

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 MURLEY, T. Document Control Branch (Document Control Desk)

SUBJECT: Responds to oral request for addl info re ATWS mods.

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 TITLE: OR/Licensing Submittal: Salem ATWS Events GL-83-28

## NOTES:

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*Drawings To: Reg Files*

Iowa Electric Light and Power Company

November 13, 1987  
NG-87-3837

Dr. Thomas Murley, Director  
U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Op. License No: DPR-49  
Response to Request for Additional  
Information Regarding the Design  
Modifications to the DAEC for Compliance to  
the ATWS Rule (10CFR50.62)  
Reference: Letter, R. McGaughy to H. Denton, NG-87-0468,  
February 26, 1987.  
File: A-117a, A-225

Dear Dr. Murley:

Attached you will find our responses to your staff's oral request for additional information regarding our ATWS modifications as described in our referenced submittal.

Please contact me if you require further information.

Very truly yours,



William C. Rothert  
Manager, Nuclear Division

WCR/RAB/pjv\*

Attachment: Iowa Electric's Response to NRC Request for Additional  
Information Regarding the Duane Arnold ATWS Design

cc: R. Browning  
L. Liu  
L. Root  
R. McGaughy  
A. Cappucci (NRC-NRR)  
A. Bert Davis (Region III)  
NRC Resident Office

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IOWA ELECTRIC'S RESPONSE TO NRC  
REQUEST FOR ADDITIONAL INFORMATION REGARDING  
DUANE ARNOLD ATWS DESIGN

QUESTION 1: Please state the separation criteria between the ATWS ARI/RPT system and the Reactor Protection System (RPS) with respect to cable routing arrangement, power source arrangement, etc.

RESPONSE: The DAEC RPS redundant divisions and channels are physically separated. Section 7.2.1.1.8 of the DAEC UFSAR states that:

Wiring for the RPS outside of the enclosures in the control room is run in rigid metallic conduits used for no other wiring.

Section 8.3.1.2.1.1 of the DAEC UFSAR provides additional guidance with regard to separation of RPS power cables from instrumentation and control cables.

All RPS conduits installed at the DAEC are identified by an alpha-numeric designator, (1Q, 2Q, 3Q or 4Q) in the conduit identification number. The ARI/RPT system wiring uses scheduled cables and raceways. The ARI/RPT cables are routed in divisional trays and non-RPS conduit by the engineers who designed the ATWS modifications. This routing does not violate the DAEC RPS channel separation as stated in the UFSAR. The cables were then installed per these routing instructions. As part of the modification process, DAEC Quality Control personnel verified that the cables were installed as designed. Field routing of scheduled cables is not permitted by DAEC procedures.

The DAEC RPS logic is powered via the RPS motor generator sets which are powered from 480 VAC Motor Control Centers (MCC). The ARI/RPT logic is classified as safety-related and is powered from the Division 1 and 2 125 VDC batteries. Circuit breakers are provided at the dc distribution panels which protect the ARI/RPT feeders. The ARI/RPT logic trains and EOC breaker trip coils are individually fused.

The ARI/RPT system uses process sensors which are independent from the RPS.

QUESTION 2: Describe the test procedure for the ARI/RPT system. The BWROG topical report NEDE-31096 stated that surveillance testing should not prevent the ARI system from responding to an automatic ARI initiation signal. Your February 26, 1987 submittal stated that each ARI logic train is equipped with a test switch which isolates the outputs and allows testing at power without causing inadvertent actuation. Will this test switch block the automatic ARI initiation signal?

RESPONSE: The ARI/RPT system installed at the DAEC is comprised of two identical logic trains. Each logic train is equipped with an ARI solenoid valve and provides trip power to 2 RPT breakers. As shown in the logic diagram provided with our referenced submittal, in the event of an ATWS while a single division has

RESPONSE TO QUESTION 2 (Continued)

its mode switch in TEST, the division in TEST will not respond to the ATWS event. The remaining division will detect the ATWS event, initiate ARI by energizing its ARI solenoid valve, and trip both reactor recirculation pumps by tripping its RPT breakers. In addition, placing the mode switch of a single division in TEST will not affect the manual initiation capability of the ATWS system. A copy of the surveillance test procedures for the ARI/RPT system is attached.

QUESTION 3: Describe the isolation devices provided between the (ATWS) ARI/RPT and the (RPS) EOC/RPT signals to the pump breaker. Are both signals fed through the same trip coil?

RESPONSE: The EOC breakers installed at the DAEC were purchased with two trip coils. The first trip coil is associated with the (RPS) EOC/RPT system. The second trip coil is associated with the (ATWS) ARI/RPT system. There is no interconnecting wiring between the two trip coils. Isolation devices are not provided because the ARI/RPT and RPS systems are not interconnected.

QUESTION 4: Provide a P&I diagram indicating ARI valve arrangement. Are the ARI valves SV-1863 and SV-1864 in series or in parallel? Can either train perform the ARI function to meet the ARI design objective?

RESPONSE: The ARI solenoid valves are arranged in a series arrangement similar to that of the existing RPS back-up scram valves. Check valves are provided which allow either ARI valve to block the air supply to and depressurize the scram pilot valve air header. These check valves also allow the RPS backup scram valves to block the air supply to and depressurize the scram pilot valve air header. A copy of the Advanced Information Drawing for P&ID BECH-M117 is attached which illustrates the ARI valve arrangement.

QUESTION 5: Describe the separation between the Division 1 and 2 ARI/RPT manual initiation logic trains.

RESPONSE: The ARI/RPT logic trains are crosstied at the local logic panels and require the operator to push both control room pushbuttons to manually initiate ARI/RPT. The isolation devices used in the crosstie meet the criteria for isolation devices as defined in our design procedures. The Division 1 and 2 ARI/RPT manual initiation pushbuttons are located within individual metal enclosures within control room panel 1C05. The wiring within 1C05 from each ARI/RPT pushbutton to the interface with its external cable is routed in a separate conduit. As stated in our response to Question 1, the ARI/RPT cables are routed in divisional trays and non-RPS conduit once they leave the control room panels.

SURVEILLANCE TEST AUTHORIZATION SHEET  
REACTOR HIGH PRESSURE (RECIRC TRIP)

42G001

(STP)

(STP Title)

Functional Test and Calibration  
(Type of Test)

FOR INFORMATION ONLY

I have read and understand the special precautions (if any) contained in the above test procedure and I will notify the Shift Supervisor before and after performing any testing on each channel.

\_\_\_\_\_  
Signature of Person Performing Test

I hereby authorize the above test to be performed on:

Channel A

Component & Number	SSE Initial	Time of Completion

Channel B

Component & Number	SSE Initial	Time of Completion

Channel C

Component & Number	SSE Initial	Time of Completion

Channel D

Component & Number	SSE Initial	Time of Completion

\_\_\_\_\_  
O.S.S. Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Completion

\_\_\_\_\_  
Date/Time

The above completion date and time may be filled in at the discretion of the OSS. If testing is not completed by the prescribed time, authorization to perform this STP is considered to be revoked, and further testing will require further authorization.

I have read and will comply to completion criteria (if any) as stated above.

\_\_\_\_\_  
Signature of Person Performing Test

Testing of the above component, channel or system has been terminated for the following reason:

1. Completion of Test \_\_\_\_\_
2. Equipment Malfunction (Deviation Report Required) \_\_\_\_\_
3. Other (define) \_\_\_\_\_

\_\_\_\_\_  
O.S.S. Initials