JUL 28 1982

AEOD/E233

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

FROM: Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

SUBJECT: CARBON DIOXIDE SYSTEMS USED FOR FIRE PROTECTION IN OR ADJACENT TO CRITICAL AREAS

A recent occurrence at the Grand Gulf Unit 1 reactor involved the actuation of the CO_2 system in the ECCS penetration room. The event was initiated by a short in the initiation circuit relay. The system operated repeatedly until the pressure in the room forced open the locked door to the auxiliary building (Region II daily report - July 14, 1982).

In addition to use in the ECCS penetration room at Grand Gulf, AEOD is aware that CO_2 is used in the diesel generator rooms at several nuclear facilities, proposed for use for fire protection in the control room and diesel generator rooms at Perry, and believe that there may be other cases in which CO_2 is used either in or adjacent to areas containing equipment required to mitigate or prevent reactor accidents.

The use of CO_2 in critical plant areas gives rise to several concerns which may not have been fully addressed in licensing reviews. The following are our concerns:

1. Recognizing the force developed in the Grand Gulf event, was missile generation considered during the reviews of CO_2 use in areas containing equipment required to prevent or mitigate reactor accidents or in areas adjacent to such locations?

2. Has the degradation in the performance of solid state devices resulting from exposure to the cooling effect of CO_2 been reviewed? (Many solid state devices are rated for service only to 0°C. The melting point of CO_2 is -56.6°C.)

8208110215 820728
PDR ADOCK 05000416
F PDR

OFFICE ▶							
SURNAME ▶							
DATE ▶							

JUL 28 1982

3. Has the effect of rapid abandonment of the control room in the event of CO_2 actuation been reviewed? Can accidents resulting from the need for CO_2 operation (or perhaps caused by it) be adequately controlled in such cases?

4. Has the possibility of CO_2 entry into the ventilation system and its effect on personnel in other plant areas been considered?

I transmitted a similar concern in a memorandum to R. Vollmer and E. Jordan, dated January 28, 1982 (copy enclosed).

A meeting to discuss these issues will be arranged at your request.

If you should desire additional information or assistance, please contact either myself or Karl Seyfrit of my staff.

Original Signed by
Carlyle Michelson

Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

Enclosure:
As Stated

cc w/enclosure:
DEisenhut, NRR
RVollmer, NRR
EJordan, IE
GLainas, NRR
RFerguson, NRR
ZRosztoczy, NRR
VBenaroya, NRR

Distribution:
Central File
AEOD Reading File
AEOD Chron. File
NRC PDR
FAshe, AEOD
MChiramal, AEOD
KSeyfrit, AEOD
CJHeltemes, AEOD
CMichelson, AEOD

OFFICE	AEOD	AEOD	AEOD	AEOD	AEOD		
SURNAME	FAshe:gt	MChiramal	KSeyfrit	CJHeltemes	CMichelson		
DATE	7/23/82	7/23/82	7/26/82	7/27/82	7/27/82		

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO: 1981—335-960