



Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

June 2, 1981



Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Zion Station Units 1 and 2
Fire Protection
NRC Dockets 50-295 and 50-304

- References (a): April 30, 1980, letter from
D. L. Peoples to H. R. Denton.
- (b): May 28, 1980, letter from
D. L. Peoples to H. R. Denton.
- (c): September 30, 1980, letter from
W. F. Naughton to H. R. Denton.
- (d): November 24, 1980, letter from
T. R. Tramm to H. R. Denton.
- (e): February 20, 1981, letter from
D. G. Eisenhut to ALL PWR Licensees.

Dear Mr. Denton:

This letter provides information required for NRC review of Zion fire protection as identified in Section 8 of enclosure (1) of reference (e). Attachment A to this letter identifies the location of the requested information in the enclosures to this letter and in the previous transmittals. Attachment B lists the construction drawings that are enclosed. Attachment C is a description of a plant modification which provides a second source of power to certain instrumentation.

Updated versions of present and proposed cable routing details are shown in the enclosure titled "Fire Protection Modifications, Present and Proposed Cable Routing, Zion Station Units 1 and 2, September 1980". The text is identified as Revision 1 and dated May 1981. The instrumentation rerouting on the color coded drawings does not agree with the latest design indicated on the enclosed construction drawings. These differences were the result of rerouting cables for charging pump flow, presurrizer pressure and auxiliary feedwater flow instrumentation and segregating steam generator wide range levels into four divisions.

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Mr. H. R. Denton

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June 1, 1981

Four complete copies of this enclosure are provided. Three partial copies are also provided to update the three copies originally transmitted by Reference (c).

One (1) signed original and thirty nine copies of this letter and the attachments are provided for your use.

Please address any questions you may have concerning this matter to this office.

Very truly yours,



T. R. Tramm
Nuclear Licensing Administrator

Attachments
Enclosures

cc: Zion Resident Inspector

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ATTACHMENT A

Information Required for Staff Review According to Section 8 of "Staff Position, Safe Shutdown Capability".

(a) Description of the systems or portions thereof used to provide the shutdown capability and modifications required to achieve the alternate shutdown capability if required.

Response

The required information for attaining hot and cold shutdown were submitted in References (a) and (b).

(b) System design by drawings which show normal and alternate shutdown control and power circuits, location of components, and that wiring which is in the area and the wiring which is out of the area that required the alternate system.

Response

The required drawings for comparing original cable routings with new routings for control cables and instrument cables was submitted in Reference (c) and titled "Fire Protection Modifications, Present and Proposed Cable Routing, Zion Station Units 1 and 2, September 1980". Instrument cables were not updated in the enclosed text revised May 1, 1981, because the drawings listed in Attachment B illustrate final design. Reroutes were added for charging pump flow, pressurizer pressure and auxiliary feedwater flow and steam generator wide range levels were segregated into four divisions.

(c) Demonstrate that changes to safety systems will not degrade safety systems. (e.g., new isolation switches and control switches should meet design criteria and standards in FSAR for electrical equipment in the system that the switch is to be installed; cabinets that the switches are to be mounted in should also meet the same criteria (FSAR) as other safety related cabinets and panels; to avoid inadvertent isolation from the control room, the isolation switches should be keylocked, or alarmed in the control room if in the "local" or "isolated" position; periodic checks should be made to verify switch is in the proper position for normal operation; and a single transfer switch or other new device should not be a source for a single failure to cause loss of redundant safety systems).

Response

Typical and preliminary schematics for instrument loops and control cables were submitted in Reference (d). Attachments B and C provide the final design for installing alternate shutdown instrument loops. Also, Section 3 of the revised equipment isolation switch list illustrates the function of control circuit isolation switches.

(d) Demonstrate that wiring, including power sources for the control circuit and equipment operation for the alternate shutdown method, is independent of equipment wiring in the area to be avoided.

Response

The Zion 1/2 Fire Protection Safety Shutdown Analyses, drawings submitted in response to 8(b), and the enclosed alternate instrument loop installation drawings demonstrate that wiring necessary for at least one method of safe shutdown is independent of any single plant fire area.

(e) Demonstrate that alternate shutdown power sources, including all breakers, have isolation devices on control circuits that are routed through the area to be avoided, even if the breaker is to be operated manually.

Response

The response to 8(c) provides a list which indicates that all alternate shutdown power source breakers will have isolation switches installed in each associated control circuits.

This transmittal does not change responses for 8(f) through (i) as submitted in Reference (c).

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ATTACHMENT B

List of Electrical Installation Drawings Enclosed.

ATTACHMENT A
(S&L Letter Dated 5-19-81)
Date: 5-19-81
Page 1 of 3
Project No. 5607-00

Commonwealth Edison Company
Zion Station - Unit 1
Modification No. M22-1-80-30

LIST OF ELECTRICAL DRAWINGS AFFECTED BY SUBJECT MODIFICATION

NOTE: All drawings dated 5-18-81

<u>Drawing No.</u>	<u>Rev.</u>
22E-0-3000, Page 0837	A
22E-1-3000, Page 1534	P
22E-1-3000, Page 1550	R
22E-1-3000, Page 1552	P
22E-1-3000, Page 1557	M
22E-1-3000, Page 1558	N
22E-1-3000, Page 1611	P
22E-1-3000, Page 1633	N
22E-1-3000, Page 1634	N
22E-1-3000, Page 1635	N
22E-1-3000, Page 1636	H
22E-1-3000, Page 1874	N
22E-1-3000, Page 1877	H
22E-1-3000, Page 1878	M
22E-1-3000, Page 1910	J
22E-1-3000, Page 1911	J
22E-1-3000, Page 1912	H
22E-1-3000, Page 4522	C
22E-1-3000, Page 4523	B
22E-1-3000, Page 4524	B
22E-1-3000, Page 4583	A
22E-1-3000, Page 4584	A
22E-1-3000, Page 4587	A
22E-1-3000, Page 4590	A
22E-1-3000, Page 4591	A
22E-1-3000, Page 4592	A
22E-1-3000, Page 4594	A
22E-1-3000, Page 4595	A
22E-1-3000, Page 4596	A
22E-1-3000, Page 4597	A

ATTACHMENT A
(S&L Letter Dated 5-19-81)
Date: 5-19-81
Page 2 of 3
Project No. 5607-00

Commonwealth Edison Company
Zion Station - Unit 1
Modification No. M22-1-80-30

LIST OF ELECTRICAL DRAWINGS AFFECTED BY SUBJECT MODIFICATION

NOTE: All drawings dated 5-18-81

<u>Drawing No.</u>	<u>Rev.</u>
22E-1-4840, Page DC0	E
22E-1-4840, Page DC8	A
22E-1-4840, Page DC9	A
22E-1-4840, Page DC10	A
22E-1-4840, Page DC11	A
22E-1-4840, Page DC100	A
22E-0-3061	CK
22E-0-3068	YF
22E-0-3071	QW
22E-0-3075	KN
22E-0-3076	AF
22E-0-3082	WG
22E-0-3083	AS
22E-0-3403	PG
22E-1-3206	U
22E-1-3207	AB
22E-1-3211	M
22E-1-3213	M
22E-1-3231	BE
22E-1-3232	AA
22E-1-3233	AA
22E-1-3235	AD
22E-1-3236	BS
22E-1-3237	AF
22E-1-3400	X
22E-1-3407	AF
22E-1-3408	W
22E-1-3409	AA
22E-1-3410	BB
22E-1-3412	GS
22E-1-3417	AE
22E-1-3419	B

ATTACHMENT A
(S&L Letter Dated 5-19-81)
Date: 5-19-81
Page 3 of 3
Project No. 5607-00

Commonwealth Edison Company
Zion Station - Unit 1
Modification No. M22-1-80-

LIST OF ELECTRICAL DRAWINGS AFFECTED BY SUBJECT MODIFICATION

NOTE: All drawings dated 5-18-81

<u>Drawing No.</u>	<u>Rev.</u>
22-1-4863	J
22-1-4940H	D
22-1-4943D	E
22-1-4945E	K
22-1-4945G	F
22-1-4945K	H
22-1-4945L	G
22-1-4945M	J

Added Switches, Isolators,
Cables, Conduits, and
Junction Boxes.

ATTACHMENT A
(S&L Letter Date: 5-20-81)
Date: 5-20-81
Page 1
Project No. 5607-

Commonwealth Edison Company
Zion Station - Unit 2
Modification No. M22-2-80-30

LIST OF ELECTRICAL DRAWINGS AFFECTED BY SUBJECT MODIFICATION

NOTE: All drawings dated 5-18-81

<u>Drawing No.</u>	<u>Rev.</u>
22E-2-3000, Page 2534	L
22E-2-3000, Page 2550	J
22E-2-3000, Page 2552	J
22E-2-3000, Page 2557	L
22E-2-3000, Page 2558	F
22E-2-3000, Page 2633	G
22E-2-3000, Page 2634	E
22E-2-3000, Page 2635	F
22E-2-3000, Page 2636	E
22E-2-3000, Page 2663	L
22E-2-3000, Page 2874	H
22E-2-3000, Page 2877	C
22E-2-3000, Page 2910	F
22E-2-3000, Page 2911	F
22E-2-3000, Page 2912	J
22E-2-3000, Page 3523	B
22E-2-3000, Page 3583	A
22E-2-3000, Page 3584	A
22E-2-3000, Page 3587	A
22E-2-3000, Page 3591	A
22E-2-3000, Page 3592	A
22E-2-3000, Page 3593	A
22E-2-3000, Page 3594	A
22E-2-3000, Page 3595	A
22E-2-3000, Page 3596	A
22E-2-3000, Page 3597	A
22E-2-3000, Page 3598	A
22E-2-4840, Page DC0	E
22E-2-4840, Page DC08	A
22E-2-4840, Page DC09	A
22E-2-4840, Page DC10	A
22E-2-4840, Page DC11	A
22E-2-4840, Page DC100	A

ATTACHMENT A
(S&L Letter Dated 5-20-81)
Date: 5-20-81
Page 2
Project No. 5607-00

Commonwealth Edison Company
Zion Station - Unit 2
Modification No. M22-2-80-30

LIST OF ELECTRICAL DRAWINGS AFFECTED BY SUBJECT MODIFICATION

NOTE: All drawings dated 5-18-81

<u>Drawing No.</u>	<u>Rev.</u>
22E-0-3069	AK
22E-0-3071	QX
22E-0-3076	AG
22E-0-3077	HT
22E-0-3403	PH
22E-2-3206	Z
22E-2-3208	U
22E-2-3231	S
22E-2-3232	V
22E-2-3233	W
22E-2-3234	Q
22E-2-3236	W
22E-2-3237	AB
22E-2-3400	W
22E-2-3408	V
22E-2-3409	K
22E-2-3410	AF
22E-2-3411	J
22E-2-3412	AN
22E-2-3417	Z
22E-2-3419	A
22E-2-3420	C
22E-2-4863	E
22E-2-4940H	C
22E-2-4943D	E
22E-2-4945E	H
22E-2-4945G	D
22E-2-4945K	F
22E-2-4945L	E
22E-2-4945M	F

Added Switches, Isolators,
Cables, Conduits, and
Junction Boxes.

ATTACHMENT C

Description of Safe Shutdown 24 volt DC
Instrument Loop Power Supply

ATTACHMENT B
(S&L Letter Dated 5-20-81)
Date: 5-20-81
Page 1
Project No. 5607-00

Commonwealth Edison Company
Zion Station - Unit 2
Modification No. M22-2-80-30

DESCRIPTION AND SCOPE OF ELECTRICAL CHANGES
REQUIRED BY SUBJECT MODIFICATION

The subject modification provides remote indication of parameters which would be required in the event of a fire in the Auxiliary Electrical Equipment Room, Cable Spreading Rooms, or Control Room as postulated in the Safe Hot Shutdown and Safe Cold Shutdown Analysis. These parameters are isolated from the postulated fire areas through qualified isolation switches in Panels 2LP85, 2LP86, 2LP87, and 2LP88. When these loops are isolated, separate power supplies are provided by 24 volt DC batteries with chargers. The following instrumentation is provided by this modification:

2LI-501	Steam Generator Wide Range Level - Loop A
2LI-504	Steam Generator Wide Range Level - Loop B
2LI-502	Steam Generator Wide Range Level - Loop C
2LI-503	Steam Generator Wide Range Level - Loop D
2FI-FW02B	Auxiliary Feedwater Flow - Loop A
2FI-FW03B	Auxiliary Feedwater Flow - Loop B
2FI-FW04B	Auxiliary Feedwater Flow - Loop C
2FI-FW25B	Auxiliary Feedwater Flow - Loop D
2LI-459B	Pressurizer Level
2LI-460B	Pressurizer Level
2TI-413	Reactor Coolant Temperature
2TI-423	Reactor Coolant Temperature
2PI-455B	Pressurizer Pressure
2PI-456B	Pressurizer Pressure
2FI-121	Charging Pump Flow

DESCRIPTION OF SAFE SHUTDOWN 24 VOLT DC
INSTRUMENT LOOP POWER SUPPLY

The safe shutdown 24 volt DC instrument loop power supply consists of the following equipment:

- 2 - Teledyne 12 volt 8-hour seismic battery charger units.
- 1 - 24 volt DC isolation panel.
- 1 - 3-position Electroswitch Series 20 Class 1E isolation switch.
- 1 - Westinghouse #AR880A Class 1E control relay.
- 1 - 120 volt AC power supply for battery chargers.
- 1 - Westinghouse 25 volt DC red indicating light.

This equipment is arranged as shown on the attached sketch, and its electrical connections are detailed in the DC system schematics on Drawings 22E-1-4840, Pages DC08 through DC11 for Unit 1 and 22E-2-4840, Pages DC08 through DC11 for Unit 2.

Normal Mode:

With the isolation switches in the instrument loop isolation panels in the "NORMAL" position, indication is provided in the control room. During this mode, the remote safe shutdown indicators and their emergency 24 volt DC power supply cables are isolated from the instrument loop.

With the safe shutdown 24 volt DC instrument power isolation switch in the "NORMAL" position, 120 volt AC is supplied to the 2 battery chargers for the 12 volt DC Teledyne batteries and a control relay. This control relay isolates the 2, 12 volt batteries from each other in the normal mode to ensure that each battery is only connected to its associated 12 volt charger. This relay also ensures that no power is provided to the instrument loop isolation panel.

Isolation Mode:

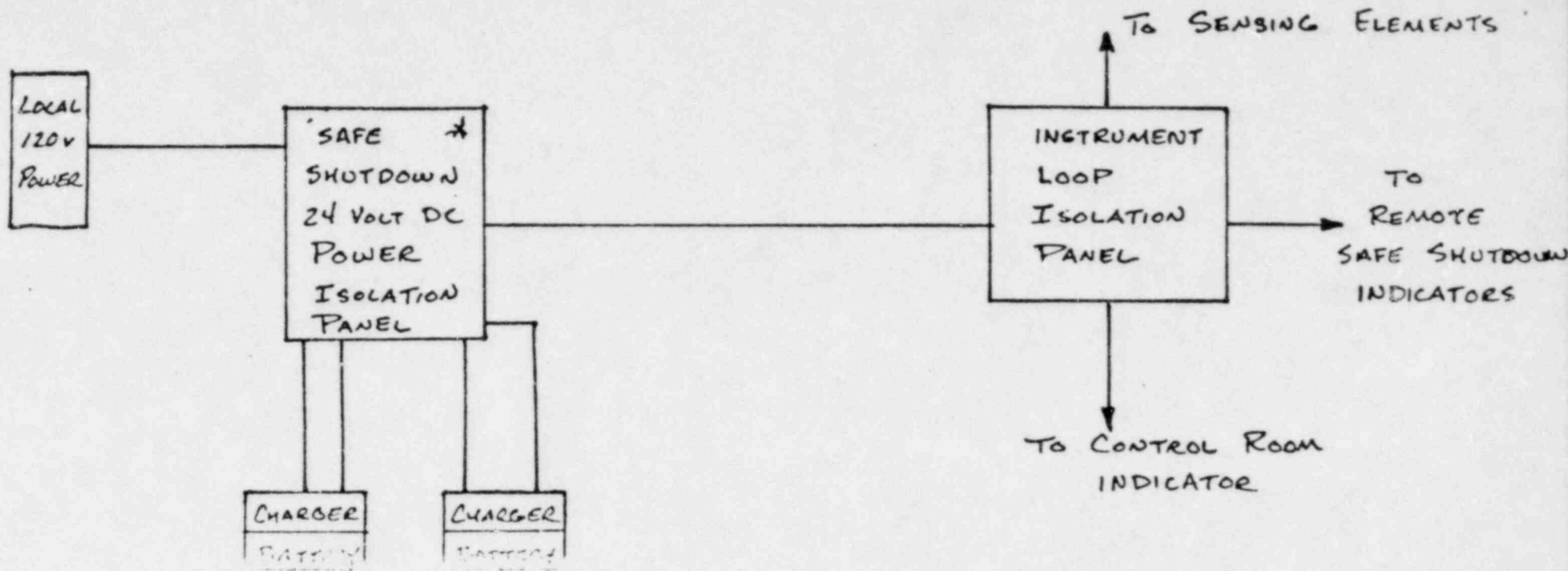
When the instrument loop isolation panel isolation switches are in the "ISOLATION" position, indication is transferred from the control room to the remote safe shutdown indicators, and the 24 volt DC power cables are connected to the local safe shutdown loop. All cables to the control room are then isolated at the instrument loop isolation panel.

SARGENT & LUNDY
ENGINEERS
CHICAGO

When the safe shutdown 24 volt DC instrument power isolation switch is in the "ISOLATION" position, the 120 volt AC power is isolated from the battery chargers and the control relay. When this control relay is de-energized, the battery chargers are isolated from the batteries; and the battery outputs are connected in series to provide 24 volt DC output. This relay also connects the battery outputs to the cable going to the instrument loop isolation panel to supply the 24 volt DC power for the local safe shutdown loop.

Test Mode:

The "TEST" position provided on the safe shutdown 24 volt DC instrument power isolation switch is identical to the "ISOLATION" mode with the addition of a 24 volt DC indicating light added to the circuit to ensure the batteries are charged. This test will not affect the instrument loops since the loops are isolated from the 24 volt DC power supply at the instrument loop isolation panel.



TELEPHONE 12 VOLT DC
BATTERY/CHARGER

* ISOLATION SWITCH, RELAY, AND INDICATING LIGHT ARE LOCATED IN THIS PANEL

ARRANGEMENT OF 24 VOLT DC POWER SUPPLY
TO THE INSTRUMENT LOOP ISOLATION PANEL