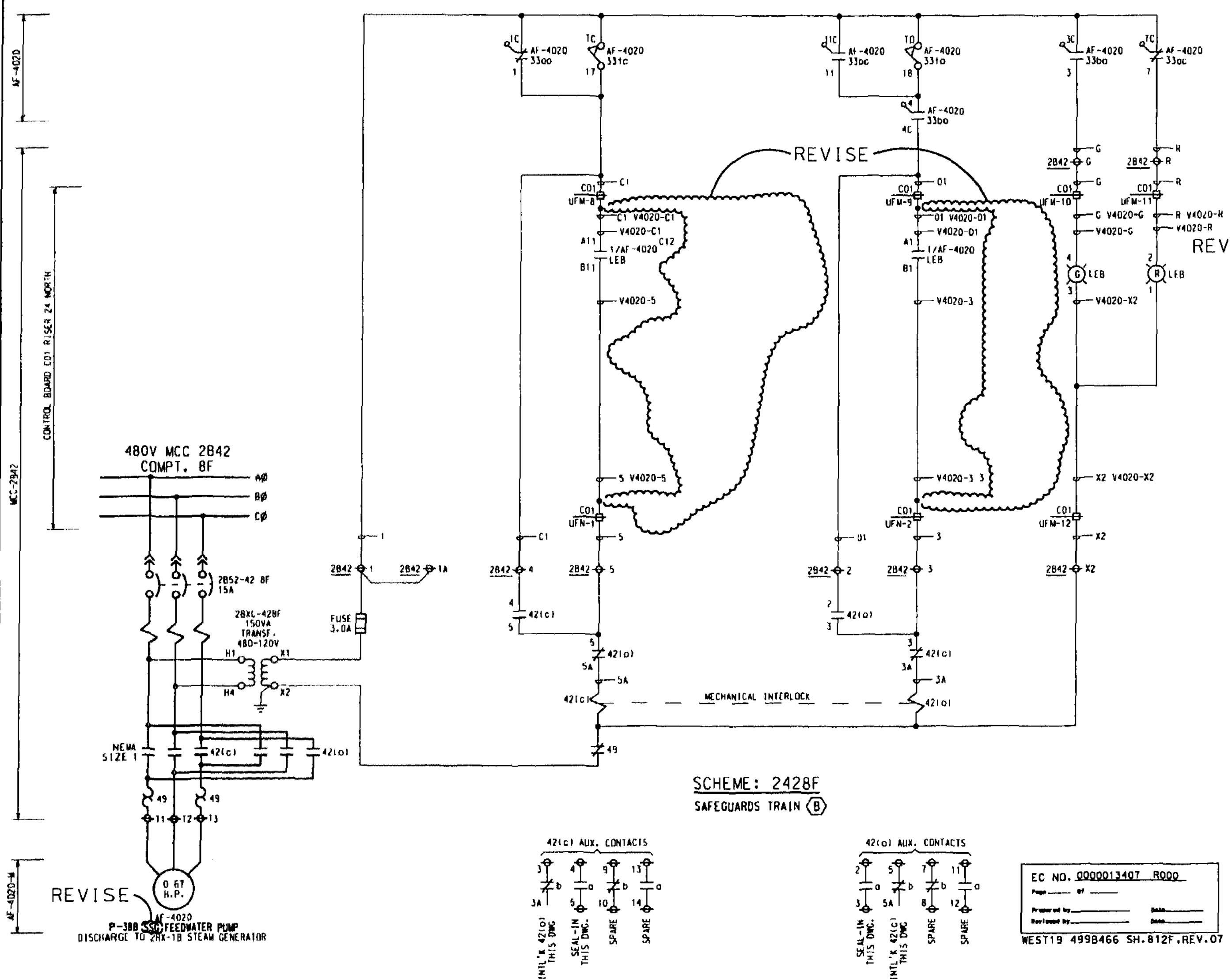
REV NO	DATE	REVISION DESCRIPTION	ACT	DRAWN	CHK D	APPRV D
08	07-11-07	REVISED PER EC #10275		JLF	KJB1	JWG
07	06-24-04	REVISED PER DCN #2004-0900		KJB1	BER	BER
06	03-04-04	REVISED PER DCN #2002-0863	2064	BER	MRW1	MRW1
05	10-27-01	REVISED PER DCN #2001-2330	2064	KJB1	BER	BER
04	03-03-01	REVISED PER DCN # 2001-0486	2064	KJB1	MRW	MRW
03	06-26-98	REVISED PER DCN #98-1384	8732	KAG	JRB	JRB
02	04-26-97	REVISED PER DCN #97-0537	7521	KAG	DES	DES
01	01-25-97	REVISED PER DCN # 96-2663	7316	JRB	DES	DES
00	12-08-95	INC INTO PUS PER MEMO # NEES-95-0898	4294	JRB	JRB	RJS

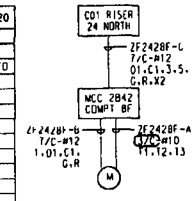
LEVEL USAGE
CGS REF FILES
MICROFILM NO. 299052
DRAWN SAB DATE 01-19-95
CHECKED KHP DATE 8-3-95
APPROVED LLC DATE 10-11-95
PROJECT NO 35804
ACTIVITY NO 5260
SCALE NONE
CGS NO 44858

ELEMENTARY WIRING DIAGRAM
P-38B SSG FEEDWATER
PUMP DISCHARGE TO 1HX-1B
STEAM GENERATOR AF-4021
POINT BEACH N.P. UNIT 1&2

D PB 31 EAFS 165 003 08

$DATE$





RISER DIAGRAM

CONTROL SWITCH							1/AF-4020
LOCATION	CONTACT	POSITION					
		CLOSE				OPEN	
		PULL	AUTO	PULL	AUTO	PULL	AUTO
THIS DWG.	A11-B11	X	X				
SPARE	A12-B12			X	X		
THIS DWG.	A1-B1					X	X
SPARE	A5-B5	X	X				
SPARE	A6-B6			X	X		
SPARE	A7-B7					X	X
SPARE	C12-C1	X		X		X	
SH.370B	D12-D1		X		X		X
SPARE	C6-C7	X		X		X	
SPARE	D6-D7		X		X		X

REVISE

IN-AUTOMATIC
PULL OUT-MANUAL
CLOSE OPEN

1/AF-4020
LEB
CONTROL SWITCH, TYPE "W2"
(3 POSITION SPRING RETURN TO
CENTER WITH SEPARATED LATERAL STAGE)
S# 807A242G02

SWITCH DEVELOPMENT

(VALVE SHOWN FULLY OPEN)

33 - LIMIT SWITCH						AF-4020
ROTOR	CONTACT	SYMBOL	VALVE POSITION FULL CLOSED	INTMD.	FULL OPEN	CONTACT FUNCTION
1	1 — 1C	oo			▬	BY PASS
	2 — 2C	oo			▬	SPARE
	3 — 3C	bo	▬	▬		IND LIGHT
	4 — 4C	bo	▬	▬		OPEN LIMIT
2	5 — 5C	bc	▬			SPARE
	6 — 6C	bc	▬			SPARE
	7 — 7C	ac		▬	▬	IND LIGHT
	8 — 8C	ac		▬	▬	SPARE
3	9 — 9C	ac		▬	▬	SPARE
	10 — 10C	oc		▬	▬	SPARE
	11 — 11C	bc	▬			BY PASS
	12 — 12C	bc	▬			SPARE
4	13 — 13C	bo	▬	▬		SPARE
	14 — 14C	bo	▬	▬		SPARE
	15 — 15C	oo			▬	SPARE
	16 — 16C	oo			▬	SPARE
TC	17 TC	tc	CLOSING TORQUE SWITCH OPENS IF MECH OVERLOAD OCCURS DURING CLOSING CYCLE OR FULLY CLOSED VALVE			
TO	18 TO	to	OPENING TORQUE SWITCH OPENS IF MECH. OVERLOAD OCCURS DURING OPEN CYCLE			

LIMIT SWITCH DEVELOPMENT

LEGEND
⊠ - PENETRATION TERMINAL
O - LOCAL TERMINAL
TERMINAL AT LOAD CENTER
TERMINAL AT CONTROL PANEL DISCONNECTING (SLIDER) TYPE
TERMINAL AT CONTROL PANEL PERMANENT (FIXED) TYPE
* - PANEL NO.
** - TERMINAL NO

ABBREVIATIONS:
IND = INDICATOR
INTMD = INTERMEDIATE
MECH = MECHANICAL

EC NO. 0000013407 R000
Page ___ of ___
Prepared by ___ Date ___
Reviewed by ___ Date ___

WEST19 499B466 SH.812F,REV.07

THIS DRAWING HAS BEEN REDRAWN
FROM WESTINGHOUSE
DWG. NO. 499B466 SH.812B REV.02
DATE 02-24-95 BY DDN/MAC

VENDOR : WEST.
T.F.I. 13.3
MOD. REQ. : NONE

WEST 499B466 SH.812F

REVISE

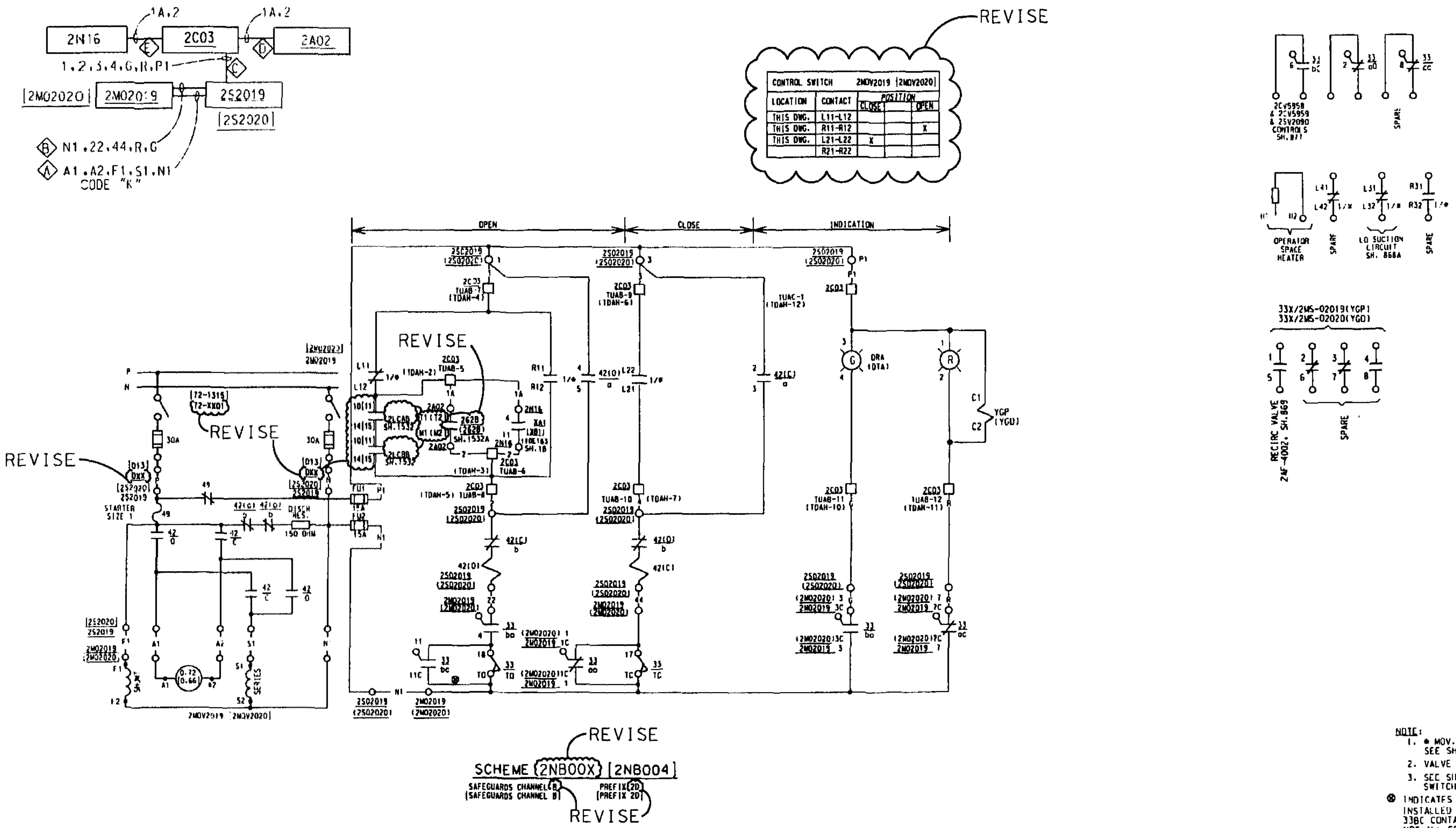
REFERENCE DRAWINGS	
ONE LINE DIAGRAM, MCC 2B42	BECH 6118 E-2005 SH.2B
CONNECTION DIAGRAM, MCC 2B42	BECH 6118 E-2092 SH.14
P & ID DIAGRAM	BECH 6118 M-217 SH.1
CONNECTION DIAGRAM, C01 RISER 24 NORTH	WOLFEM E1621E-A
CONNECTION DIAGRAM, C01	WOLFEM E1620E-B
CONNECTION DIAGRAM, AF-4020	BECH 6118 E-98 SH 10

REV NO	DATE	REVISION DESCRIPTION
07	08-15-05	REVISED PER DCN #2005-1212
06	02-03-05	REVISED PER DCN #2004-1454
05	06-24-04	REVISED PER DCN #2004-0902
04	10-27-01	REVISED PER DCN #2001-2332
03	03-03-01	REVISED PER DCN #2001-0488
02	5-14-97	REVISED PER DCN #97-0107
01	01-24-97	REVISED PER DCN #96-2665
00	10-10-95	INC INTO PDS PER MEMO # NEES-95-0788

MICROFILM NO. 298080
CGS NO 45189

ELEMENTARY WIRING DIAGRAM
P-38B SSC FEEDWATER PUMP
DISCHARGE TO 2HX-1B STEAM GENERATOR
AF-4020
POINT BEACH N.P. UNITS 1&2

D PB 31 E AFS 165 001 07



CONTROL SWITCH 2MOV2019 [2MOV2020]				
LOCATION	CONTACT	POSITION CLOSE		OPEN
THIS DWG.	L11-L12			
THIS DWG.	R11-R12			X
THIS DWG.	L21-L22	X		
	R21-R22			

NOTE:
1. * MOV. NUMBER DEVELOPMENT 19 SEE SHEET 71, NP. "E".
2. VALVE SHOWN FULLY OPEN.
3. SEE SHEET 60 FOR LIMIT SWITCH DEVELOPMENT.

⊗ INDICATES 4 ROTOR LIMIT SWITCHES INSTALLED ON THESE VALVES. THE 33BC CONTACT IS ON THE THIRD ROTOR. NOT ALL SPARE CONTACTS SHOWN.

EC NO. 0000013399 R000

WEST 499B466 SH.868, REV.21

VENDOR : WEST
T.F.I. T3.3
MOD. REQ. : 85-214

WEST 499B466 SH.868

REFERENCE DRAWINGS

REV NO.	DATE	REVISION DESCRIPTION	ACT	DRAWN	CHK'D	APPRV'D
21	12-14-04	REVISED PER DCN #2004-2147		BER	MRW1	MRW1
20	03-19-04	REVISED PER DCN #2004-0382		KJB1	BER	BER
19	10-25-03	REVISED PER DCN #2003-1917	2064	CEK	BER	BER
18	08-02-03	REVISED PER DCN #2003-0925	(2064)	KJB1	BER	BER
17	11-11-00	REVISED PER DCN #2000-2089	(2064)	KJB1	MRW	MRW
16	7-10-99	REVISED PER DCN #99-1067	9751	RLG	KHP	KHP
15	12-12-97	REVISED PER DCN #97-2809	(8225)	KAG	KHP	KHP

LEVEL USAGE

COS REF FILES

MICROFILM NO. 021458

DRAWN L.J. DATE 8-21-68 PROJECT NO.
CHECKED DATE ACTIVITY NO.
APPROVED DATE SCALE

CGS NO. 12428

ELEMENTARY WIRING DIAG. STEAM TO TURB DR AUX F.P. 2MOV2019 [2MOV2020]

POINT BEACH N.P. UNIT 2

DPB 31 EAPS000096 21

$DATE$

(VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		2AF-04073-A			
LOCATION	CONTACT	SYMBOL	VALVE POSITION: FULL CLOSED	INTMD	FULL OPEN
THIS DWG	A—||—B	ac			
THIS DWG	C—||—D	bc			
SPARE	E—||—F	bc			
SPARE	G—||—H	ac			

(VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		2AF-04073-B			
LOCATION	CONTACT	SYMBOL	VALVE POSITION: FULL CLOSED	INTMD	FULL OPEN
THIS DWG	A—||—B	bo			
THIS DWG	C—||—D	bc			
SPARE	E—||—F	bo			
SPARE	G—||—H	ao			

LIMIT SWITCH DEVELOPMENT

(DISCHARGE VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		2AF-04074-A			
LOCATION	CONTACT	SYMBOL	VALVE POSITION: FULL CLOSED	INTMD	FULL OPEN
THIS DWG	A—||—B	ac			
THIS DWG	C—||—D	bc			
SPARE	E—||—F	bo			
SPARE	G—||—H	ao			

(DISCHARGE VALVE SHOWN FULLY OPEN)

33-LIMIT SWITCH		2AF-04074-B			
LOCATION	CONTACT	SYMBOL	VALVE POSITION: FULL CLOSED	INTMD	FULL OPEN
THIS DWG	A—||—B	bo			
THIS DWG	C—||—D	bc			
SPARE	E—||—F	bc			
SPARE	G—||—H	ac			

LIMIT SWITCH DEVELOPMENT

HOLD

SELECTOR SWITCH PANEL NX 43/2P-53			
LOCATION	CONTACT	POSITION: REMOTE	LOCAL
THIS DWG	A11-B11		X
THIS DWG	A12-B12	X	
THIS DWG	A1-B1		X
THIS DWG	A5-B5		X
THIS DWG	A6-B6	X	
499B466 SH 968	A7-B7		X
THIS DWG	C11-D11	X	
SPARE	C12-D12		X
THIS DWG	C1-D1	X	
THIS DWG	C5-D5	X	
THIS DWG	C6-D6		X
THIS DWG	C7-D7	X	

REMOTE LOCAL

43/2P53

SELECTOR SWITCH, TYPE "W2"
S# 505A621G01
WITH MAINTAINED HANDLE
STYLE # 501B787H01

SWITCH DEVELOPMENT

CONTROL SWITCH PANEL 2C-03 1/2P-53						
LOCATION	CONTACT	POSITION: PULL	STOP	OFF AFTER: STOP	OFF AFTER: START	START
THIS DWG	A11-B11	X	X			
THIS DWG	A12-B12			X	X	
THIS DWG	A1-B1					X
SPARE	A5-A6	X	X	X		
SPARE	A6-A7				X	X
THIS DWG.	B5-B6	X	X	X		
SPARE	B6-B7				X	X
SPARE	C11-D11	X	X			
[illegible]	C12-D12			X	X	
[illegible]	C1-D1					X
SPARE	C5-C6	X	X	X		
[illegible]	C6-C7				X	X
	D5-D6	X	X	X		
[illegible]	D6-D7				X	X
[illegible]	E12-E1	X				
[illegible]	F12-F1		X	X	X	X
SPARE	E6-E7	X				
THIS DWG.	F6-F7		X	X	X	X

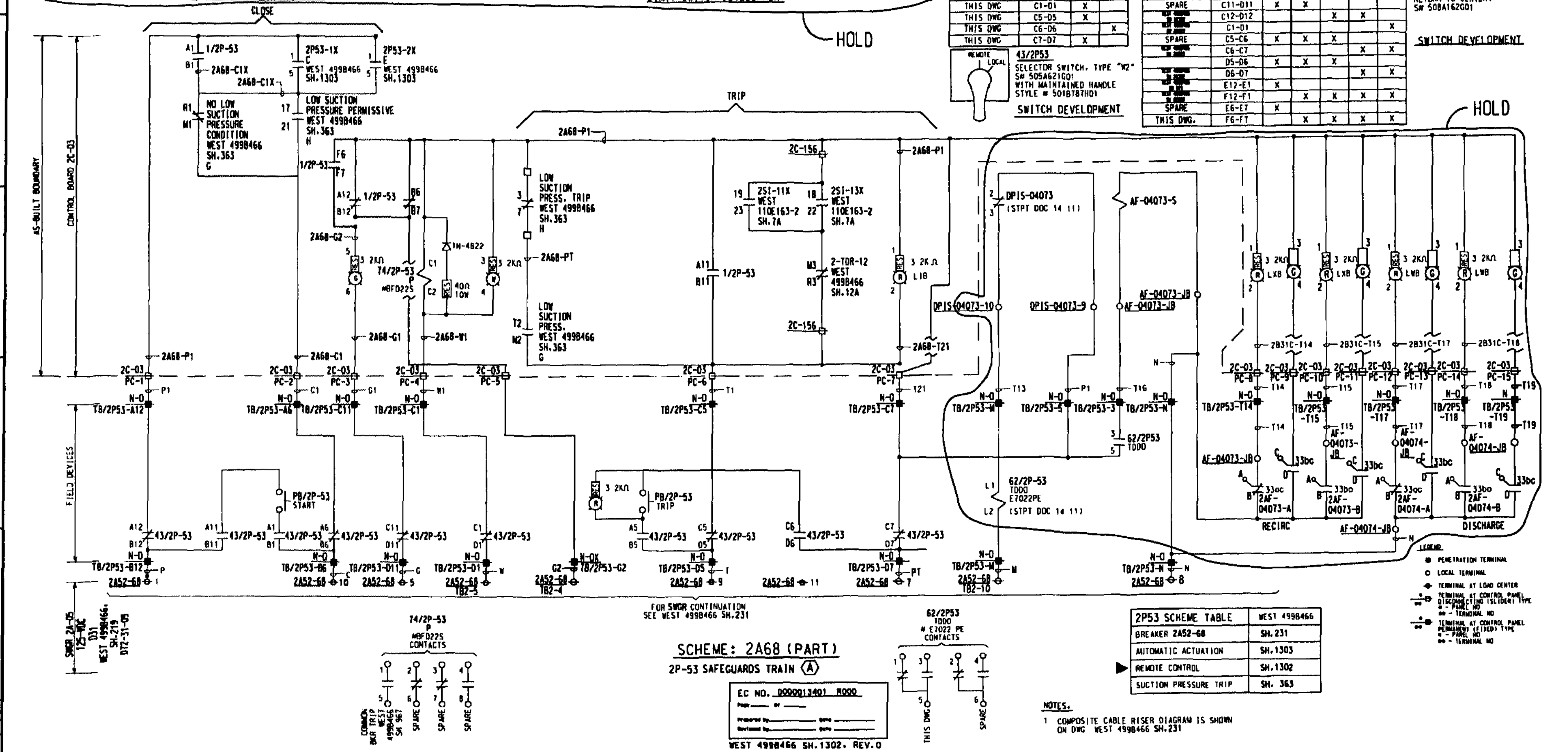
AUTO STOP START PULL OUT

1/2P-53

CONTROL SWITCH, TYPE "W2"
(3 POSITION SPRING RETURN TO CENTER)
S# 508A162G01

SWITCH DEVELOPMENT

HOLD



SCHEME: 2A68 (PART)

2P-53 SAFEGUARDS TRAIN (A)

EC NO. 0000013401 R000

WEST 499B466 SH.1302, REV.0

2P53 SCHEME TABLE	WEST 499B466
BREAKER 2A52-68	SH.231
AUTOMATIC ACTUATION	SH.1303
▶ REMOTE CONTROL	SH.1302
SUCTION PRESSURE TRIP	SH. 363

NOTES.

1 COMPOSITE CABLE RISER DIAGRAM IS SHOWN ON DWG WEST 499B466 SH.231

WEST 499B466 SH.1302

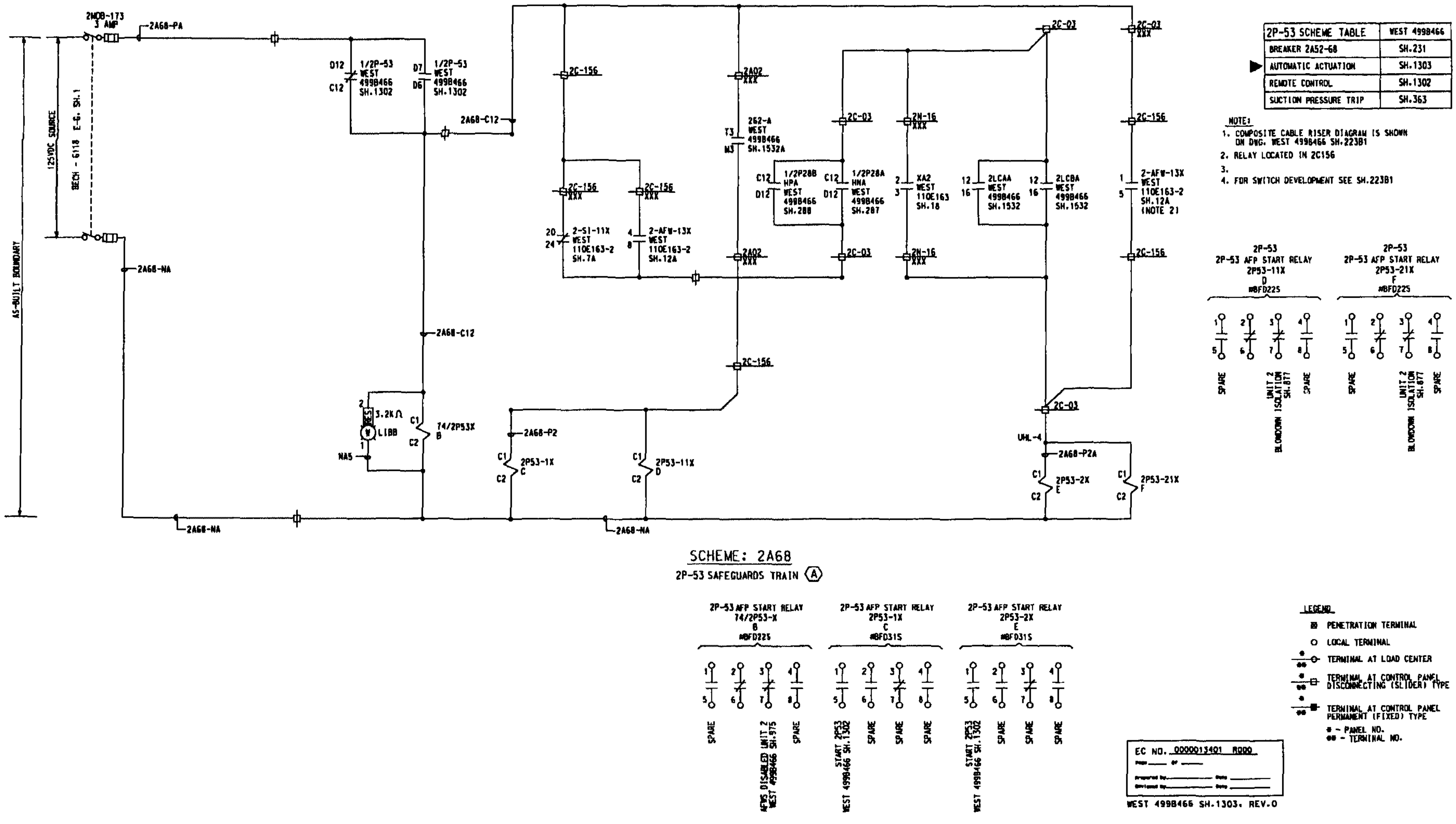
REFERENCE DRAWINGS

FPL Energy

ELEMENTARY WIRING DIAGRAM
AUXILIARY FEED PUMP
2P-53
CONTROL CIRCUIT FOR FEEDER BREAKER
POINT BEACH N.P. UNIT 2

MICROFILM NO. REVISION NO. 0 DRAWING SIZE D

6/11/2009



WEST 499B466 SH.1303

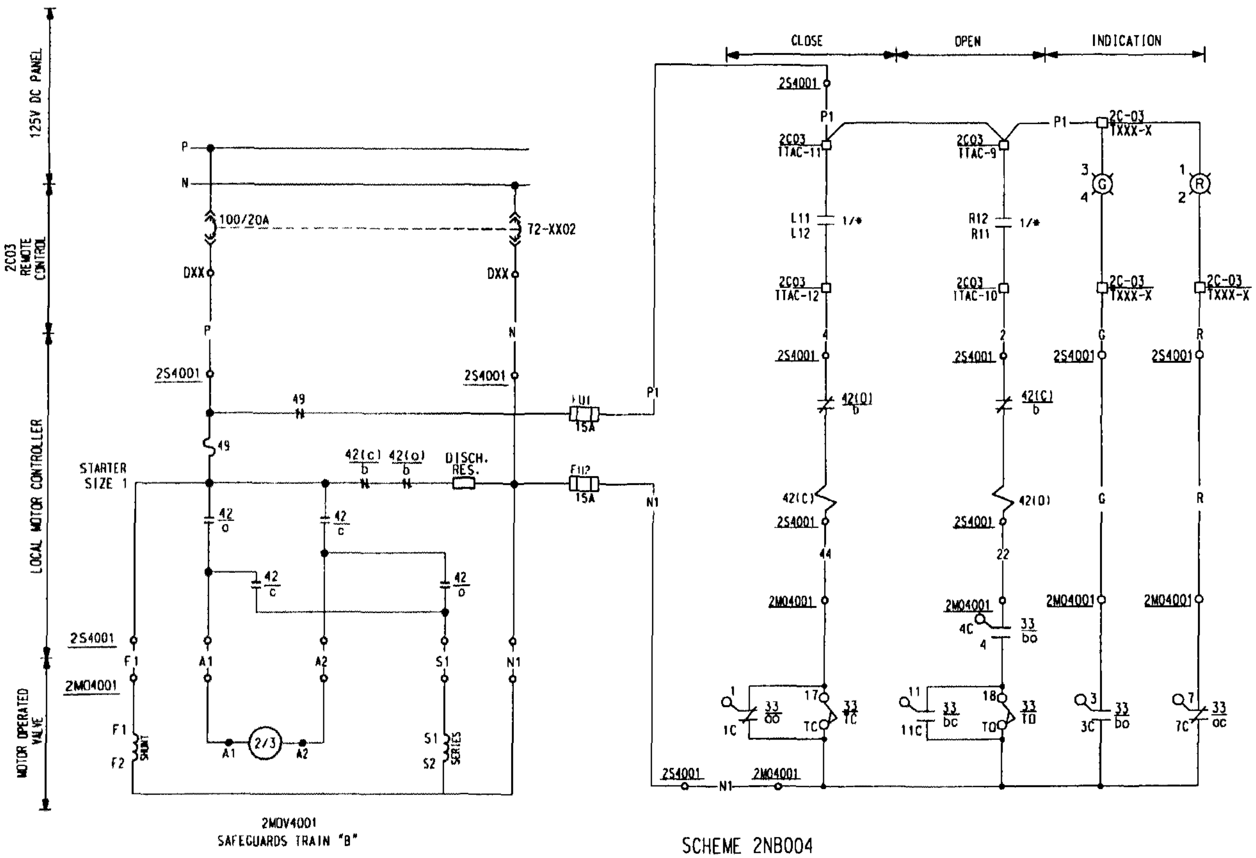
REFERENCE DRAWINGS

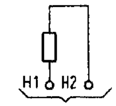
FPL Energy

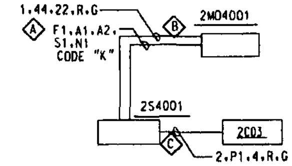
ELEMENTARY WIRING DIAGRAM
AUXILIARY FEED PUMP
2P-53
AUTOMATIC ACTUATION
POINT BEACH N.P. UNIT 2

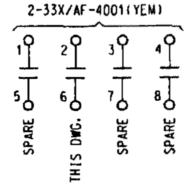
MICROFILM NO. | REVISION NO. 0 | DRAWING SIZE D

6/11/2009







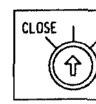


(VALVE SHOWN FULLY OPEN)

33 - LIMIT SWITCH						2AF-4001
ROTOR	CONTACT	SYMBOL	VALVE POSITION FULL CLOSED	INTMD.	FULL OPEN	CONTACT FUNCTION
1	1 — 1C	ao			■	BY PASS
	2 — 2C	ao			■	SPARE
	3 — 3C	bo	■	■		IND. LIGHT
	4 — 4C	bo	■	■		OPEN LIMIT
2	5 — 5C	bc	■			SPARE
	6 — 6C	bc	■			SPARE
	7 — 7C	ac		■	■	IND. LIGHT
	8 — 8C	ac		■	■	SPARE
3	9 — 9C	ac		■	■	SPARE
	10 — 10C	ac		■	■	SPARE
	11 — 11C	bc	■			BY PASS
	12 — 12C	bc	■			SPARE
4	13 — 13C	bo	■	■		SPARE
	14 — 14C	bo	■	■		SPARE
	15 — 15C	ao			■	SPARE
	16 — 16C	ao			■	SPARE
TC	17 — TC	tc	CLOSING TORQUE SWITCH OPENS IF MECH. OVERLOAD OCCURS DURING CLOSING CYCLE OR FULLY CLOSED VALVE			
TO	18 — TO	to	OPENING TORQUE SWITCH OPENS IF MECH. OVERLOAD OCCURS DURING OPEN CYCLE			

LIMIT SWITCH DEVELOPMENT

CONTROL SWITCH		1/2MOV4001	
LOCATION	CONTACT	POSITION CLOSE	OPEN
THIS DWG.	L11-L12	X	
THIS DWG.	R11-R12		X



1/2MOV4001
CONTROL SWITCH
(3 POSITION SPRING RETURN TO CENTER)
#02TV6, OT2M

NOTES:

1. 1/* - 2MOV4001 DEV. 7, N.P. "J", SEE SH.70.
2. VALVE SHOWN FULLY OPEN.
3. ROTOR 3 IS SET TO ACTUATE AT 50% OF VALVE STROKE.
4. PREFIX "2D" FOR "B" TRAIN

ExpertCADIC

EC NO. 0000013399 R000
Page ___ of ___
Prepared by ___ Date ___
Reviewed by ___ Date ___

WEST 499B466 SH.NEW, REV.0

WEST 499B466 SH.NEW

VENDOR : WEST
T.F.I. T3.3
MOD. REQ. :

REFERENCE DRAWINGS

REV NO.	DATE	REVISION DESCRIPTION		DRAWN	CHK'D	APPRV'D
13	10-10-05	REVISED PER DCN #2005-1581		KJB1	MRW1	MRW1
12	07-27-06	REVISED PER DCN #2005-0271 & ECN #2005-0096		KJB1	BER	BER
11	01-07-05	REVISED PER DCN #2004-2378		JLF	BER	BER
10	11-11-00	REVISED PER DCN # 2000-2088	2064	KJB1	MRW	MRW
09	01-19-97	REVISED PER DCN #97-1916	8030	KAG	KHP	KHP
08	01-03-97	CONVERTED AND REVISED PER DCN #96-2030	7010	SPS	DES	DES

DRAWN DATE
CHECKED DATE
APPROVED DATE
SCALE
FILE NO. 63681
MICROFILM NO.

We Energies

ELEMENTARY WIRING DIAGRAM
TURBINE DRIVEN AUXILIARY
FEEDWATER PUMP
DISCHARGE
POINT BEACH N.P. UNITS 1 & 2

REVISION NO. 0
DRAWING SIZE D

$DATE$

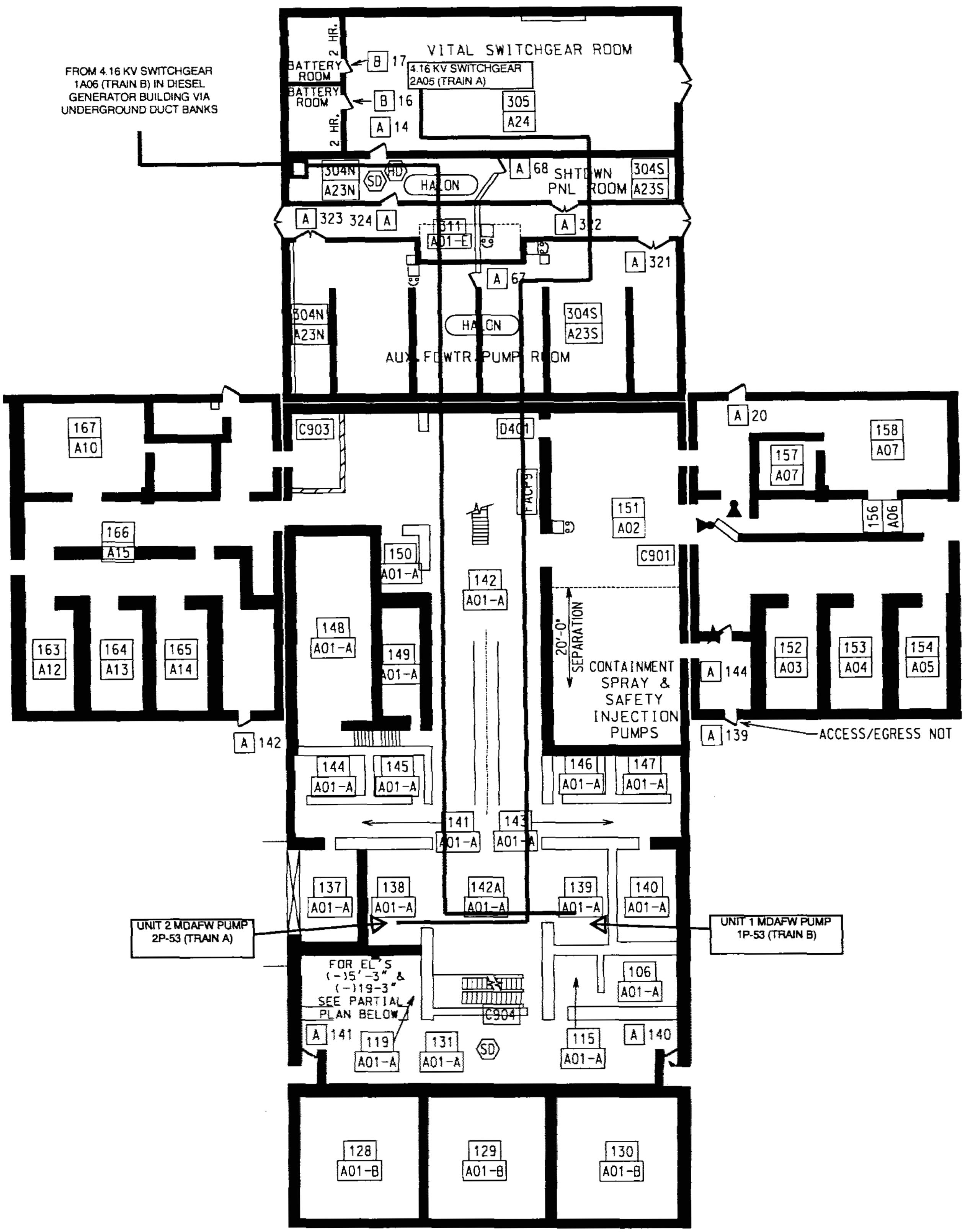
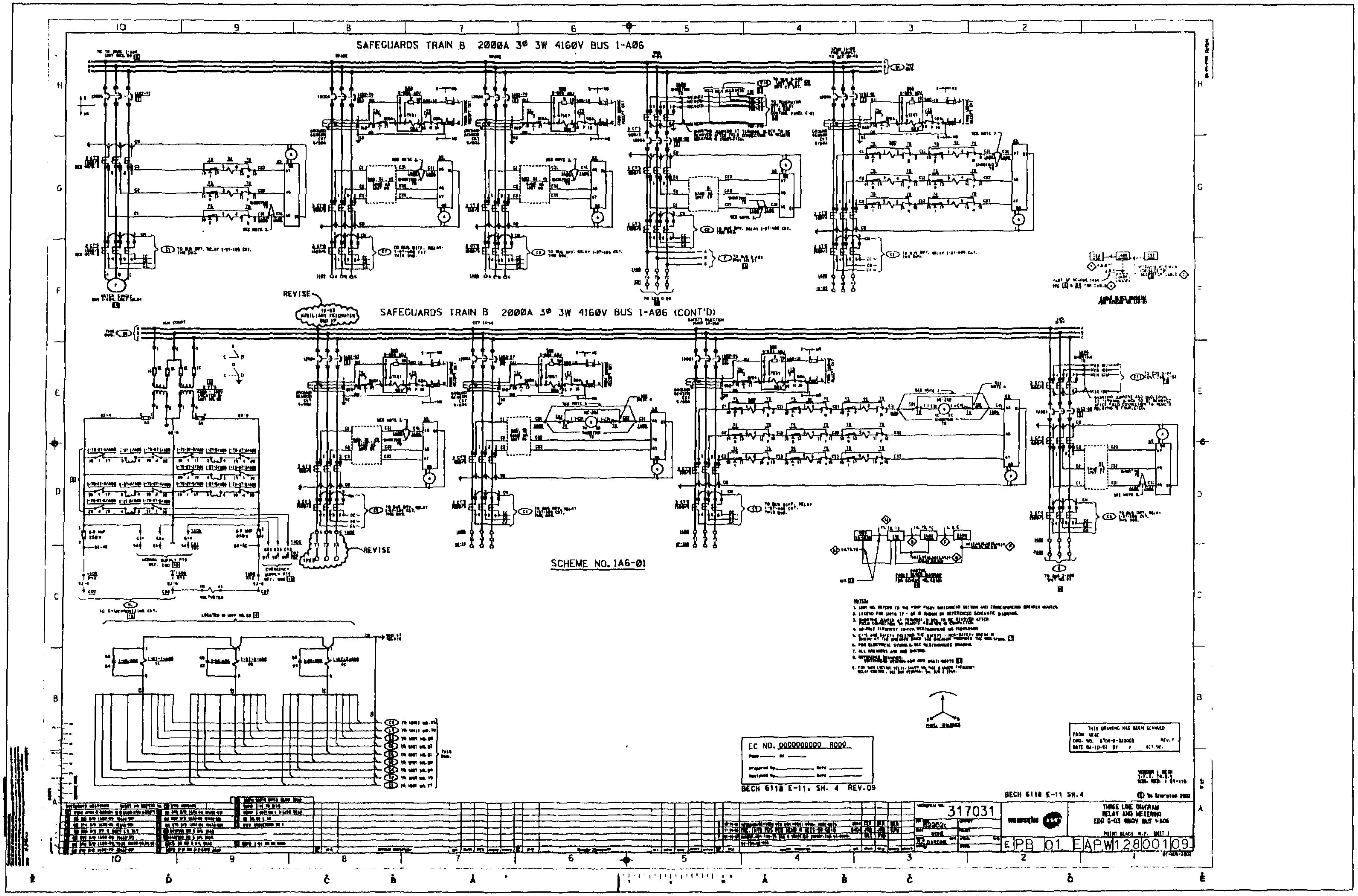
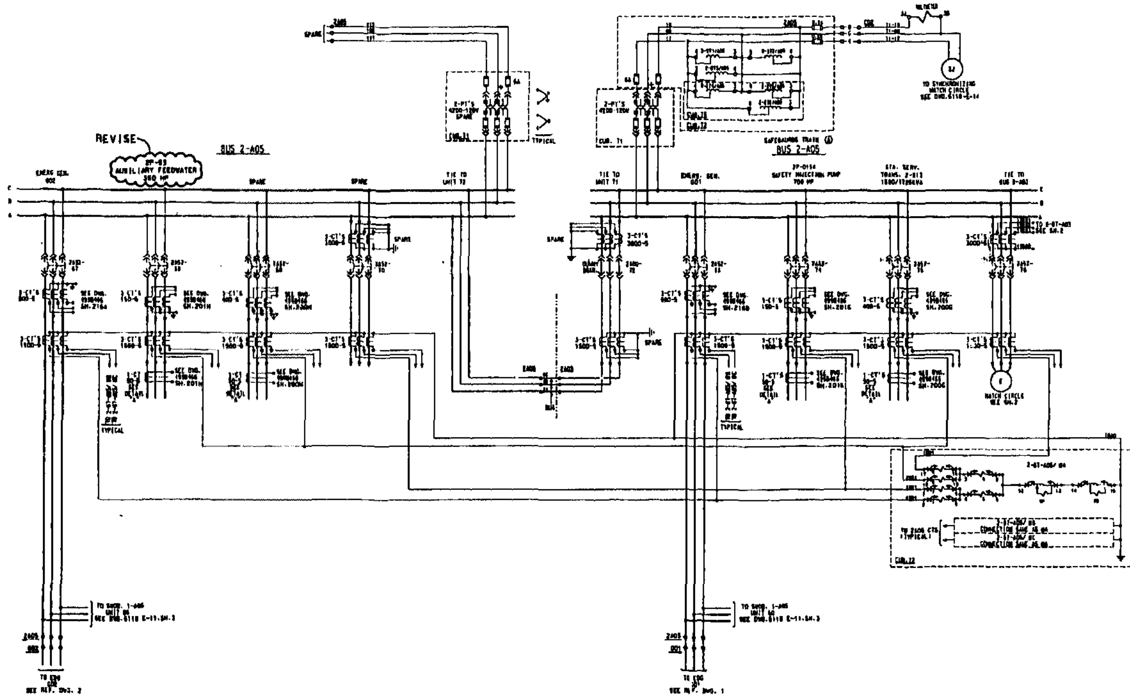
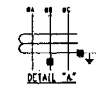


FIGURE 1 - MDAFW POWER CABLE ROUTING


SAFEGUARDS TRAIN B 2000A 3Ø 3W 4160V BUS 1-A06
REVISE
SAFEGUARDS TRAIN B 2000A 3Ø 3W 4160V BUS 1-A06 (CONT'D)
REVISE
SCHEME NO. 1A6-01
EC NO. 0000000000 R000
BECH 6118 E-11, SH. 4 REV.09
BECH 6118 E-11 SH.4
317031
THREE LINE DIAGRAM
RELAY AND METERING
POINT BEACH N.P. UNIT 1
E PB 01 E APW 128 001 09

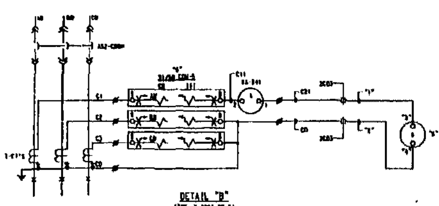




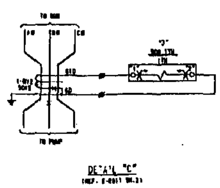
NOTE:
1. FOR VOLTMETER SELECTOR SWITCH DEVELOPMENT, SEE REF. DWG. 4998466 SH.51. DEV. 6. M.P.F.
2. FOR 2A05 LOCKOUT RELAY, UNDER VOLTAGE & UNDER FREQUENCY RELAY CONTROL, SEE DWG 4998461, SH. 2060

EC NO. 0000000000 R000
Page ____ of ____
Prepared by ____________ Date ____________
Reviewed by ____________ Date ____________

BECH 6118 E-2011, SH. 3 REV.11



BUS	CUB. #	2C03 PHASE WIRE CODE "1"	2C03 GND WIRE CODE "2"	AMMETER TERMINAL NO. "3"	AMMETER TERMINAL NO. "4"	AMMETER DEVICE NO. "5"	RELAY DEVICE NO. "6"
2A01	19	9-C21	9-CO	1C	2C	2P-027C-M-AM1	51/50A/A52-19 51/50B/A52-19 51/50C/A52-19
	20	08-C21	08-CO	1A	2A	2P-027A-M-AM1	51/50A/A52-20 51/50B/A52-20 51/50C/A52-20
	21	07-C21	07-CO	1A	2A	2P-028A-M-AM1	51/50A/A52-21 51/50B/A52-21 51/50C/A52-21
	22	08-C21	08-CO	1A	2A	2P-030A-M-AM1	51/50A/A52-22 51/50B/A52-22 51/50C/A52-22
	23	06-C21	06-CO	1C	2C	2P-028A-M-AM1	51/50A/A52-23 51/50B/A52-23 51/50C/A52-23
2A02	30	13-C21	13-CO	1C	2C	2P-028B-M-AM1	51/50A/A52-30 51/50B/A52-30 51/50C/A52-30
	31	12-C21	12-CO	1B	2B	2P-030B-M-AM1	51/50A/A52-31 51/50B/A52-31 51/50C/A52-31
	32	11-C21	11-CO	1B	2B	2P-028B-M-AM1	51/50A/A52-32 51/50B/A52-32 51/50C/A52-32
	33	10-C21	10-CO	1B	2B	2P-027B-M-AM1	51/50A/A52-33 51/50B/A52-33 51/50C/A52-33



BUS	CUB#	RELAY TERMINAL "1"	RELAY TERMINAL "2"	RELAY DEVICE NO. "3"	NOTES
2A01	19	5	6	50G/A52-19	
	20	5	6	50G/A52-20	
	21	5	6	50G/A52-21	
	22	5	6	50G/A52-22	
	23	5	6	50G/A52-23	3 CTS PER DET.A ON SH.3 DUE TO PARALLELED CABLES
2A02	30	5	6	50G/A52-30	3 CTS PER DET.A ON SH.3 DUE TO PARALLELED CABLES
	31	5	6	50G/A52-31	
	32	5	6	50G/A52-32	
	33	5	6	50G/A52-33	

DETAIL B AND C
LEGEND

THIS DRAWING HAS BEEN SCANNED/CONVERTED FROM BECHTEL JOB #
DWG. NO. E-2011 SH.3 REV.06
DATE 12-02-93 BY BR

VENDOR : BECH
T.F.C. 14.1.8
MOD. REQ. : NONE

BECH 6118 E-2011 SH.3

MICROFILM NO. 19384

SCHEMATIC METER & RELAY DIAGRAM
4160 V AUXILIARY SYSTEM
POINT BEACH N.P. UNIT 2

E PB 02 E APK 240 001 11

WAS: BECH E-2011 SH.3

ENCLOSURE 6

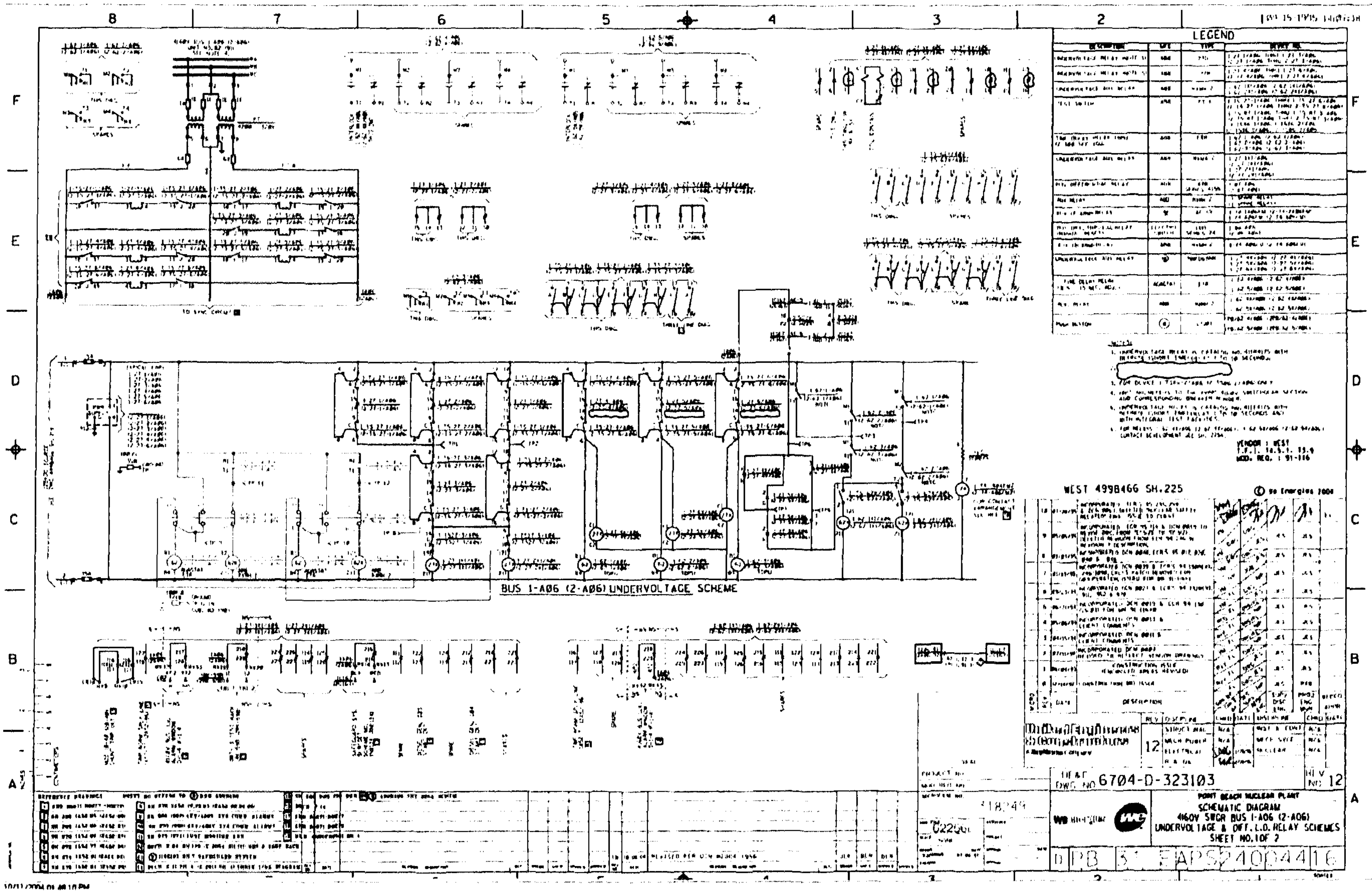
NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 1
EXTENDED POWER UPRATE

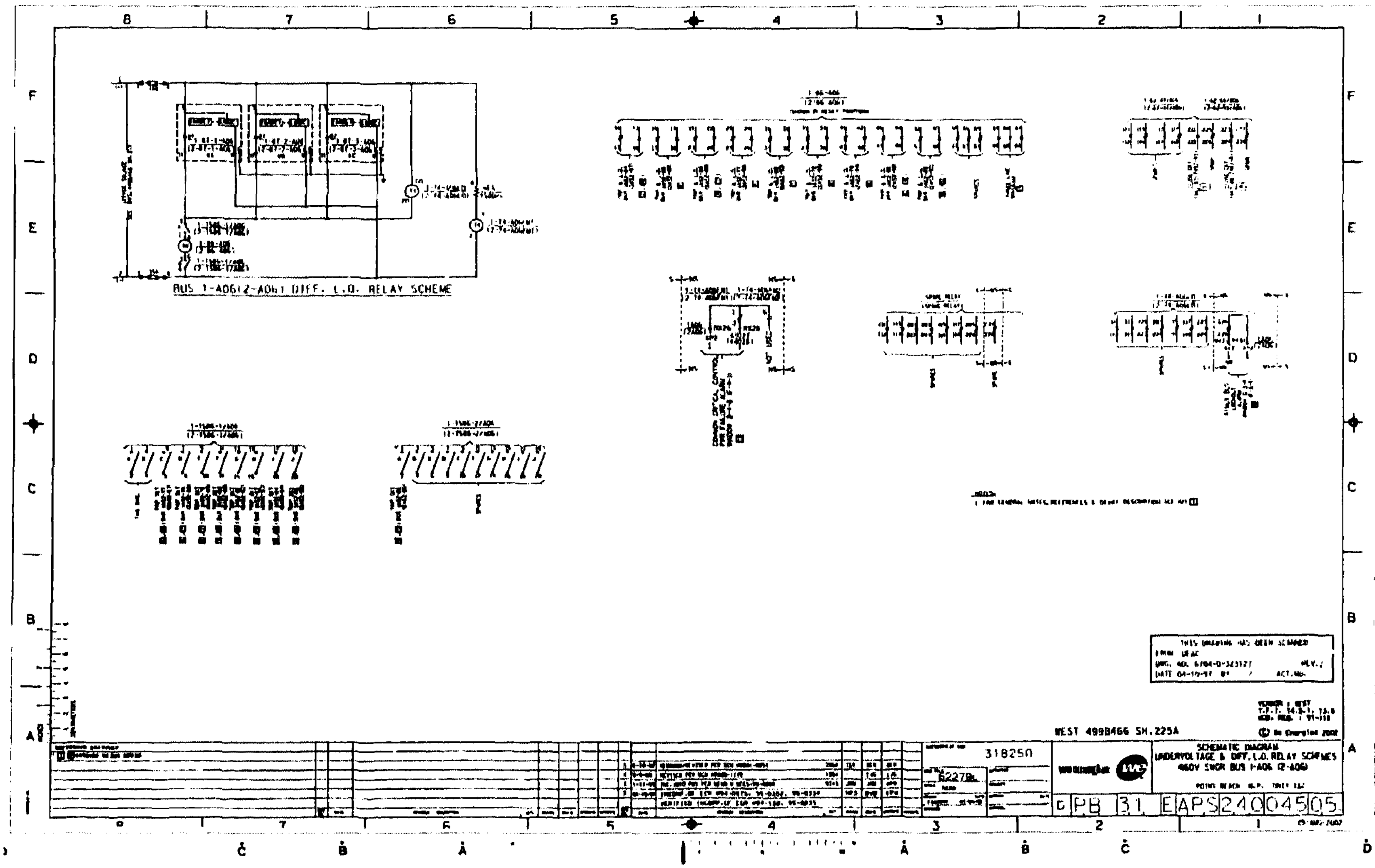
ENCLOSURE 1, QUESTION 7 DRAWINGS

(FOR INFORMATION ONLY)

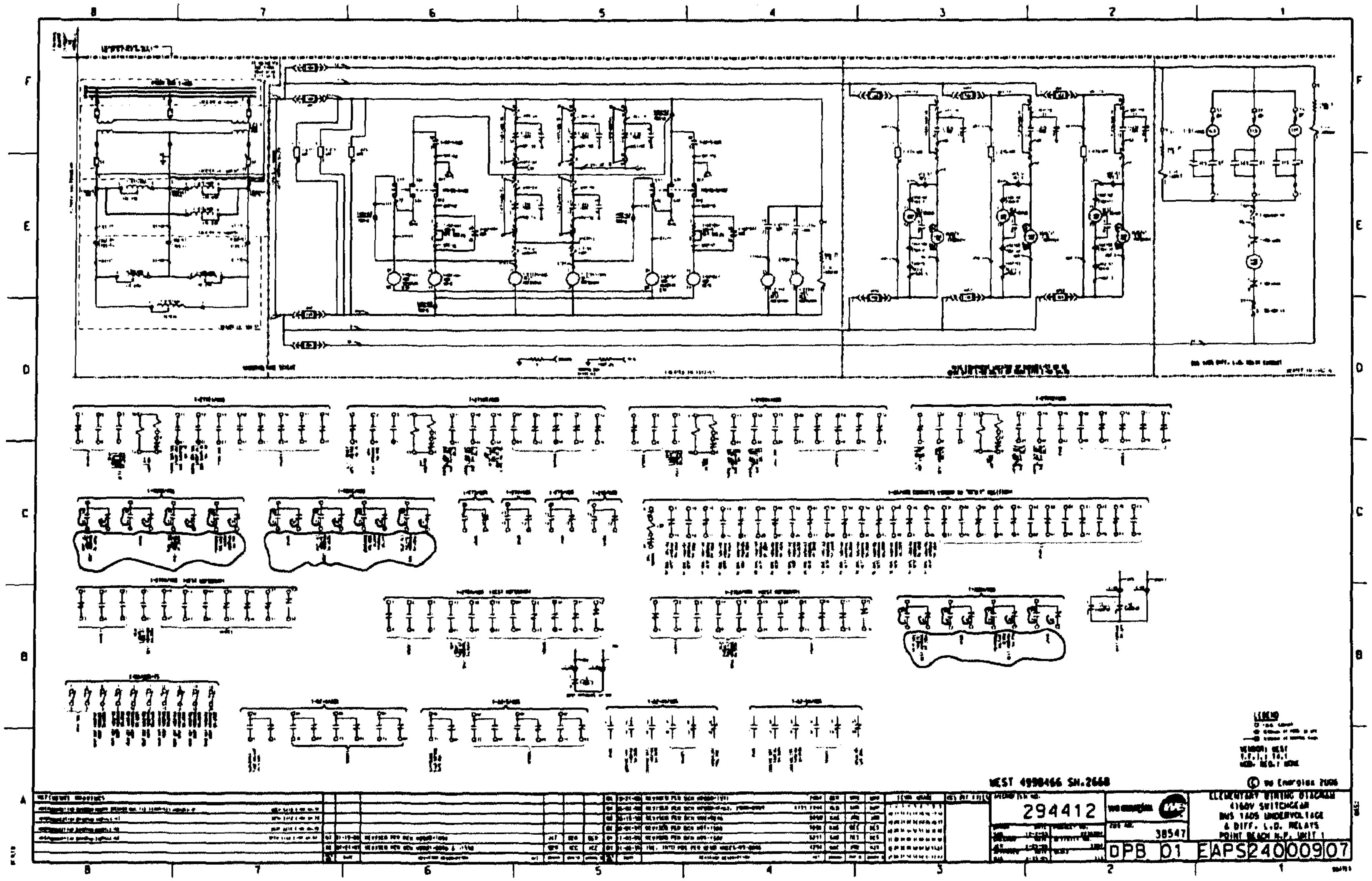
7 pages follow

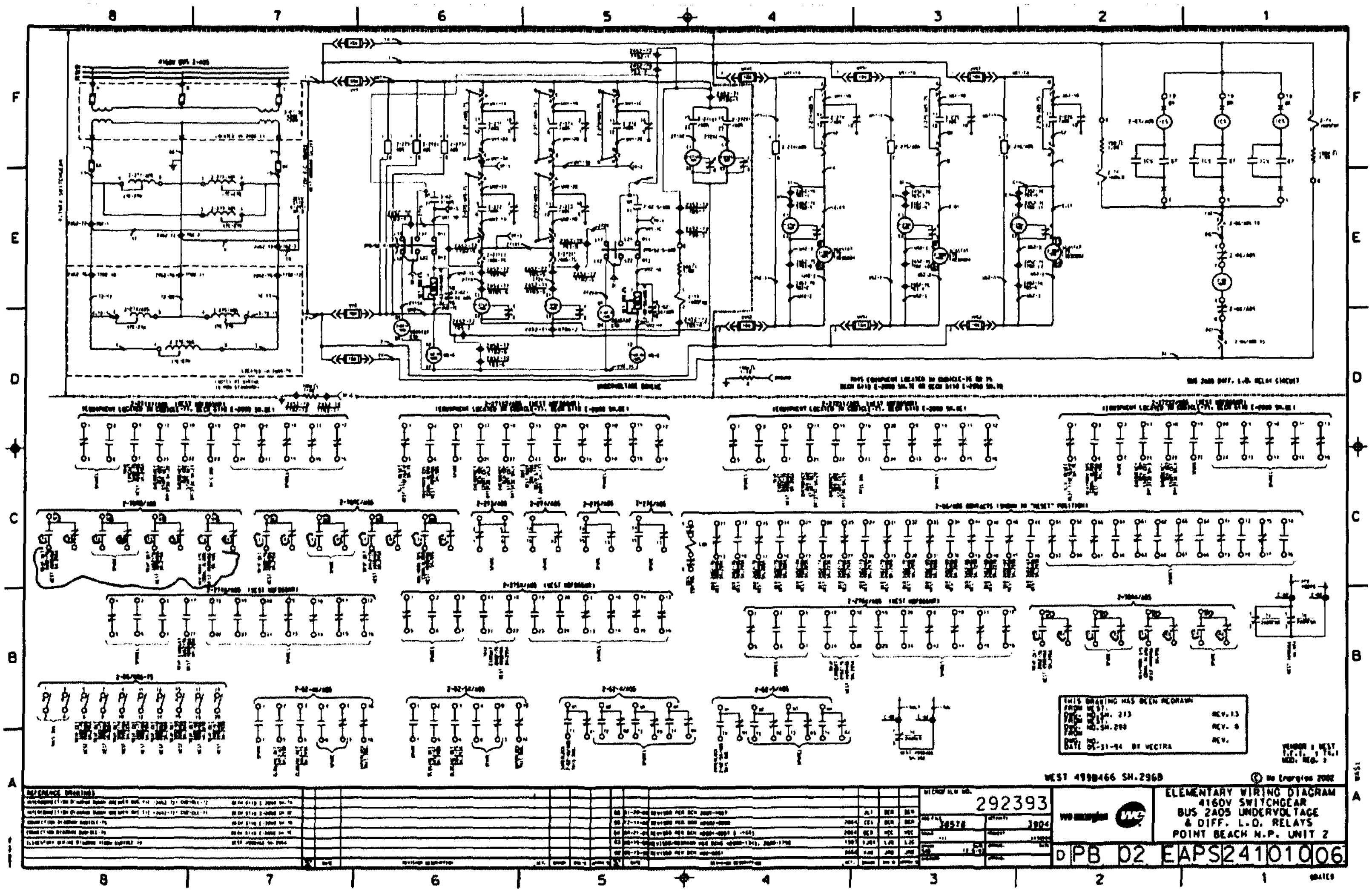


LEGEND
BUS 1-A06 (2-A06) UNDERVOLTAGE SCHEME
WEST 4998466 SH.225
DWG NO 6704-D-323103
REV NO 12
POINT BEACH NUCLEAR PLANT
SCHEMATIC DIAGRAM
4160V SWGR BUS 1-A06 (2-A06)
UNDERVOLTAGE & OFF.L.O.RELAY SCHEMES
SHEET NO.1 OF 2



BUS 1-A06(2-A06) DIFF. L.O. RELAY SCHEME
WEST 499B466 SH.225A
318250
62279
SCHEMATIC DIAGRAM
UNDERVOLTAGE & DIFF. L.O. RELAY SCHEMES
480V SWGR BUS 1-A06 (2-A06)
PB 31 E APS 240 045 05


ELEMENTARY WIRING DIAGRAM
4160V SWITCHGEAR
& DIFF. L.O. RELAYS
294412
38547
DPB 01 EAPS24000907


WEST 499B466 SH.296B
ELEMENTARY WIRING DIAGRAM
4160V SWITCHGEAR
BUS 2A05 UNDERVOLTAGE
& DIFF. L.O. RELAYS
POINT BEACH N.P. UNIT 2
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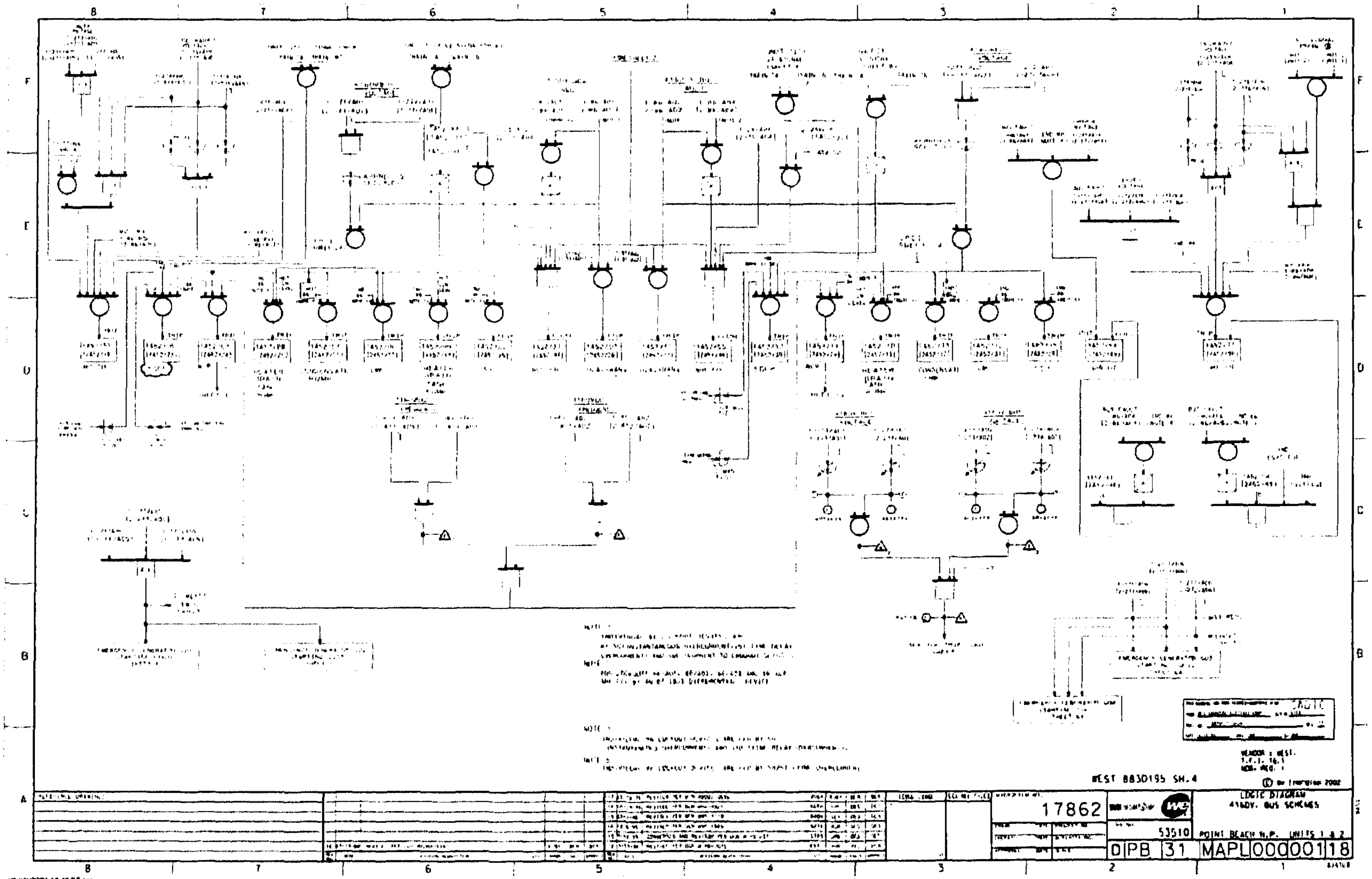
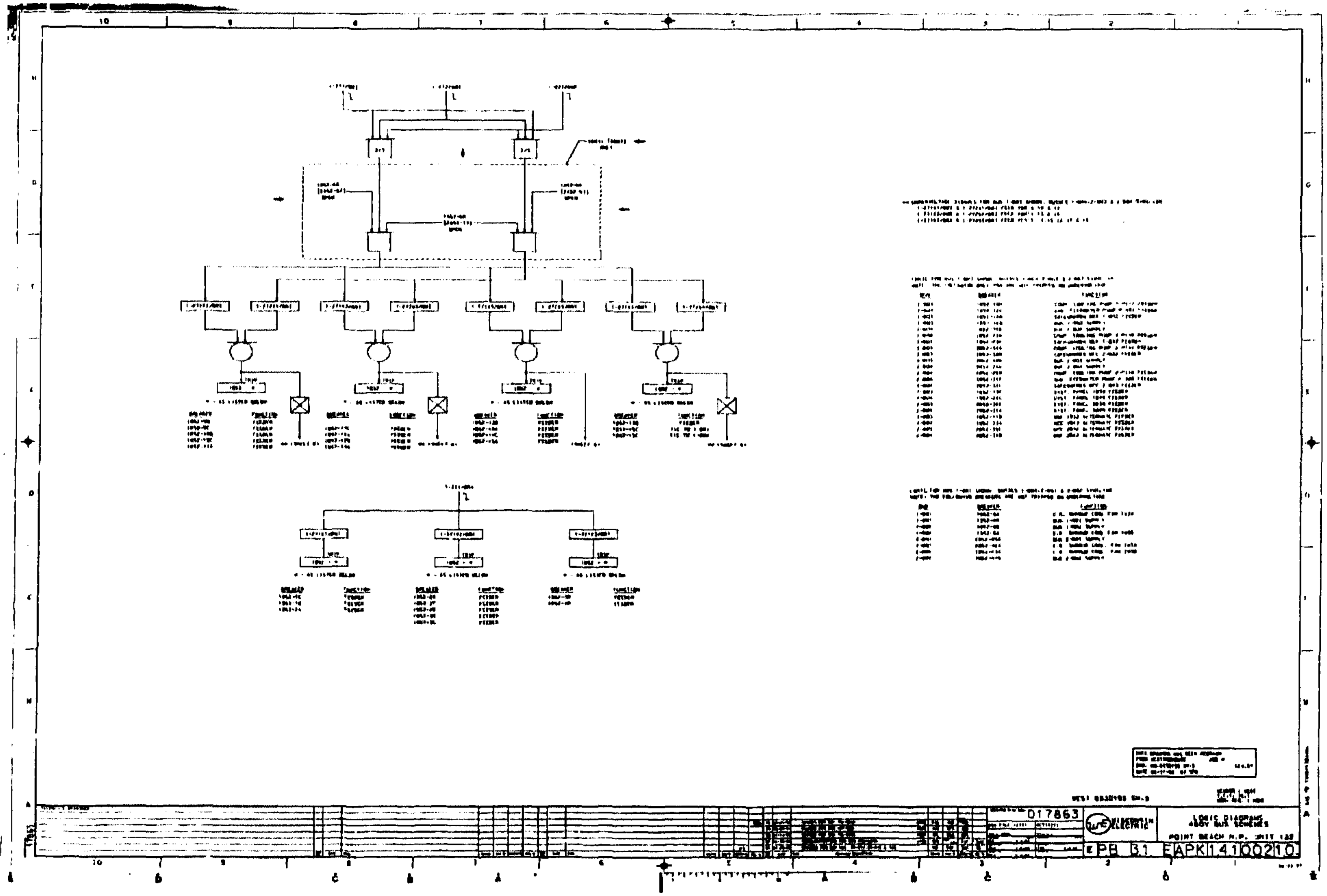
3904
D PB 02 E APS 241 010 06



WEST 883D195 SH.4
17862
53510
LOGIC DIAGRAM
4160V. BUS SCHEMES
POINT BEACH N.P. UNITS 1 & 2
0 PB 31 MAPL 000 001 18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LOGIC DIAGRAMS
480V BUS SCHEMES
POINT BEACH N.P. UNIT 1&2
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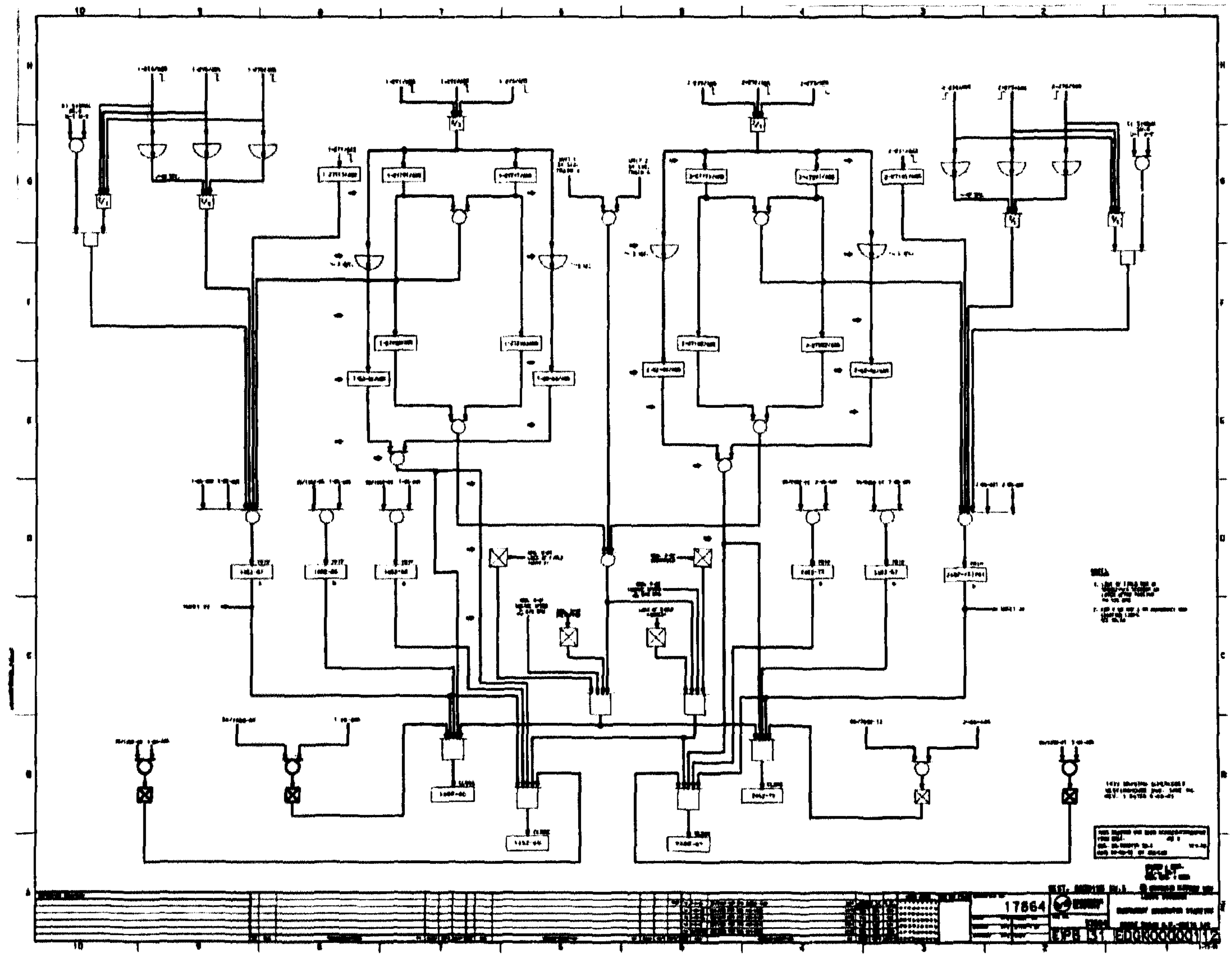
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