Tera

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

July 23, 1980

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
Schedule For Completion of ATWS
Modifications
NRC Docket Nos. 50-295 and 50-304

References (a): June 19, 1980 letter from Steven A. Varga to D. Louis Peoples

(b): April 28, 1980 letter from D. L. Peoples to H. R. Denton

Dear Mr. Denton:

Reference (a) requested Commonwealth Edison Company to re-evaluate its proposed schedule for completing ATWS modifications at Zion Station as outlined in Reference (b). In addition, the NRC Staff requested that Commonwealth Edison improve upon the schedule required of other plants due to the risk the Staff believes that Zion Station represents.

Commonwealth Edison does not concur with the NRC Staff that Zion Station represents an additional risk over and above other plants especially with regard to its Alternate Mitigating Systems Actuation Circuitry (AMSAC) installation schedule. On February 20, 1980 Commonwealth Edison in conjunction with the Power Authority of the State of New York and Consolidated Edison Company presented the results of their 60 day study on mitigation of severe accidents to the NRC Staff. This study was docketed for Zion Station on June 9, 1980 per a D. L. Peoples to H. R. Denton letter. The results of this study revealed that, due to additional features incorporated in the initial design of the Zion units, these reactors do not pose the risk stated by the Staff in its comparison to the Wash 1400 plant. Subsequent meetings involving technology exchanges with the NRC Staff, as part of our detailed probability risk analysis work for Zion Station, have continued to support Commonwealth Edison's position. Currently, a review team is being formed under Mr. S. Israel of your Staff to review our ongoing work in greater detail. Therefore, Commonwealth Edison has concluded that improvement on the schedule required of other plants for completion of ATWS modifications is not necessary for Zion Station.

A029
S
1/1

8008040072

With regard to the schedule contained in Reference (b) for the design, procurement and installation of AMSAC at Zion Station, the completion dates are realistic and are based on a schedule that includes the necessary front end lead time to provide adequate interaction between Commonwealth Edison and other parties, such as, Architect-Engineers, Westinghouse and the NRC. Also expected during this engineering phase was the NRC final generic input regarding the AMSAC design. Such an interaction at the early stage is necessary to sufficiently define the AMSAC scope of work. As indicated in Reference (b), the schedule provided for normal preparation of equipment specifications, competitive bidding, QA reviews, component development, qualificaton activities, production, and installation consistent with planned refueling outages. In Commonwealth Edison's view this proposed schedule is very realistic considering the fact that the Westinghouse AMSAC concept still has not received NRC concurrence.

However, in discussions at a May 13, 1980 meeting with the Westinghouse ATWS Owner's Group, the NRC Staff indicated informally their position with regard to diversity and tne single failure criterion for AMSAC. Based on Commonwealth Edison's understanding of the Staff positions, a revised schedule for Zion Station is possible, provided an expeditious agreement can be reached with the Staff on the system design details described in Attachments 1, 2 and 3 to this letter. This system operates independent of the reactor protection system by initiation of auxiliary feedwater and turbine trip when an impending loss of heat sink is detected via the steam generator level monitors. The twelve existing steam generator level instrumentation channels are utilized to develop the AMSAC trip signal.

The proposed system utilizes isolators to separate the AMSAC input signal from the reactor protection input signal to elminate the possibility of interaction between the two systems. Existing actuation devices for auxiliary feedwater and turbine trip are utilized. The balance of the AMSAC system is separate and independent of the reactor protection system (RPS) and to the extent practicable meets the original plant seismic design requirements. This system also satisfies requirements for diversity from the RPS by virtue of the variety of other parameters which are input to that system and which initiate reactor trip.

Utilization in AMSAC of the design criteria depicted in Attachments 1, 2, and 3, results in a system that can be procured and installed on a much more expeditious schedule than that

delineated in Reference (b). The proposed system significantly decreases the quantity of hardware to be procured and installed at the sensor level, simplifies the design, reduces channel separation within AMSAC (thus improving cable installation time), minimizes plant down time to accommodate installation, decreases engineering efforts, and reduces considerably the system cost while achieving the same design objectives.

The proposed system provides for a reliable and redundant backup to the existing RPS and also provides for the analytical results contained in the December 30, 1979 Westinghouse letter (NS-TMA-2182). The system, which increases plant safety for the low probability ATWS event, is appropriate for Zion Station because it can be expeditiously procured and readily installed in an operating plant.

In order to begin procurement activities and expenditures in pursuit of a January 1, 1982 completion date, prompt NRC approval of the AMSAC design contained in Attachments 1,2 and 3 is essential. To that end, Commonwealth Edison's engineering personnel will be available at Staff's convenience to meet or discuss with the Staff the proposed design.

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

One (1) signed orginal and thirty-nine (39) copies of this letter and seven (7) copies of the attachments are provided for your use.

Very truly yours,

William F. Naughton

William F. Naughton
Nuclear Licensing Administrator
Pressurized Water Reactors

Attachments (3)

5566A

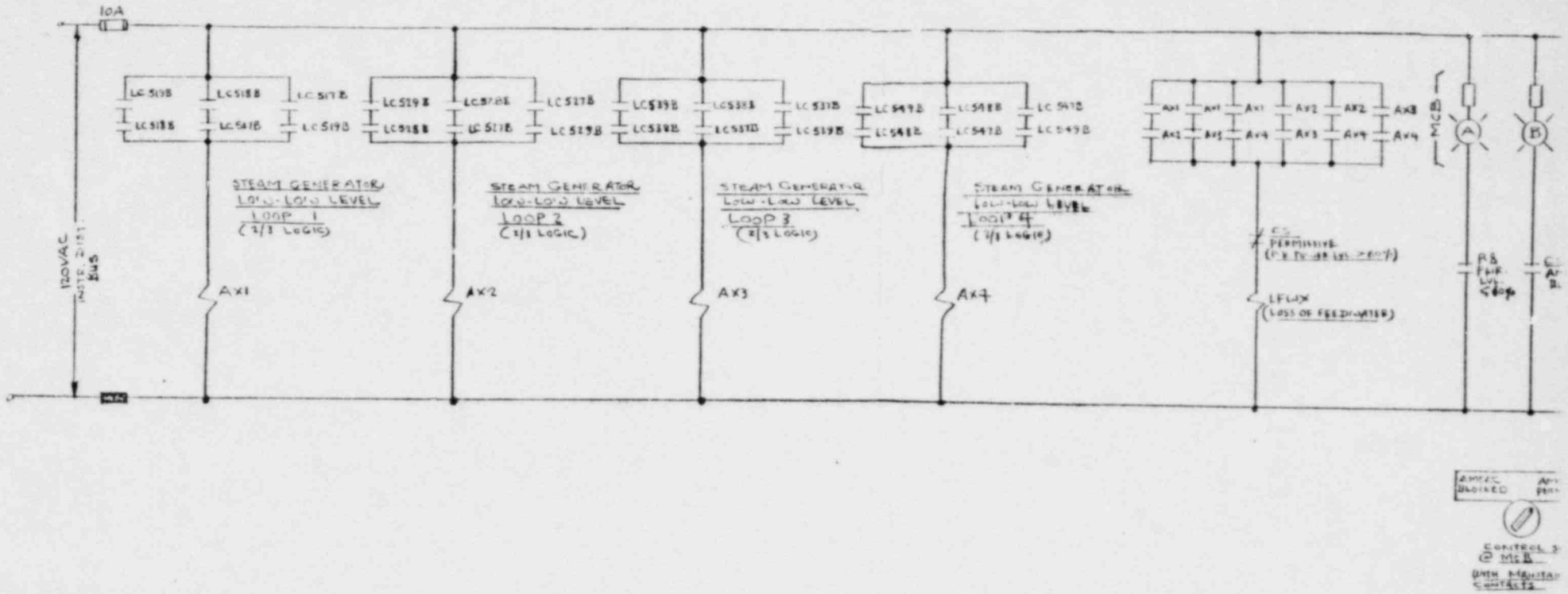
NRC Docket Nos. 50-295
50-304

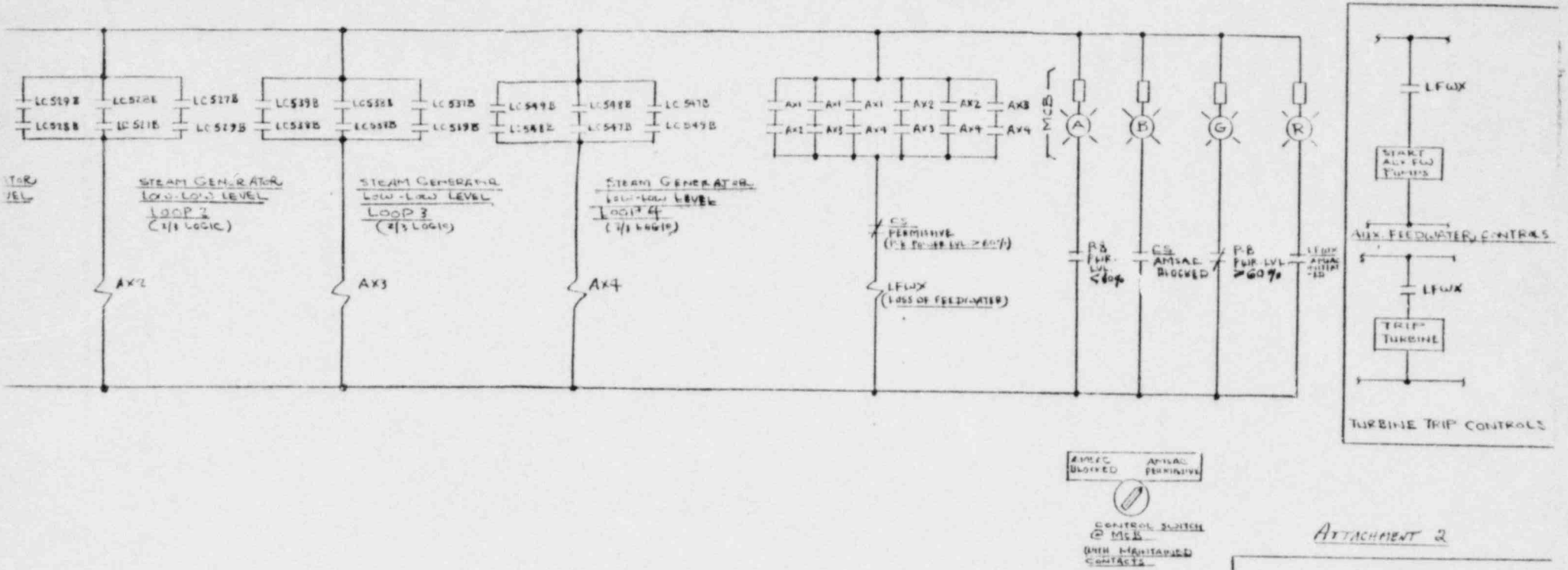
Attachment 1

PROPOSED DESCRIPTION OF
ANTICIPATED TRANSIENTS WITHOUT SCRAM MITIGATING
SYSTEM ACTUATION CIRCUITRY (AMSAC)

There are three independent level transmitters provided for each of the four steam generator loops. Loss of any one of the three sensors associated with a respective loop will not jeopardize initiation of a low-low level signal under said conditions. A high degree of reliability is accomplished by the two out of three logic integrated into the circuit design of each loop. Since these existing sensors also generate Reactor Protection System (RPS) signals, to separate the AMSAC signal from the RPS signal, isolators are provided in the auxiliary electrical equipment room. Downstream of each isolator a signal comparator provides an auxiliary relay contact closure resulting in a two out of three logic of the low-low level sensors as per the control schematic. This capability is provided for each steam generator loop. A combination of any two auxiliary relay contact closures of the four steam generator loops (2 out of 4 logic) and the P-8 power level permissive greater than 60%, will initiate AMSAC to start auxiliary feedwater and trip the turbine. Operator Indication is provided for P-8 Power level less than 60% , P-8 Power level greater than 60%, AMSAC blocked and AMSAC initiated in the Control Room.

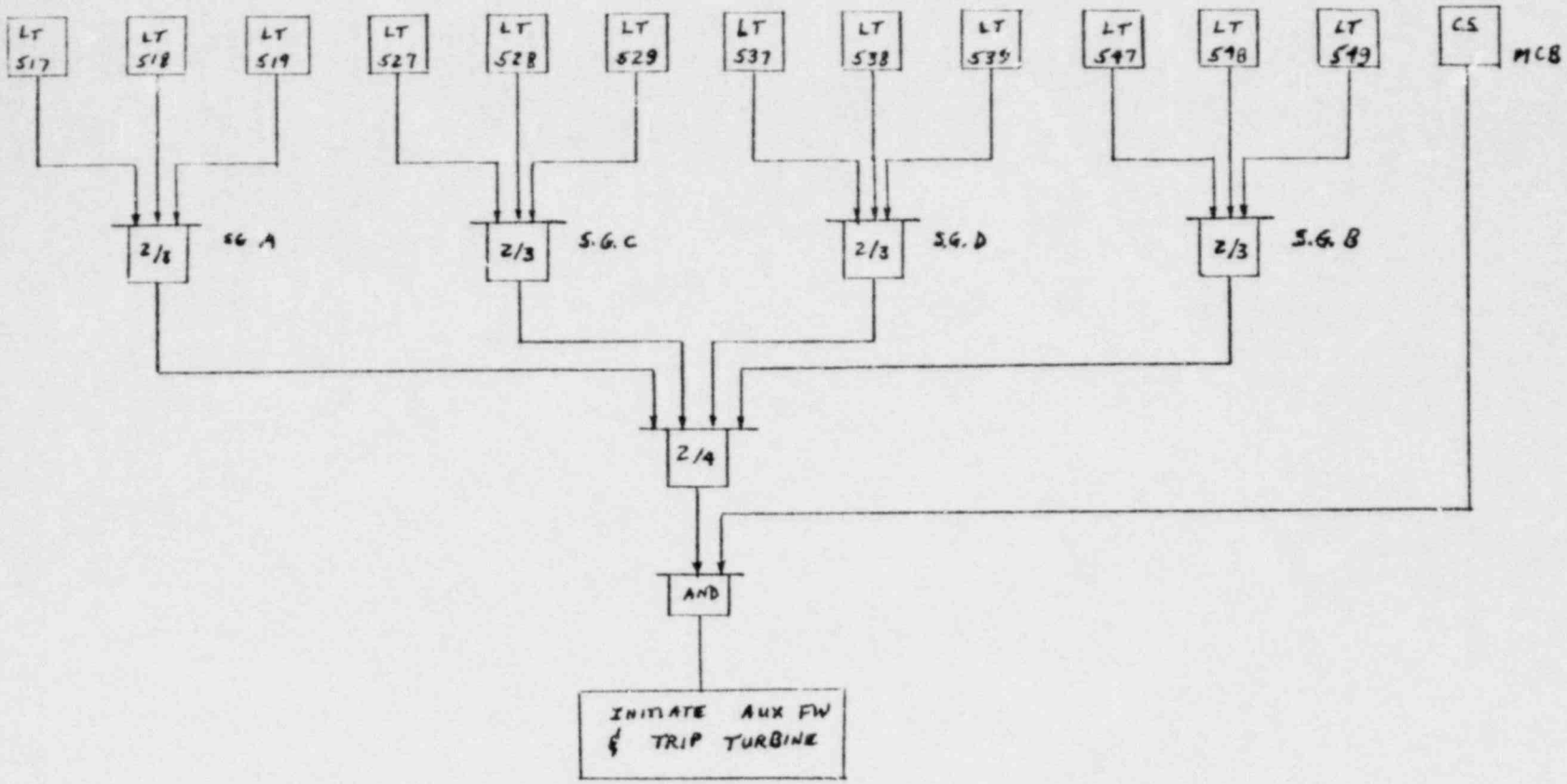
The logic cabinet for the AMSAC signal will employ solid state devices and will be separate and independent from the Reactor Protection System logic cabinets.


10A
120VAC
LC 5138
LC 5188
LC 5418
LC 5178
LC 5198
LC 5219
LC 5188
LC 5218
LC 5178
LC 5198
LC 5238
LC 5288
LC 5218
LC 5278
LC 5298
LC 5338
LC 5388
LC 5318
LC 5378
LC 5398
LC 5498
LC 5488
LC 5478
LC 5498
STEAM GENERATOR LOW-LOW LEVEL LOOP 1 (2/3 LOGIC)
STEAM GENERATOR LOW-LOW LEVEL LOOP 2 (2/3 LOGIC)
STEAM GENERATOR LOW-LOW LEVEL LOOP 3 (2/3 LOGIC)
STEAM GENERATOR LOW-LOW LEVEL LOOP 4 (2/3 LOGIC)
AX1
AX2
AX3
AX4
MCB
PERMISSIVE
LFLUX
(LOSS OF FEEDWATER)



ATTACHMENT 2

PROPOSED ATWS MITIGATING SYSTEM ACTUATION CIRCUITRY
ZION - UNIT 1 & 2
SKETCH: ES-71580
ENGR: MJS/DAS



ATTACHMENT 3

ZION ATWS INITIATION

NRC Docket Nos. 50-295 and 50-304