

Dominion Resources Services, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard, 2SE, Glen Allen, VA 23060



January 25, 2012

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

Serial No. 11-712
LIC/CDS/R3
Docket No. 50-305
License No. DPR-43

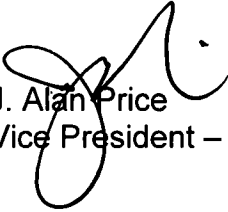
DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION:
LICENSE AMENDMENT REQUEST 244, PROPOSED REVISION TO
RADIOLOGICAL ACCIDENT ANALYSIS AND CONTROL ROOM ENVELOPE
HABITABILITY TECHNICAL SPECIFICATIONS (TAC NO. ME7110)

By application dated August 30, 2011 (Reference 1), Dominion Energy Kewaunee, Inc. (DEK), requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). This proposed amendment (LAR 244) would revise the KPS Operating License by modifying the Technical Specifications (TS) and the current licensing basis (CLB) to incorporate changes to the current radiological accident analysis (RAA) of record. This amendment would also fulfill a commitment made to the NRC in response to Generic Letter 2003-01, "Control Room Habitability" (References 1 and 2) to submit proposed changes to the KPS TS based on the final approved version of TSTF-448, "Control Room Habitability."

Subsequently, on December 5, 2011 the Nuclear Regulatory Commission (NRC) staff transmitted a request for additional information (RAI) regarding the proposed amendment (Reference 3). The RAI questions and associated DEK responses are provided in Attachment 1 to this letter.

If you have any questions or require additional information, please contact Mr. Craig Sly at 804-273-2784.

Sincerely,


J. Alan Price
Vice President – Nuclear Engineering

A102
nrc

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and State aforesaid, today by J. Alan Price, who is Vice President – Nuclear Engineering of Dominion Energy Kewaunee, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 25 day of January, 2012.

My Commission Expires: 4/30/2015

Ginger Lynn Rutherford
NOTARY PUBLIC
Commonwealth of Virginia
Reg. # 310847
My Commission Expires 4/30/2015

Ginger L Rutherford
Notary Public

Attachment:

1. NRC Request for Additional Information Questions and Dominion Energy Kewaunee Responses

Commitments made in this letter: None

References:

1. Letter from J. A. Price (DEK) to Document Control Desk (NRC), "License Amendment Request 244, Proposed Revision to Radiological Accident Analysis and Control Room Envelope Habitability Technical Specifications," dated August 30, 2011. [ADAMS Accession No. ML11252A521]
2. Letter from Craig W. Lambert (NMC) to Document Control Desk (NRC), "Generic Letter 2003-01; Control Room Habitability – Supplemental Response," dated April 1, 2005. [ADAMS Accession No. ML050970303]
3. E-mail from Karl D. Feintuch (NRC) to Craig D. Sly, Jack Gadzala (DEK), "ME7110 Kewaunee Amendment request Re: Chi-over-Q – EICB Request for Additional Information (RAI)," dated December 5, 2011. [ADAMS Accession No. ML11339A001]

cc: Regional Administrator, Region III
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ATTACHMENT 1

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION:
LICENSE AMENDMENT REQUEST 244, PROPOSED REVISION TO
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HABITABILITY TECHNICAL SPECIFICATIONS**

**NRC REQUEST FOR ADDITIONAL INFORMATION QUESTIONS AND DOMINION
ENERGY KEWAUNEE RESPONSES**

**KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.**

NRC REQUEST FOR ADDITIONAL INFORMATION QUESTIONS AND DOMINION ENERGY KEWAUNEE RESPONSES

By application dated August 30, 2011 (Reference 1), Dominion Energy Kewaunee, Inc. (DEK), requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). This proposed amendment (LAR-244) would revise the KPS Operating License by modifying the Technical Specifications (TS) and the current licensing basis (CLB) to incorporate changes to the current radiological accident analysis (RAA) of record. This amendment would also fulfill a commitment made to the NRC in response to Generic Letter 2003-01, "Control Room Habitability" (References 1 and 2) to submit proposed changes to the KPS TS based on the final approved version of TSTF-448, "Control Room Habitability."

Subsequently, on December 5, 2011 the Nuclear Regulatory Commission (NRC) staff transmitted a request for additional information (RAI) regarding the proposed amendment (Reference 3). The RAI questions and associated DEK responses are provided below.

1. NRC Question 1 (ME7110-RAI-EICB-Alva-001-2011-12-29)

"In DEK's License Amendment Request (LAR)-210, DEK proposed incorporating the control room envelope operability and surveillance requirements, R-23 operability requirements, and the control room post-accident recirculation (CRPAR) system requirements into the KPS Technical Specification (TS) ensures the systems, structures, or components (SSCs) credited for mitigating the consequences of an accident for control room occupants were included in the TS. At the same time, DEK requesting removing crediting R-23 and the control room envelope boundary from the KPS Waste Gas Decay Tank (GDT) and Volume Control [Tank] (VCT) rupture accident analysis, since it determined that occupant dose consequences are achieved without crediting the control room envelope boundary or the CRPAR system. Later DEK withdrew LAR-210. However, based on the information provided in LAR-210, it is not clear why DEK in LAR-244 is requesting deleting R-23 from the TS, even though in the accident analysis performed for both LARs, DEK stated that R-23 was not credited in the proposed accident analysis. Please explain the reason to remove R-23 and replace with analysis and manual operation of the isolation dampers."

DEK Response:

LAR-210 and LAR-244 are different in how they credit the use of the control room ventilation radiation monitor (R-23) in the revised radiological accident analyses (RAAs). The RAAs submitted in LAR-210 credited the control room isolation function of R-23 for the fuel handling accident (FHA) and locked rotor accident (LRA) in order to maintain control room dose within limits. The RAAs submitted in LAR-244 do not credit R-23 in any of the RAAs. Consequently, DEK is proposing to eliminate all credit for R-23 in isolating the control room. The rationale for eliminating credit for R-23 isolation is explained in LAR-244, Attachment 4, Section 2.7, "Removal of R-23 Credit for Control Room Isolation," which states:

"The R-23 system is not safety grade and consists of a single radiation monitor. In addition, the isolation signal generated by R-23 is only a partial signal that will not assure closure of all control room inlet and outlet ventilation dampers to provide complete control room isolation."

Because of these factors, DEK has opted to assume no credit in the revised RAAs for the R-23 control room isolation function. However, for defense-in-depth, the alarms and functions associated with R-23 will be maintained in operation.

In order to maintain FHA control room dose within limits without crediting the isolation function provided by R-23, the proposed FHA analysis in LAR-244 requires; 1) the control room is isolated prior to moving recently irradiated fuel, and; 2) the CRPAR system is manually initiated within 20 minutes of the release. In order to maintain LRA control room dose within limits without crediting the isolation function provided by R-23, the proposed LRA analysis in LAR-244 requires manual operator action within one hour following the LRA to isolate the control room and start CRPAR. DEK is proposing to credit manual initiation of SI as an approved method to accomplish this requirement. Initiation of SI isolates the control room and starts the CRPAR system. Since R-23 will no longer be credited in the RAAs for mitigating the consequences of an accident and will no longer meet any of the four 10 CFR 50.36 criteria for inclusion in the TS, DEK is proposing in LAR-244 to relocate the current KPS TS Actions and Surveillance Requirements associated with R-23 into the KPS Technical Requirements Manual. DEK also plans to maintain the description of R-23 in the USAR, as discussed in LAR-244, Attachment 1, Section 2.2.3.

2. NRC Question 2 (ME7110-RAII-EICB-Alva-002-2011-12-29)

"NUREG-0737, "Clarification of TMI Action Plan Requirements," Item III.D.3.4, "Control Room Habitability Requirements," required licensees to assure that control room operators will be adequately protected against the effects of accidental release of toxic and radioactive gas and that the plant can be safely operated or shutdown under design basis accident conditions. LAR proposed removing radiation monitor channel R-23 as a required channel for CRPAR initiation, modifying DEK previously approved by the NRC compliance with NUREG-0737. Please describe if R-23 is removed, how DEK will comply with NUREG-0737."

DEK Response:

NUREG-0737, Item III.D.3.4 states the following:

"In accordance with Task Action Plan item III.D.3.4 and control room habitability, licensees shall assure that control room operators will be adequately protected against the effects of accidental release of toxic and radioactive gases and that the nuclear power plant can be safely operated or shut down under design basis accident conditions (Criterion 19, "Control Room," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50)."

A discussion of the proposed deletion of the control room ventilation radiation monitor (R-23) from the KPS TS is provided in DEK LAR-244, Attachment 1, Section 4.2.3. In addition, a discussion of the effects of this proposed amendment on NUREG-0737, Item III.D.3.4 requirements is provided in LAR-244, Attachment 1, Section 3.2.1.

R-23 is currently credited as the primary means to ensure control room habitability in the event of a LRA, FHA, and for the volume control tank (VCT) rupture and waste gas decay tank (GDT) rupture accidents. R-23 also acts as a non-credited backup to an SI signal for the loss-of-coolant accident (LOCA), rod ejection accident (REA), main steam line break (MSLB), and steam generator tube rupture (SGTR) accident. An SI signal isolates the control room and initiates the CRPAR system (see response to Question 7 for details).

DEK has performed a revised radiological accident analysis (RAA) that assumes no credit for R-23 in mitigating the radiological consequences of postulated design basis accidents. The revised RAA is provided in DEK LAR-244, Attachment 4 and requires the following with respect to the accidents discussed above.

- Consistent with the revised RAA for the fuel handling accident, a new requirement has been proposed for TS 3.7.10, "Control Room Post Accident Recirculation (CRPAR) System," which specifies the control room must be isolated prior to movement of recently irradiated fuel assemblies. The revised RAA also requires the CRPAR system is manually initiated within 20 minutes of the release.
- The revised RAA requires that the control room is isolated and CRPAR is started and running within 1 hour after a LRA.
- The revised RAA assumes no credit for control room isolation for the GDT and VCT rupture accidents. (See response to Question 5 below for details.)
- For the other design basis accidents (DBAs), the revised RAA assumes an SI signal will perform the necessary control room isolation function and maintain dose within acceptable limits.

A description of, and justification for, both of the proposed two new manual actions mentioned above is provided in DEK LAR-244, Attachment 5. DEK is requesting approval of the two manual actions as part of the NRC review of this license amendment.

Based on the results of the revised RAAs, DEK concludes that NUREG-0737, Item III.D.3.4 requirements for control room habitability will continue to be met. The revised RAA does not assume any credit for R-23 in isolating the control room or initiating CRPAR, and the calculated doses for applicable DBAs remain within the relevant dose criteria specified in 10 CFR 50.67 (see LAR-244, Attachment 1, Table 3-3). Therefore, DEK concludes: 1) that the radiological consequences analyzed and submitted are acceptable; 2) control room operators will continue to be adequately protected against the effects of accidental release of radioactive gases, and; 3) the nuclear power plant can be safely operated or shut down under design basis accident conditions.

3. NRC Question 3 (ME7110-RAII-EICB-Alva-003-2011-12-29)

"During the NRC staff review of LAR-210, EICB issued RAI January 30, 2008 letter (ADAMS Accession No. ML080280107). DEK provided a response on its April 3, 2008 letter (ADAMS Accession No. ML080950096); the response to question 1b included a logic diagram for operation of the control room ventilation radiation monitor. To assist NRC staff review, please address the following:

- a. Section 3.1.1 of Attachment 1 of LAR-244 (ADAMS Accession No. ML11252A521) states that radiation monitor R-23, as a single channel, initiates both trains of the CRPAR system and each SI train initiates the associated CRPAR fan and filtration unit train. If R-23 is removed from the logic, will it be necessary that both SI trains be actuated to initiate CRPAR fans, filtration unit trains, and close dampers ACC-1A, ACC-1B, ACC-2, and ACC-5?*
- b. This logic shows that safety injection (SI) train A closes dampers ACC-1A and ACC-1B, and SI train B closes dampers ACC-2 and ACC-5. If R-23 is removed, how will dampers ACC-2 and ACC-5 close if the SI train B actuation signal fails?*
- c. Provide a marked logic for the control room ventilation radiation monitor assuming that R-23 is removed from the logic."*

DEK Response:

- a. As discussed in LAR-244, the control room ventilation radiation monitor (R-23) is a single channel non-safety-related instrument. Therefore, DEK has proposed to not credit R-23 in the revised RAAs. However, DEK intends to maintain R-23 in service and functional for defense-in-depth. DEK also plans to relocate the current TS requirements for R-23 into the KPS Technical Requirements Manual and maintain the description of R-23 in the USAR, as discussed in LAR-244, Attachment 1, Section 2.2.3 (see response to Question 1 above). Therefore, R-23 will not be removed from the logic diagram for control room air conditioning. Actuation of either train of SI will isolate the control room and initiate the CRPAR system (see response to question 7 for details).
- b. Actuation of either train of SI will cause an isolation of the control room boundary. The CRPAR trains are redundant and either train is sufficient to perform the CRPAR function. Operation of the control room dampers following an SI actuation is described in the response to Question 7 below.
- c. Applicable logic diagrams are provided in Enclosure 1 to this letter. R-23 will not be removed from the logic diagrams.

4. NRC Question 4 (ME7110-RAII-EICB-Alva-004-2011-12-29)

"LAR-244 is requesting removal of R-23 from the CRPAR system. Please describe how DEK would reflect removal of R-23 from the CRPAR system in an update of the FSAR for the following items:

- a. Figure 9.6-6, "Control Room Air Conditioning System-Flow Diagram," in the Final Safety Analysis Report (FSAR) shows R-23 location in the CRPAR system. Provide a marked diagram for an update of the FSAR after removal of R-23.*
- b. Section 7.7.1, "Control Room," in the FSAR describes how R-23 monitors and activates the control room ventilation."*

DEK Response:

- a. There is no physical plant change proposed by LAR-244. Therefore, KPS USAR Figure 9.6-6, "Control Room Air Conditioning System-Flow Diagram," will remain unchanged. Although the control room ventilation radiation monitor (R-23) is not credited in the revised RAAs, DEK intends to maintain R-23 in service and functional for defense-in-depth.
- b. The discussion in USAR Section 7.7.1 will remain in place since R-23 will remain in service and functional for defense-in-depth. The current design capabilities of R-23 (i.e., monitoring and activating control room ventilation) will not be changed by the proposed LAR-244.

After NRC issuance of the requested amendment, the Safety Analyses contained in Chapter 14 of the KPS USAR will be revised to document removal of accident analysis credit for R-23. However, DEK intends to continue to maintain R-23 in service and functional for defense-in-depth.

5. NRC Question 5 (ME7110-RAII-EICB-Alva-005-2011-12-29)

"LAR-244, Attachment 1, Section 4.2.3 and Attachment 4, Section 2.7 state that revised radiological accident analysis (RAA) credits R-23 to limit consequences of the Locked Rotor Action (LRA) and Fuel Handling Accident (FHA). However, the RAA approved in license amendment 190 (current radiological analysis of record for KPS) credited R-23 high radiation signal for mitigating the radiological consequences to control room occupants for the LRA, GDT and VCT Rupture, and FHA. Please explain why the revised RAA (submitted in LAR-244) does not state whether credit for R-23 is considered for mitigating GDT and VCT rupture."

DEK Response:

The revised RAAs do not directly state that the control room ventilation radiation monitor (R-23) is not credited for mitigating the GDT and VCT rupture accidents. However, the RAA's for these accidents do state that no credit is taken for control room isolation, so the radiological release is assumed to transport directly to the control room. For the GDT and VCT rupture accidents, delayed isolation of the control room produces higher dose rates to control room operators than cases where the control room is not isolated for the duration of the accident. Since R-23 will continue to be maintained in service and functional, from a realistic perspective automatic isolation of the control room may occur after these accidents. Therefore, sensitivity runs were evaluated for various control room isolation times and for no control room isolation. The evaluations concluded that control room dose is maximized for the GDT and VCT rupture accidents if the control room isolates at 30 minutes after accident initiation. Even though R-23 will no longer be credited for isolation, the revised GDT and VCT rupture RAAs provide assumptions and results assuming control room isolation at 30 minutes in order to conservatively maximize control room dose consequences.

In summary, while R-23 is not credited for mitigating the GDT and VCT rupture accidents, an R-23 actuation can increase the control room dose consequences of these accidents. Therefore, DEK has assumed the worst case R-23 actuation time in the revised GDT and VCT rupture RAAs to ensure conservative results.

6. NRC Question 6 (ME7110-RAII-EICB-Alva-006-2011-12-29)

"LAR-244, Section 4.2.3 describes that removal of R-23 would require manual actions to ensure post-accident control room dose is maintained within limits and are required to limit consequences of the FHA and LRA events. Note that the current accident analysis does not credit operator action to isolate the control room during for FHA. Attachment 3, Section B.3.3.7 states that manual actuation of the CRPAR System is a backup for the SI signal actuation. To assist NRC staff review, please address the following:

- a. Manual actuation is not part of the logic diagram for operation of the control room ventilation radiation monitor (FSAR Figure 9.6-6). Please clarify if this would be included in the logic diagram.*
- b. SI signal is not considered for all accident events (i.e., FHA, LRA, and GDT/VCT ruptures don't consider SI). In these cases manual action would be required. Please clarify if this would be included in the logic diagram."*

DEK Response:

- a. DEK does not plan to change USAR figure 9.6-6 to include a reference to manual action. DEK is requesting approval of two new manual actions in LAR-244. LAR-244, Attachment 5 describes the two proposed new manual actions for FHA and LRA and provides a justification as to why these manual actions are reasonable and should be approved.

The revised FHA requires that the control room be isolated prior to moving recently irradiated fuel. This requirement has been proposed as a new TS 3.7.10 requirement. The revised FHA also requires that the CRPAR is started by manual operator action within 20 minutes of the release. This is accomplished by placing the control switch to ON to start the respective fan. The proposed manual action is simple, can be accomplished from the control room, and will be procedurally controlled. The manual start of CRPAR is shown on the CR ventilation logic diagram (see Logic Diagram E-2003 in Enclosure 1).

The revised LRA analysis requires that the control room is isolated and CRPAR is started and running 1 hour after the LRA. DEK is proposing to credit a manual SI actuation as an approved method to accomplish this requirement. A manually actuated SI signal will isolate the control room and start CRPAR. This manual action is simple, can be accomplished from the control room, and will be procedurally controlled. The effects of an SI actuation (manual or automatic) on

CR isolation and CRPAR start is shown on Logic Diagram E-2003 (see Enclosure 1).

- b. In the MSLB, REA, LOCA, and SGTR RAAs, SI is actuated automatically (e.g. pressurizer pressure low, high containment pressure, steam line pressure low). The LRA RAA requires that the control room is isolated and CRPAR is initiated within 1 hour after the LRA. DEK is proposing to credit a manual SI actuation as an approved method to accomplish this requirement. All actuation signals for SI, including manual actuation, are included on the current SI logic diagram. An SI actuation signal (either manual or automatic) isolates the control room and starts CRPAR.

The FHA requires pre-isolation of the control room (a proposed new TS requirement in LAR-244) and a manual initiation of either train of the CRPAR system within 20 minutes after the release. The VCT/GDT rupture RAAs do not require manual action to isolate the control room. See response to Question 5 above for a complete discussion. SI actuation is not required for these RAAs.

7. NRC Question 7 (ME7110-RAII-EICB-Alva-007-2011-12-29)

"LAR-244, Attachment 4, Section 2.7, 3.3.1, and 3.6.1, state that full control room isolation require action by the operator to close monitor dampers that are not included in the isolation logic (of the control room ventilation radiation monitor). This was not discussed in previous LARs or in FSARs. Please explain the following:

- a. Where is this information described? Provide a logic diagram and a description for operation of all dampers required for the control room ventilation radiation system.*
- b. Are these monitor dampers closed by the SI signal? If not, what signal actuates them?"*

DEK Response:

- a. Actuation of the control room ventilation radiation monitor (R-23) is described in logic diagram E-2003, "Integrated Logic Diagram - Control Room A/C System." A copy of this logic diagram is included in Enclosure 1 of this letter. A description of the system response to an R-23 actuation is as follows:
 - Post-Accident Recirculation Fans A and B start.
 - A/C Fans A and B start if in **ON** or **AUTO**.
 - Motor Operated Dampers ACC-1A/MD-32367 and ACC-1B/MD-32368 close to isolate both control room fresh air intakes.
 - Solenoid Valve SV-33094 de-energizes and closes the Non-Accident Fresh Air Damper ACC-5/CD-34007.
 - Post-Accident Recirculation Dampers ACC-3A/MD-32397 and ACC-3B/MD-32371 open.
 - Normally closed Post-Accident Fresh Air Damper ACC-2/MD-32370 closes if open.

The following dampers must be closed to achieve full isolation of the control room boundary and are not isolated by an R-23 actuation signal. These dampers must be manually closed after an R-23 actuation signal unless the R-23 signal is accompanied by an SI signal.

- Close Recirculation Relief to Turbine Room Dampers ACC-20/CD-34061 and ACC-21/CD-34602.
- Close Kitchenette/Toilet Exhaust Dampers ACC-10/CD-34064 and ACC-11/CD-34063.

As previously discussed, DEK is proposing no credit for R-23 actuation in the revised RAAs but intends to maintain R-23 in service and functional for defense-in-depth.

- b. Manual or automatic actuation of SI produces the same system response as an actuation of R-23 and also isolates the dampers listed above that are not isolated by an R-23 signal. The following automatic actions occur upon receipt of a SI signal/sequence.

- Post-Accident Recirculation Fans A and B start.
- A/C Fans A and B start if in **ON** or **AUTO**.
- Motor operated Dampers ACC-1A/MD-32367 and ACC-1B/MD-32368 close to isolate both fresh air intakes.
- Solenoid Valve SV-33094 de-energizes and closes the Non-Accident Fresh Air Damper ACC-5/CD-34007.
- Post-Accident Recirculation Dampers ACC-3A/MD-32397 and ACC-3B/MD-32371 open.
- Normally closed Post-Accident Fresh Air Damper ACC-2/MD-32370 closes if open.
- Recirculation relief to Turbine Room Dampers ACC-20/CD-34061 and ACC-21/CD-34602 close.
- Kitchenette/Toilet Exhaust Dampers ACC-10/CD-34064 and ACC-11/ CD-34063 close.

The following logic diagrams for CRPAR and associated dampers are provided in Enclosure 1 of this letter:

- E-2003, Integrated Logic Diagram - Control Room AC
- E-2004, Integrated Logic Diagram - Control Room AC
- E-2074, Integrated Logic Diagram - Aux Building Special Vent
- E-1616, Integrated Logic Diagram - Aux Building Special Vent
- E-2189, Schematic Diagram - Solenoid Valves SV33433, SV33441, SV33444 & SV33442
- E-2199, Schematic Diagram - Damper Control Relays
- E- 1635, Integrated Logic Diagram - Diesel Generator Electric

References

1. Letter from J. A. Price (DEK) to Document Control Desk (NRC), "License Amendment Request 244, Proposed Revision to Radiological Accident Analysis and Control Room Envelope Habitability Technical Specifications," dated August 30, 2011. [ADAMS Accession No. ML11252A521]
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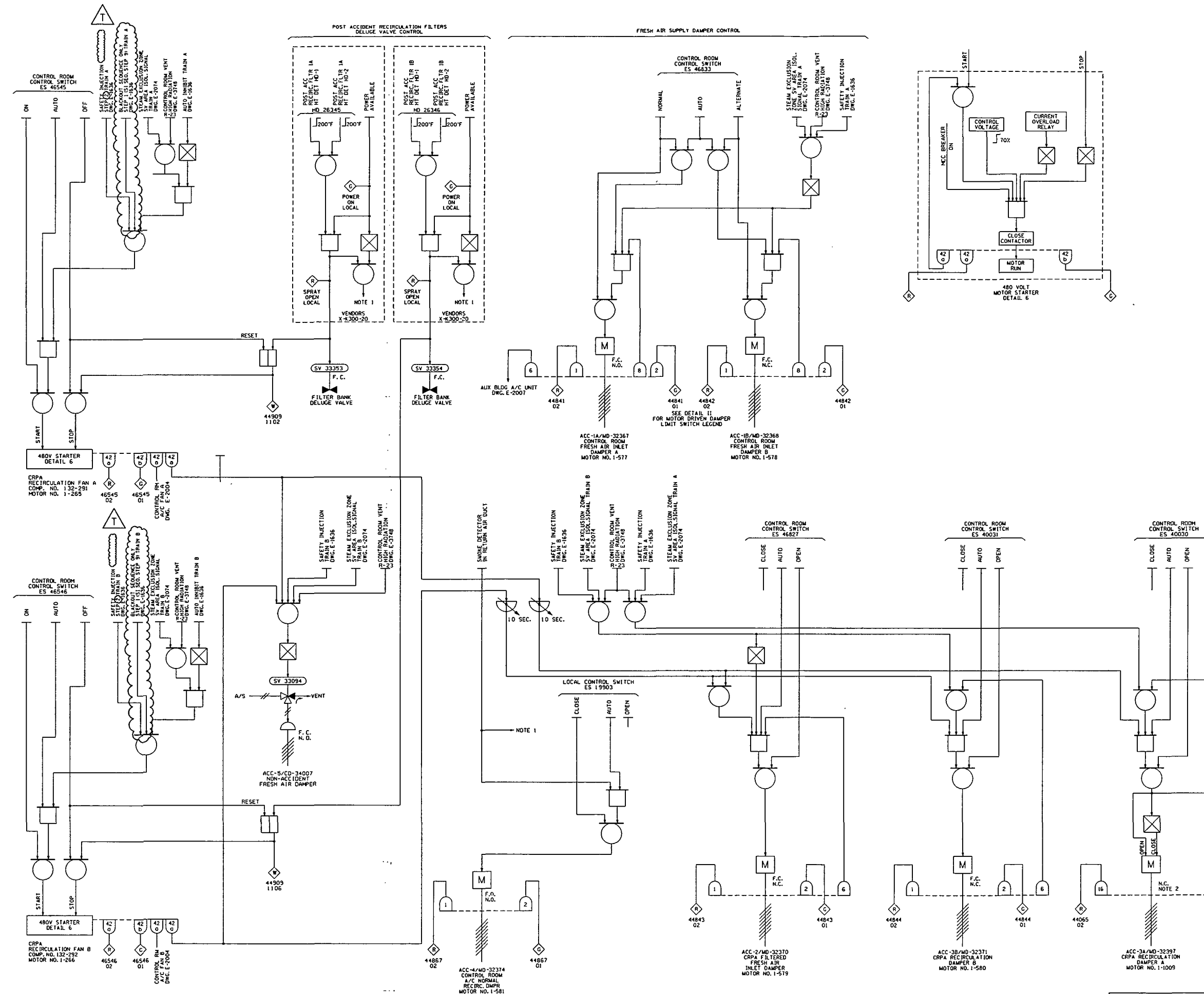
ENCLOSURE 1

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RADIOLOGICAL ACCIDENT ANALYSIS AND CONTROL ROOM ENVELOPE
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Logic Diagrams

1. E-2003, Integrated Logic Diagram - Control Room AC
2. E-2004, Integrated Logic Diagram - Control Room AC
3. E-2074, Integrated Logic Diagram - Aux Building Special Vent
4. E-1616, Integrated Logic Diagram - Aux Building Special Vent
5. E-2189, Schematic Diagram - Solenoid Valves SV33433, SV33441,
SV33444 & SV33442
6. E-2199, Schematic Diagram - Damper Control Relays
7. E- 1635, Integrated Logic Diagram - Diesel Generator Electric

**KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.**



J-1
DCR 1885 COMP.
SEE REV. M-1
APP'D: DMM 12/16/91
FILMER: WPS 12/23/91

J-1
REVISED DRAWING AND REDRAFTED TO CADD.
PER DCR 2704
BY: BCT 6/13/94
CWD: DDE 06-15-94
APP'D: BOD 06-17-94
LJ DCR 2704 COMPL.
SEE REV. M-1
FILMER: WPS 07-26-94

K-1
ADDED COMMENTS FROM WPS REVIEW MEETING OF 6-29-93 PER DCR 2172
BY: ESS 8-17-94
CWD: RES 8-23-94
APP'D: TLM 08-23-94

L-1
DCR 2172 COMPL.
SEE REV. M-1
FILMER: WPS 09-20-94

L-1
DCR 3023
ADDED LOCAL CONTROL SWITCH ES 19903
BY: JMS 12-09-99
APP'D: RES 08-24-01

M-1
DCR 3023 COMPLETE
SEE REVISION L-1
FILMER: WPS 09-04-01

M-1
DCR 3048
ADDED CONTROL ROOM A/C FAN A & B NOTES.
BY: SAM 04-25-02
APP'D: RES 05/14/02

N-1
DCR 3048 COMPL.
SEE REVISION M-1
FILMER: WPS 05-28-02

N-1
DCR 3084
REVISED NUMBER OF SWITCH POSITIONS.
BY: NTH 08-18-02
APP'D: DAK 09-03-02

P-1
DCR 3084 COMPLETE.
SEE REVISION M-1
FILMER: WPS 09-10-02

P-1
DCR 3084
ADDED MOTOR NUMBERS.
BY: NTH 09-16-02
APP'D: JLS 09-23-02

Q-1
DCR 3084 COMPLETE.
SEE REVISION P-1
FILMER: WPS 10-01-02

R-1
DCR 3084 3637
REVISED ACC-3A/MD-32397
DRFT'D: AMH 10-15-09
APP'D: CAD 10-20-09

S-1
RE PUR 10-022
ADDED PRIORITY DWG. STAMP
DRFT'D: EAB 07-22-10

T-1
DC 10-01019
REVISED LOGIC
DRFT'D: NTH 03-16-11

E-2003

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION

INTEGRATED LOGIC DIAGRAM
CONTROL ROOM A/C SYSTEM

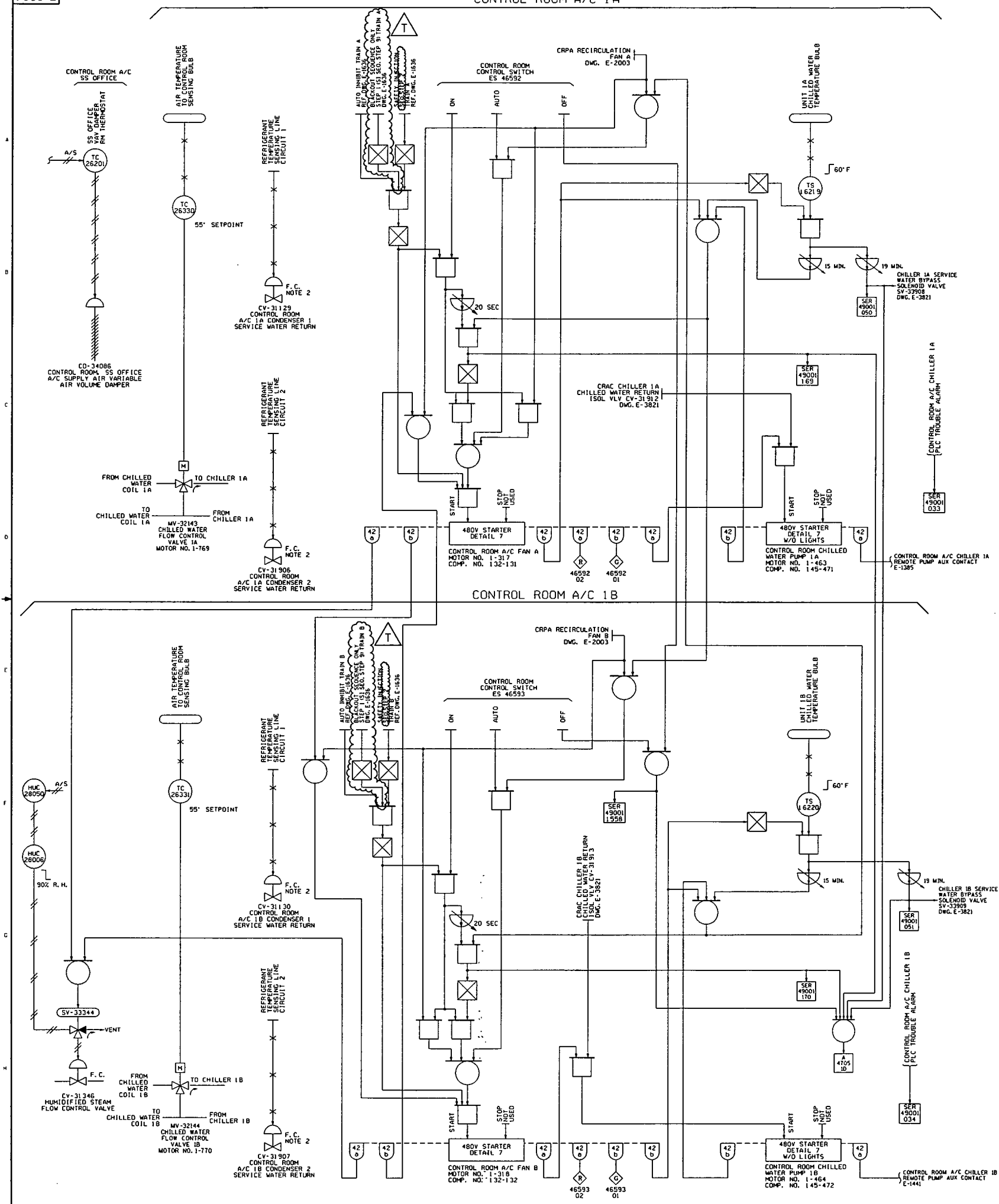
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.

GREEN BAY, WISCONSIN

CADD
REV. NO. 12/93
DWG. NO. E-2003
REV. T

PRIORITY DRAWING

CONTROL ROOM A/C 1A



REVISION

G	DCR 1895 COMP. SEE REV. E-1. APP'D: DWM 12/16/91. FILMED: WPS 12/23/91.
G-1	REVISED LOGIC UNIT A AND UNIT B. REDRAFTED TO CADD. PER DCR 2704. BY: BCT 6/13/94. CWM: DDE 08-15-94. APP'D: BDC 06-17-94.
H-1	ADDED MOTOR NO. TO MV-32143. MV-32144 & LOGIC FOR SS OFFICE. PER PDD 0131. BY: BCT 1/12/95. CWM: DDE 1/12/95. APP'D: DWM 1-18-95.
J	PDD 0131 COMP. SEE REV. H-1. FILMED: WPS 1-31-95.
J-1	PDD 0161 COMP. TO DESTINATIONS & REVISED NOTE 3. BY: SJD 4-28-98. APP'D: PCM 4-29-98.
K	PDD 0161 COMPL. SEE REV. J-1. FILMED: WPS 5-12-98.
K-1	PDD 0170 ADDED CHART REVISED SUPPLY & EXH DAMPERS. BY: BJD 1-6-00. APP'D: DAK 1-21-00.
L	PDD 0170 COMPL. SEE REV. K-1. FILMED: WPS 02-01-00.
L-1	DCR 3048 REVISED LOGIC UNIT A AND UNIT B. BY: SMJ 05-10-02. APP'D: RER 05-14-02.
M	DCR 3048 COMPL. SEE REV. L-1. FILMED: WPS 05-28-02.
M-1	CAP 26656 ADDED NOTE 5. DRFT'D: SJA 05/22/05. APP'D: EW 05/26/05.
N	CAP 26656 COMPL. SEE REV. M-1. FILMED: WPS 05/31/05.
N-1	CAP 043179 REVISED LABELS FOR CONTROL ROOM A/C UNITS. DRFT'D: SJA 04-22-07. APP'D: RER 04-23-07.
P	CAP 043179 COMPL. SEE REV. N-1. FILMED: 05-01-07.
Q	RE PUR 09-040 ADDED DRAWING. CONTINUATION NUMBERS. DRFT'D: NTH 06-26-09. APP'D: LEW 06-29-09.
R	RE PUR 10-022 ADDED PRIORITY DWG. STAMP. DRFT'D: EAB 07-22-10.
S	DCR 3669 REVISED LOGIC. ADDED SER 49001050 AND SER 49001051. DRFT'D: ANH 02-17-11.
T	DC 10-01019 REVISED LOGIC. DRFT'D: NTH 03-16-11.

REFERENCE:

FLOW DIAGRAM-AIR CONDITIONING ADMINISTRATION BLDG & CONTROL ROOM.....N-603

NOTES:

- ULV1 - UNLOADING SOLENOID VALVE #1
ULV2 - UNLOADING SOLENOID VALVE #2
ULV3 - UNLOADING SOLENOID VALVE #3
SLV1 - LIQUID LINE SOLENOID VALVE #1
SLV2 - LIQUID LINE SOLENOID VALVE #2
- FAILS CLOSED ON LOSS OF AIR ONLY.
- HPC AND LPC ARE ALSO CALLED THE REFRIGERANT DUAL PRESSURE CONTROL (RPCI)
- CV-31123 & CV-31130 FAIL CLOSED ON LOW REFRIGERANT PRESSURE.
- SWITCH TYPES:
SWITCH NO. POSITIONS
46592 (3 POSITION
46593 MAINTAINED)

AIR OPERATED DAMPER LIMIT SWITCH

WHICH	WHICH	CLOSED	DAMPER POSITION	OPEN
1	DO			
2	DO			
3	DO			
4	DO			
5	DO			
6	DO			
7	DO			
8	DO			

LEGEND PLATE DATA

OFF/AUTO/ON

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DATE: 11/20/93
BY: BCT
SCALE: NONE

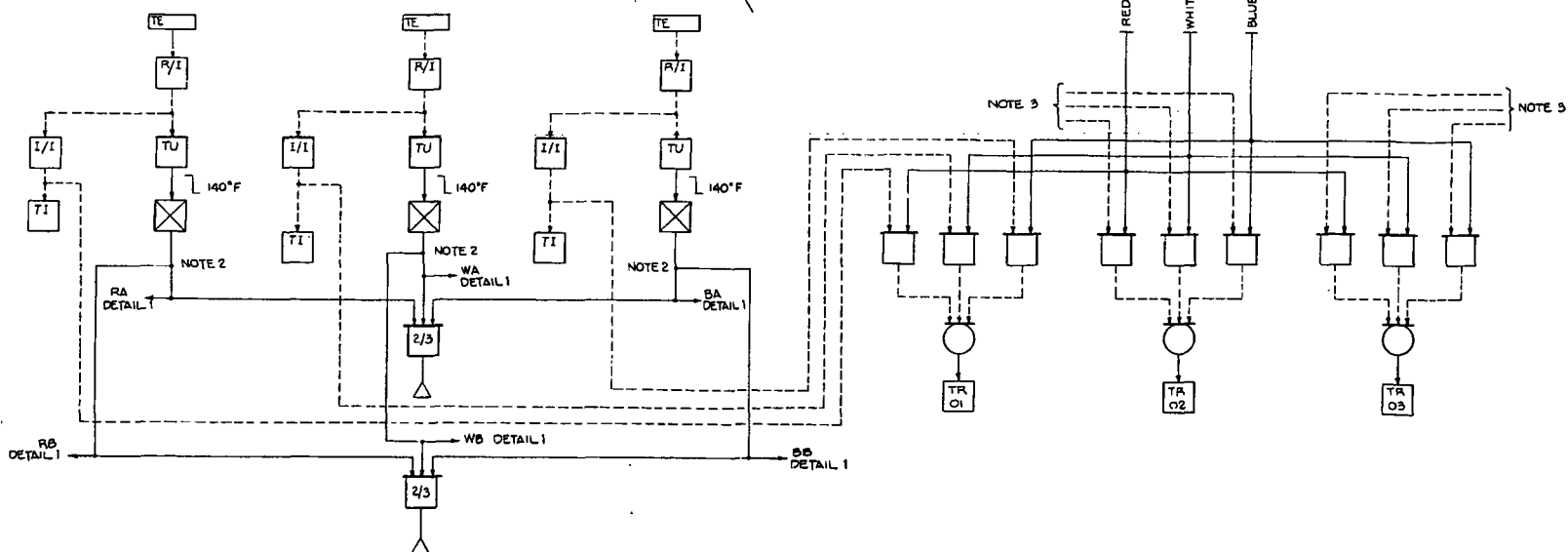
DWG. NO. E-2004
REV. T

PRIORITY DRAWING

CADD

STEAM EXCLUSION ISOLATION SIGNAL GENERATION (SEE DETAIL 6)

TYPICAL 3-CHANNEL LOOP FOR ANALOG/DIGITAL SIGNAL DEVELOPMENT



LOCATION (NOTE 1)	TE	CHN	R/I	TU	I/I	TI	SER. DETAIL 1	TR	SEL. E5
CONTROL ROOM DRIVE RM. INLET	15252	R	72001	7210101	72201	41575	49001420	42577	01
CONTROL ROOM DRIVE RM. OUTLET	15253	B	72002	7210102	72202	41576	49001420	42577	02
BATTERY ROOMS INLET	15254	R	72003	7210201	72203	41577	49001420	42577	03
BATTERY ROOMS OUTLET	15255	B	72004	7210202	72204	41578	49001420	42577	04
TR. DRIVEN AFW PUMP ROOM	15256	W	72005	7210301	72205	41579	49001420	42578	01
AUX. BLDG. AREA INLET	15257	R	72006	7210401	72206	41580	49001420	42578	02
AUX. BLDG. AREA OUTLET	15258	B	72007	7210402	72207	41581	49001420	42578	03
AUX. BLDG. FAN FLOORS	15259	Y	72008	7210501	72208	41582	49001420	42579	01
AUX. BLDG. AREA INLET	15260	R	72009	7210601	72209	41583	49001420	42579	02
AUX. BLDG. AREA OUTLET	15261	B	72010	7210602	72210	41584	49001420	42579	03
CONTROL ROOM A/C RECIRC.	15262	Y	72011	7210701	72211	41585	49001420	42579	04
CONTROL ROOM A/C MAKEUP AIR	15263	R	72012	7210801	72212	41586	49001420	42579	05
AUX. BLDG. LAB AREAS	15264	W	72013	7210901	72213	41587	49001420	42580	01
AUX. BLDG. A/C EXHAUST FILTERS	15265	B	72014	7211001	72214	41588	49001420	42580	02
SPARE	15266	Y	72015	7211101	72215	41589	49001420	42580	03

DETAIL 6

AIR OPERATED VALVE LIMIT SWITCH LEGEND			
VALVE	POSITION	CLOSED	OPEN
1	INITIATE		
2	RESET		
3	INITIATE		
4	RESET		
5	INITIATE		
6	RESET		
7	INITIATE		
8	RESET		

DETAIL 13

REVISION

M-1	REMOVED TO AFW PUMP ROOM STEAM EXCLUSION ISOLATION LOGIC, NOTE 6, AND SWITCHES 46844, 46845 AND 46846
15259	PER DCR 2690
BY: B. T. H. 7-27-99	
CHKD: J. C. 8-1-99	
APP'D: J. C. 8-1-99	
N-1	REVISED INFO CHART AND DETAIL 1 AT CO-OR E-10 PER PDD 0133
BY: D. G. 01-31-95	
CHKD: B. C. 01-31-95	
APP'D: P. C. 2-3-95	
P-1	PDD 0133 COMPL. SEE REV. N-1
CHKD: W. S. 2-21-95	
P-1	DCR 2960
REVISED DETAIL 1	
BY: J. M. 04-13-00	
APP'D: J. S. 04-13-00	
SCANNED TO CAD & REM REF. Dwg. PER PUR APP'D: D. A. 04-17-00	
O-1	DCR 2960 COMPL. SEE REV. P-1
FILED: W. S. 04-18-00	
O-1	PDR 0176
CHANGED I/F FOR 15253 FROM 722121 TO 72212	
BY: J. B. 8-9-00	
APP'D: D. A. 08-10-00	
R-1	PDR 0176 COMPL. SEE REV. Q-1
FILED: W. S. 08-15-00	
R-1	FILE PUR 04-035
ADDED DRAWING REFERENCE TO STEAM EXCLUSION TRAIN A & B	
DRFT: J. B. 11-06-04	
APP'D: J. B. 11-09-04	
S-1	RE PUR 04-035
COMPL. SEE REV. R-1	
FILED: J. B. 11-16-04	
U-1	CR 028504
CHANGED DRAWING REFERENCE	
DRFT: J. B. 01-15-08	
APP'D: J. B. 01-15-08	
FILED: J. B. 01-22-08	
U-1	RE PUR 10-022
ADDED PRIORITY DWG. STAMP	
DRFT: J. B. 07-22-10	

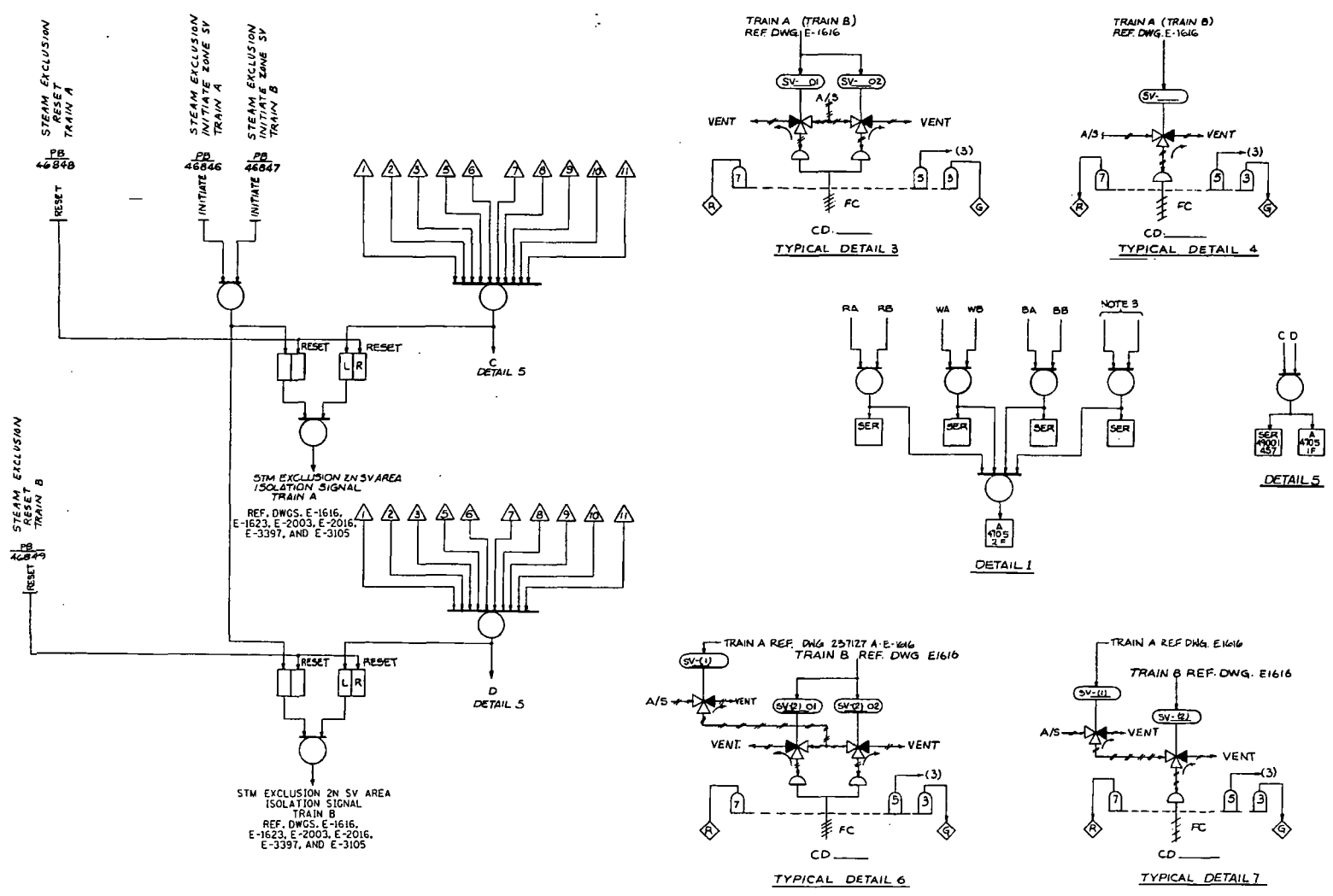
DAMPER	DESCRIPTION	SOLENOID VALVE (1)	SOLENOID VALVE (2)	GREEN LITE	RED LITE	TS NOTE 5	TRAIN	TYPICAL DETAIL
34050	EX-15253-34050 EXH. RM. SP. STYL. EXH. DMP.	33429	4487801	4487802	AA	A	A	4
34051	EX-15253-34051 EXH. RM. SP. STYL. EXH. DMP.	33430	4487901	4487902	BB	B	B	4
34052	EX-15253-34052 EXH. RM. SP. STYL. EXH. DMP.	33431	4488001	4488002	CC	C	C	4
34053	EX-15253-34053 EXH. RM. SP. STYL. EXH. DMP.	33432	4488101	4488102	DD	D	D	4
34054	EX-15253-34054 EXH. RM. SP. STYL. EXH. DMP.	33433	4488201	4488202	EE	E	E	4
34055	EX-15253-34055 EXH. RM. SP. STYL. EXH. DMP.	33434	4488301	4488302	FF	F	F	4
34057	EX-15253-34057 EXH. RM. SP. STYL. EXH. DMP.	33437	4488501	4488502	GG	A	A	4
34058	EX-15253-34058 EXH. RM. SP. STYL. EXH. DMP.	33438	4488601	4488602	HH	B	B	4
34059	EX-15253-34059 EXH. RM. SP. STYL. EXH. DMP.	33439	4488701	4488702	KK	A	A	4
34060	EX-15253-34060 EXH. RM. SP. STYL. EXH. DMP.	33440	4488801	4488802	LL	B	B	4
34061	EX-15253-34061 EXH. RM. SP. STYL. EXH. DMP.	33441	4488901	4488902	MM	A	A	4
34062	EX-15253-34062 EXH. RM. SP. STYL. EXH. DMP.	33442	4489001	4489002	NN	B	B	4
34063	EX-15253-34063 EXH. RM. SP. STYL. EXH. DMP.	33443	4489101	4489102	PP	A	A	4
34064	EX-15253-34064 EXH. RM. SP. STYL. EXH. DMP.	33444	4489201	4489202	RR	B	B	4
34065	EX-15253-34065 EXH. RM. SP. STYL. EXH. DMP.	33445	4489301	4489302	TT	B	B	4
34120	EX-15253-34120 EXH. RM. SP. STYL. EXH. DMP.	33769	4492901	4492902	UU	A	A	4
34121	EX-15253-34121 EXH. RM. SP. STYL. EXH. DMP.	33770	4493001	4493002	VV	B	B	4

DAMPER	DESCRIPTION	SOLENOID VALVE (1)	SOLENOID VALVE (2)	GREEN LITE	RED LITE	TS NOTE 5	TYPICAL DETAIL
34056	EX-15253-34056 EXH. RM. SP. STYL. EXH. DMP.	33435	33436	4488401	4488402	X	6
34066	EX-15253-34066 EXH. RM. SP. STYL. EXH. DMP.	33446	33447	4489401	4489402	Y	7
34067	EX-15253-34067 EXH. RM. SP. STYL. EXH. DMP.	33448	33449	4489501	4489502	Z	7

- NOTES:
1. EACH LOCATION CONTAINS 3 SEPARATE CHANNELS.
 2. TRAIN A & TRAIN B SIGNALS ARE DEVELOPED FROM SEPARATE TESTABLE ISOLATION RELAYS.
 3. SIGNALS FROM OTHER CHANNELS FROM OTHER FIELD LOCATIONS.
 4. SWITCH TYPES

SWITCH NO.	POSITIONS	LEGEND PLATE DATA
46846	MOMENTARY PUSHBUTTON	INITIATE
46847	MOMENTARY PUSHBUTTON	RESET
46848	3 POSITION MAINTAINED	RED WHITE BLUE
46849	3 POSITION MAINTAINED	WHITE BLUE YELLOW
46850	3 POSITION MAINTAINED	RED WHITE YELLOW
46851	3 POSITION MAINTAINED	RED BLUE YELLOW

5. SEE ALARM DETAIL 1, REF. DWG. E-1616

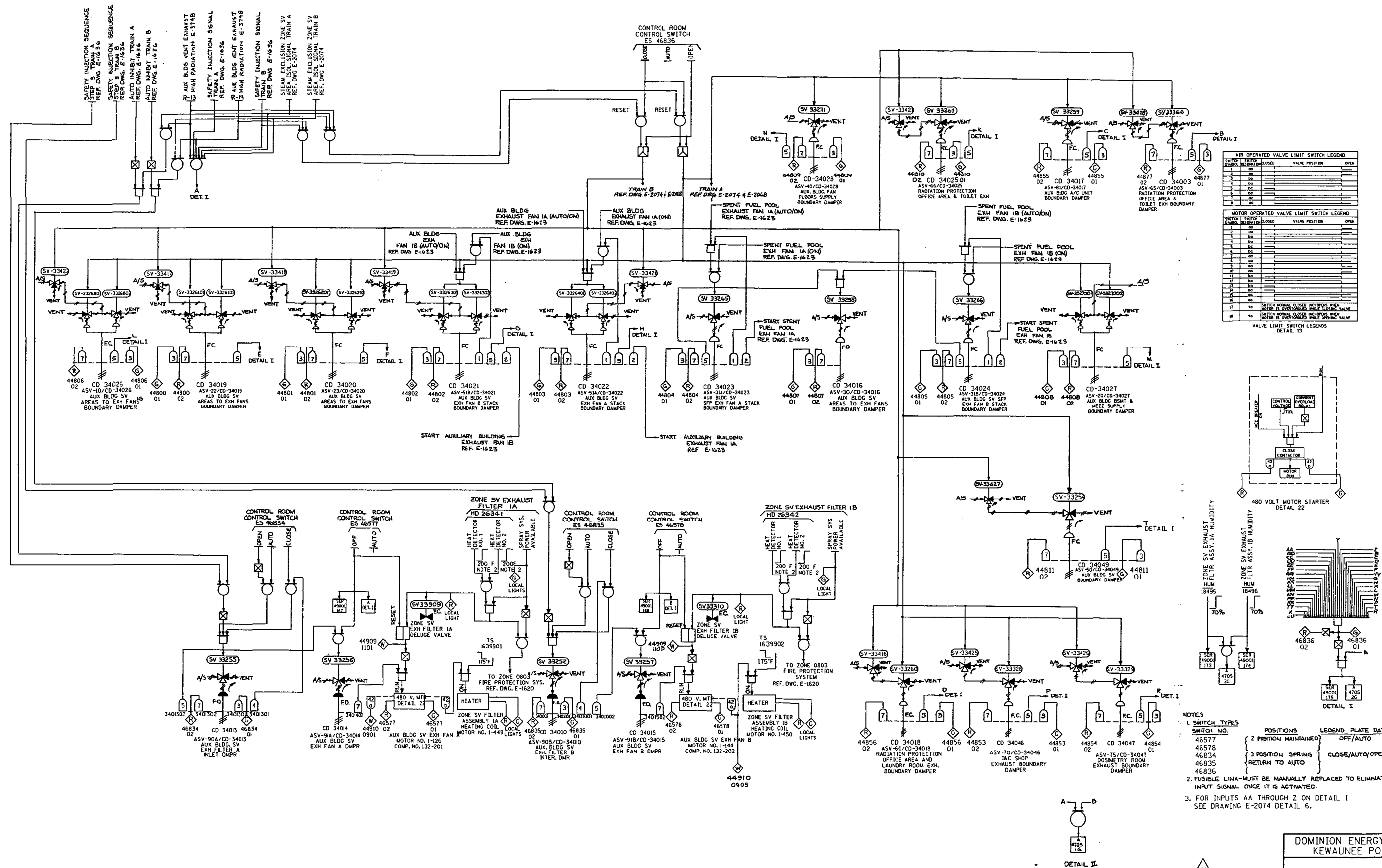


PRIORITY DRAWING

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION

INTEGRATED LOGIC DIAGRAM
AUXILIARY BUILDING SPECIAL VENT

DATE	REVISED	AED
SCALE	PROPOSED	
NONE		
APPROVED	PROJ. & DWG. NO.	SHT. OF
	E-2074	(U)



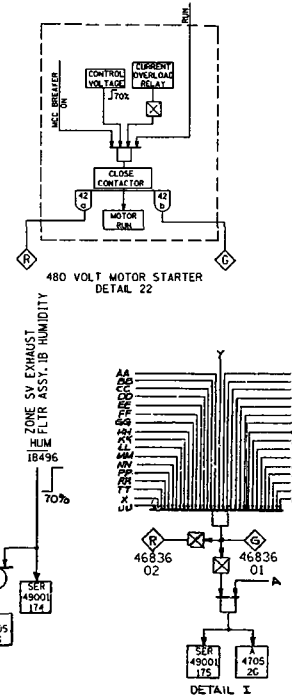
AIR OPERATED VALVE LIMIT SWITCH LEGEND				
SWITCH	STATUS	POSITION	VALVE POSITION	OP
STATION	STATION	POSITION	VALVE POSITION	OP
1	NO			
2	NO			
3	NO			
4	NO			
5	NO			
6	NO			
7	NO			
8	NO			
9	NO			
10	NO			

MOTOR OPERATED VALVE LIMIT SWITCH LEGEND				
SWITCH	STATUS	POSITION	VALVE POSITION	OP
STATION	STATION	POSITION	VALVE POSITION	OP
1	NO			
2	NO			
3	NO			
4	NO			
5	NO			
6	NO			
7	NO			
8	NO			
9	NO			
10	NO			
11	NO			
12	NO			
13	NO			
14	NO			
15	NO			
16	NO			
17	NO			
18	NO			

SWITCH NORMAL CLOSED W/NO OPERATE WHEN MOTOR IS DEENERGIZED WHILE CLOSING VALVE

SWITCH NORMAL CLOSED W/NO OPERATE WHEN MOTOR IS DEENERGIZED WHILE OPENING VALVE

VALVE LIMIT SWITCH LEGENDS



NOTES

<u>1 SWITCH TYPES</u>	<u>POSITIONS</u>	<u>LEGEND PLATE DATA</u>
<u>SWITCH NO.</u>		
46577	{ 2 POSITION MAINTAINED	OFF/AUTO
46578		
46834	{ 3 POSITION SPRING RETURN TO AUTO	CLOSE/AUTO/OPEN
46835		
46836		

2. FUSIBLE LINK-MUST BE MANUALLY REPLACED TO ELIMINATE INPUT SIGNAL ONCE IT IS ACTIVATED.

3. FOR INPUTS AA THROUGH Z ON DETAIL I
SEE DRAWING E-2074 DETAIL 6.

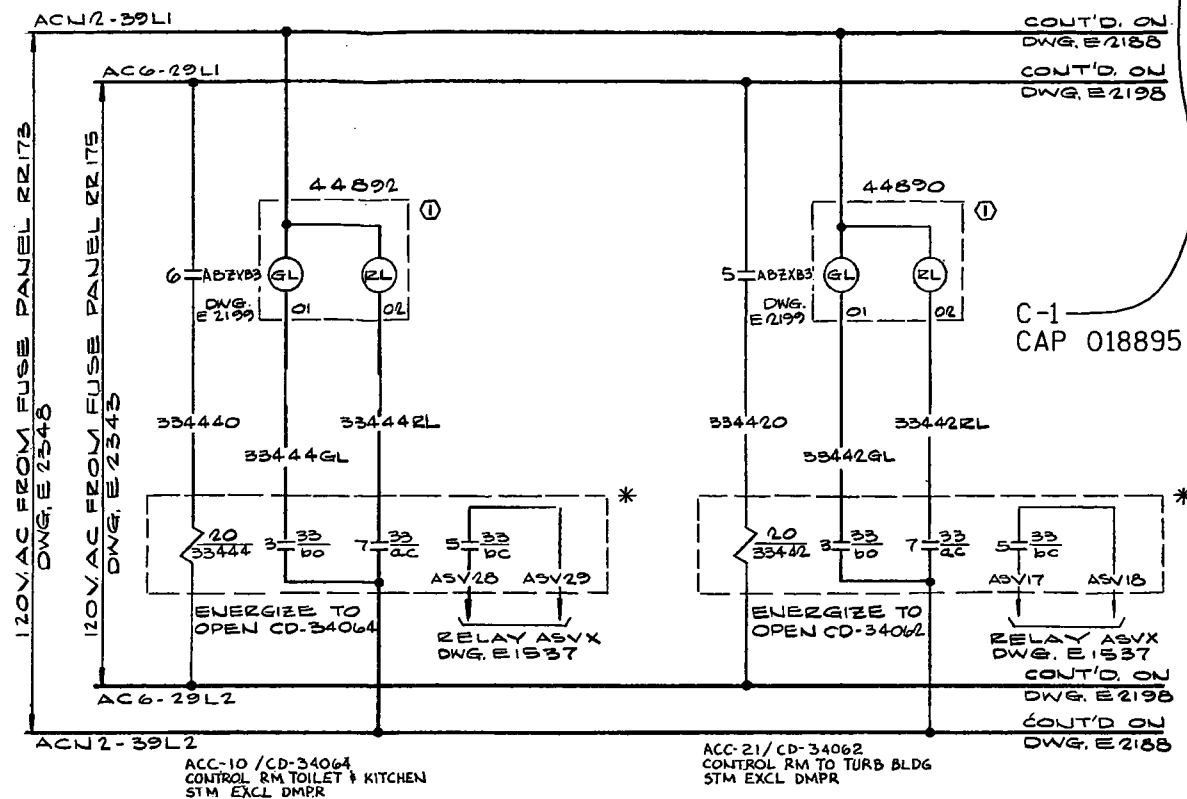
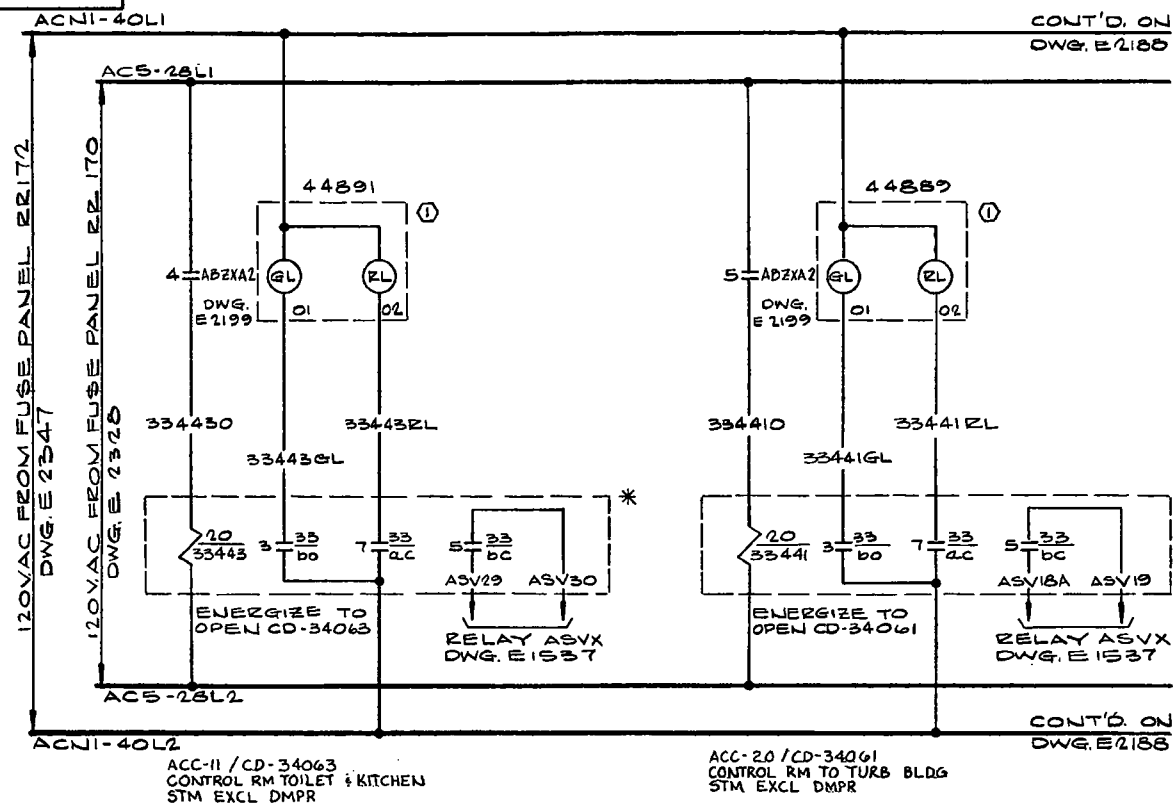
PRIORITY DRAWING

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION

INTEGRATED LOGIC DIAGRAM
AUX BLDG SPEC VENT

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

HYBRID CADD	Public Service	DRAIN	DWG. NO. E-1616	REV. W
		N/A		
		SCALE		
		NONE		



RG 1.97 DRAWING
SEE NOTE 1

NOTES:

1. THE PURPOSE OF THIS DRAWING IS TO ILLUSTRATE THE EQUIPMENT ASSOCIATED WITH THE REGULATORY GUIDE (RG) 1.97 ACCIDENT MONITORING INSTRUMENTATION VARIABLE.

THIS LOOP DRAWING CONTAINS THE RG 1.97 EQUIPMENT INCLUDED ON THE RG 1.97 MASTER EQUIPMENT LIST FOR THE SPECIFIED VARIABLE. DEDICATED RG 1.97 DRAWINGS WERE NOT DEVELOPED FOR THIS VARIABLE. THEREFORE EQUIPMENT OUTSIDE THE SCOPE OF RG 1.97 MAY ALSO BE ILLUSTRATED ON THIS DRAWING.

CONTACT THE RG 1.97 PROCESS OWNER PRIOR TO SUBMITTING CHANGES TO THIS DRAWING.

C-1
CAP 018895

REFERENCES:

2. FOR SYMBOL LIST SEE DWG. E1094.

ACC

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SCHEMATIC DIAGRAM - SOLENOID VALVES
SV33443, SV33441, SV33444, & SV33442

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

HYBRID
CADD

Public
Service

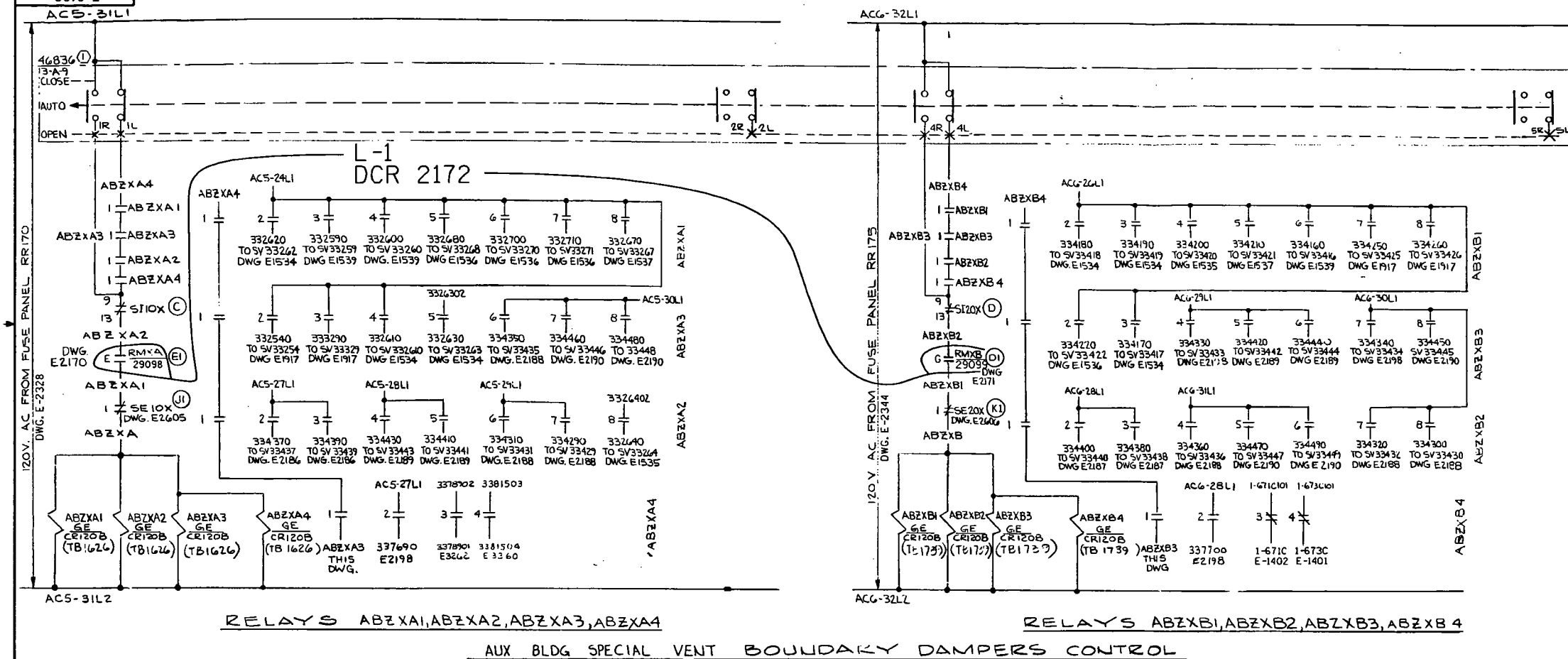
DRAWN
JJC
SCALE
4-30-73

DWG. NO.
E-2189

REV.
D

REVISIONS

A] DCR 1915 COMPL
SEE REV 0-1
APP'D: JBV 4-24-86
FILM'D: WPS 5-6-86
A] REVISED EQUIP
TITLES
DWG: S. CHOE
CHK'D: WJ 11-17-91
APP'D: JJB 2-13-91
INFO TRANSFER FROM
FD EOR WPS
PER DCE 1885
BY: D. GIESLER 8-26-91
CHK'D: JJM 9-03-91
B] DCR 1885 COMPL
SEE REV. A-1
APP'D: DMM 1-15-92
FILM'D: WPS 1-28-92
B] RE PUR 0302
SCANNED TO CADD
REMOVED DRAWING REF.
BY: ABF 07-03-02
APP'D: RAF 07-18-02
C] RE PUR 0302 COMPLETE
SEE REV. B-1
FILM'D: WPS 07-23-02
C-1] CAP 018895
ADDED NOTE 1 AND RG 1.97
INDICATION.
DRAFT'D: NTH 01-27-04
APP'D: PPB 01-03-05
D] CAP 018895 COMPLETE.
SEE REVISION C-1.
FILM'D: 01-11-05



REFERENCES:
1. FOR SYMBOL LIST SEE DWG E-1094
2. L/D AUX BLDG SPEC VENT E-1616

L-1
DCR 2172

REVISIONS	
J-1	REMOVED PROJECT
NO'S. SYMBOL K1 FOR RELAY SE20X WAS K PER RE PUR 0132 BY: BCY 12/23/92 CHK'D: RJS 12/29/92 APP'D: TRR 01-04-93	
K	RE PUR 0132 COMPL.
SEE REV. J-1 FILMED:(WPS) 01-12-93	
K-1	REMOVE
RELAYS TAFTA & TAFTBR, MTR 1-724, RELAY 421-724 & ASSOC. CONTROLS PER DCR 2690 BY: BCY 7/13/94 CHK'D: GJV 07-19-94 APP'D: BDG 07-22-94	
L	DCR 2690 COMPL.
SEE REV. K-1 FILMED:(WPS) 08-09-94	
L-1	
REVISED RM AUX. RLY TAC NOS. ADDED DWG REF. 2. PER DCR 2172 BY: BCY 9/12/94 CHK'D: GV 09-20-94 APP'D: TLM 09-28-94	
M	DCR 2172 COMPL.
SEE REV. L-1 FILMED:(WPS) 10-18-94	
E-2199	

ASV


HYBRID
CADD

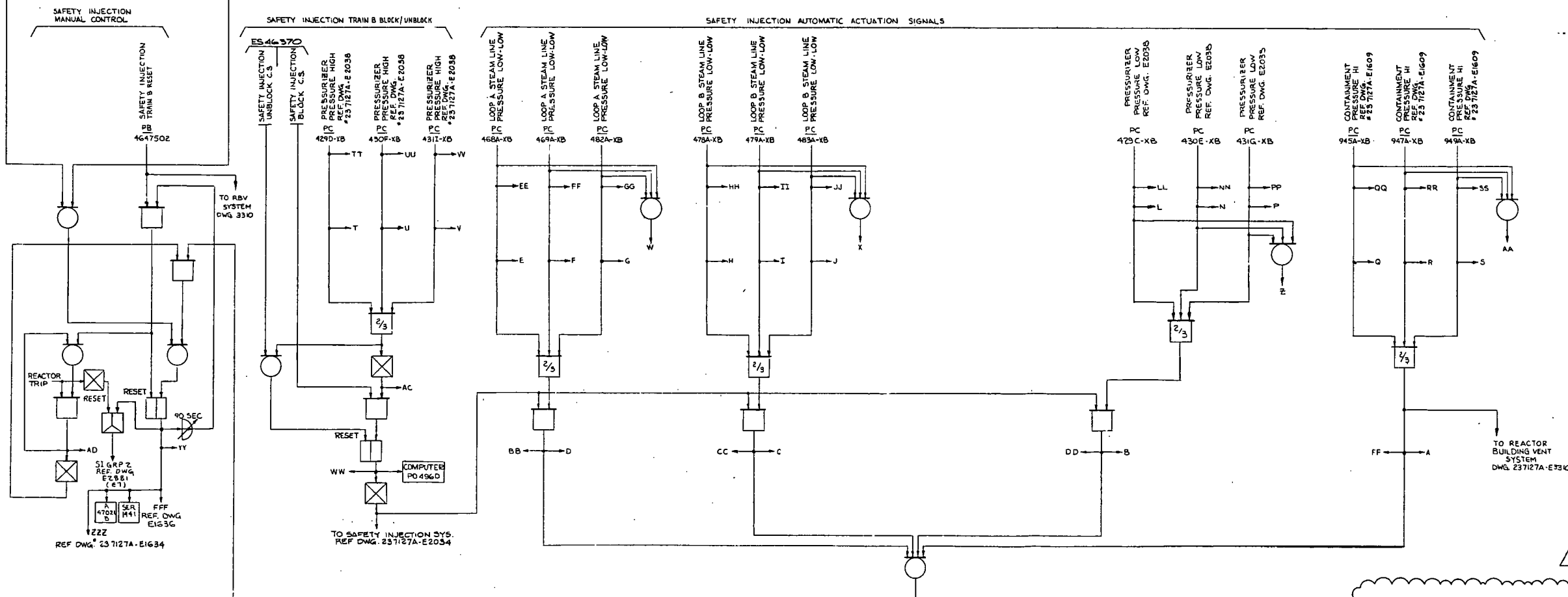
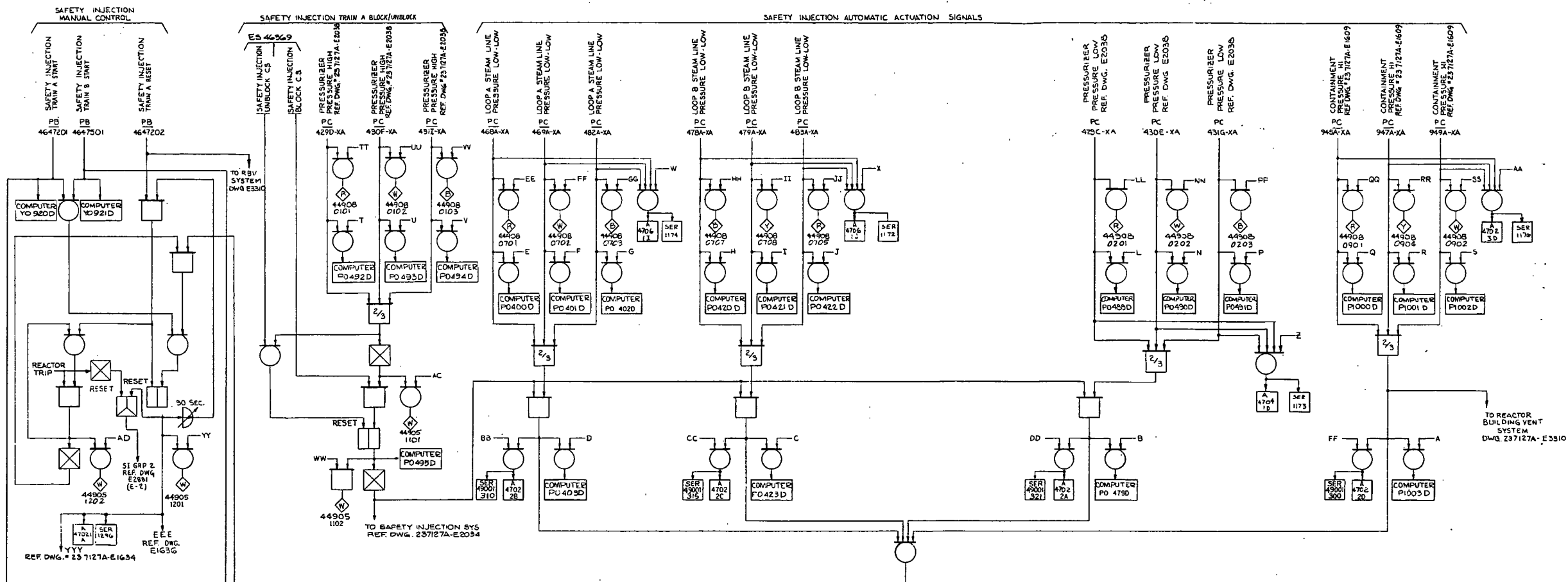
E-2199

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SCHEMATIC DIAGRAM
DAMPER CONTROL RELAYS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

	DRAWN	DWG. NO. E-2199	REV. M
	N/A		
	SCALE		
	NONE		



REFERENCES:

FOR PRESSURIZER PRESSURE ALSO SEE XE-100-146 AND E-2038.
FOR SI ACTUATED, CHARGED, & BLOCKED ALSO SEE XE-100-150.
CONTAINMENT PRESSURE 17 PSIG E-1621, 23 PSIG E-1604 ALL ON XE-100-150.
STEAM LINE PRESSURE ALSO SEE XE-100-149.

PRIORITY DRAWING

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATIONINTEGRATED LOGIC DIAGRAM
DIESEL GENERATOR ELECTRICDESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSINHYBRID
CADD

REV.	DATE	BY	CHKD.	APP'D.
1				
2				
3				
4				
5				
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7				
8				
9				
10				
11				
12				

DWG. NO. E-1635
REV. R

E-1635

REV. R