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December 4, 1984

Docket No. 50-320

Mr. F. R. Standerfer
Vice President/Director
Three Mile Island Unit 2
GPU Nuclear Corporation
P.O. Box 480
Middletown, PA 17057

Dear Mr. Standerfer:

Subject: Containment Air Control Envelope

Reference: (a) Letter, 4410-83-L-0070, B. Kanga to L. Barrett, Containment Air Control Envelope, dated July 22, 1983
(b) Letter, 4410-84-L-0175, F. Standerfer to B. Snyder, Containment Air Control Envelope Design Criteria, Revision 4, and Technical Evaluation Report, Revision 2, dated October 30, 1984

By letter (Reference a), dated July 22, 1983, you submitted the Design Criteria and Technical Evaluation Report (TER) for the proposed Containment Air Control Envelope (CACE) for our review and approval. This submittal was revised and updated by letter (Reference b), dated October 30, 1984. Your staff provided additional information on the design and intended use of the CACE in a meeting with TMIPO staff held on November 13, 1984. This letter transmits our safety evaluation and approval of the proposed design and initial use of the CACE, as specified in your submittal (Reference b).

Sincerely,

Original signed by
B. J. Snyder

Bernard J. Snyder, Program Director
Three Mile Island Program Office
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

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NRC STAFF SAFETY EVALUATION OF
CONTAINMENT AIR CONTROL ENVELOPE

DESCRIPTION OF THE CACE

The CACE, as described in the referenced Design Criteria and TER, is a structure external to the reactor building that encloses the equipment hatch and personnel airlock. The building rests on the existing control building area roof slab and is attached to the missile shield door frame. The missile shield door will be rolled back and any openings between the CACE and the door frame will be sealed prior to use of the CACE. The building consists of a structural steel frame, fire-rated metal siding, sheet metal interior walls and a roof of galvanized metal decking. Access to the CACE from the outside is provided by a personnel door and a 27 foot wide roll-up truck door.

The purpose of the CACE is to provide an area where cleanup equipment and materials can be assembled and staged prior to transfer into the reactor building, thus reducing worker staytimes in radiation areas, resulting in occupational exposure savings. The CACE will also function as a staging area for contaminated material removed from the reactor building, but it is not designed to be a storage area for radioactive wastes. When both equipment hatch personnel airlock doors are open, the reactor building purge system will induce air flow from the outside through the CACE and the CACE will aid in controlling and confining potential airborne releases from the reactor building. The CACE is provided with an HVAC system, consisting of two filtered exhaust trains, fans, associated ductwork and radioactive effluent release monitor, dampers, controls and three pressure relief intakes, which will be operated to reduce airborne particulate contamination in the building as needed and to protect the structure from overpressurization. The HVAC system will be

operated to maintain net airflow into the CACE when isolated from the reactor building. The CACE will normally be maintained at a slightly negative pressure relative to the outside to limit exfiltration from the building, except when the roll up door is open to stage equipment and materials into or out of the CACE in support of cleanup activities. Periodic monitoring of the CACE atmosphere will be performed to ensure that potential airborne releases will be well within regulatory limits.

SAFETY CONSIDERATIONS

Since the CACE is external to, and seismically separated from the reactor building, its operation will not affect the probability or consequences of postulated accidents inside containment. The CACE will act to control and limit potential releases of radioactivity from the reactor building to the environment when the airlock doors are open and it will provide a filtered and monitored release path when one or both airlock doors are closed. Safety considerations associated with the CACE relate to its use as a staging area for contaminated materials removed from the reactor building. The TER states that any staging of contaminated material within the CACE will be controlled, monitored and reviewed prior to implementation in accordance with Radiological Control Procedures. Since general area dose rates may approach the limits, as defined in 10 CFR Part 20 for an unrestricted area, personnel access to the CACE will also be restricted by Radiological Control Procedures.

We have reviewed your assessment of offsite doses resulting from potential airborne releases during normal use of the CACE. We find that the assumptions used are conservative (including no credit taken for the CACE structure or ventilation filters) and that the resulting calculated offsite doses are well below the limits specified in 10 CFR 50 Appendix I. The offsite doses calculated in your TER resulting from a fire in the CACE are less than those calculated due to a contaminated material fire, as analyzed by the staff in the Programmatic Environmental Impact Statement (PEIS, NUREG-0683), and are well within 10 CFR Part 20 limits. Based on those calculated doses in the PEIS, we concluded that such an accident would not pose a significant risk to the public health and safety. Therefore, we find that postulated offsite releases from the CACE during normal and accident conditions are acceptably low and well within regulatory limits.

As described in the TER, the CACE and its associated equipment serve no safety related function nor does the CACE interface in any way with the plant safety systems such that CACE failure could contribute to the failure of equipment or systems important to safety. Containment integrity will be maintained in accordance with existing requirements, independent of the condition of the CACE. Therefore, we find the proposed design criteria for the CACE to be acceptable for the initial use of the structure as identified and supported by the TER.

The use of the CACE will result in a reduction in total occupational exposure and considerable man-rem savings. Workers will be able to assemble equipment in the low general area dose rate environment of the CACE prior to entering the

reactor building, thus decreasing the time spent in the higher radiation fields inside containment. Similarly, contaminated material can be removed from the reactor building to the CACE for further packaging in a low radiation area, resulting in lower occupational exposures. This is the primary benefit of the CACE and represents a practical application of ALARA principles.

In summary, the staff approves the proposed design and initial use of the Containment Air Control Envelope, as specified in your Design Criteria and Technical Evaluation Report. The structure and intended use of the CACE identify it as a passive facility which will not increase the likelihood or consequences of previously evaluated accidents during the remaining cleanup activities. Normal operation and postulated accidents involving the CACE will not pose a significant risk to public health and safety. Our approval of the design and use of this structure does not relieve the licensee from compliance with existing requirements or technical specifications. Any other use of this facility not previously identified, evaluated and reported to the staff will be subject to NRC review and approval prior to such use.