April 6, 2000

Mr. David D. Snellings, Jr., CHP, Director
Division of Radiation Control and
Emergency Management
Arkansas Department of Health
4815 West Markham Street
Little Rock, AR 72205-3867

Dear Mr. Snellings:

This is in response to your December 21, 1999 letter requesting our review and comment on your structural evaluation of the West Memphis irradiator application.

Enclosed, for your information, is a memorandum to OSP from the Division of Engineering providing their evaluation of seismic design criteria and related calculations for the walls and roof of the facility.

We apologize for the lengthy response time.

Sincerely,

/RA By Frederick C. Combs Acting For/

Paul H. Lohaus, Director
Office of State Programs

Enclosure:
As stated

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 3, 2000

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OSP

MEMORANDUM TO: Paul H. Lohaus, Director
Office of State Programs

FROM: Kamal A. Manoly, Chief
Civil & Engineering Mechanics Section
Mechanical and Civil Engineering Branch
Division of Engineering

SUBJECT: EVALUATION OF SEISMIC DESIGN CRITERIA AND RELATED CALCULATIONS FOR THE WALLS AND ROOF OF A PROPOSED IRRADIATOR FACILITY IN WEST MEMPHIS, ARKANSAS (TAC NO. J00158 "REACTOR COOPERATION WITH STATE & INDIAN TRIBES," PA NUMBER 1E1B)

In response to your request, the Mechanical and Civil Engineering Branch (EMEB) reviewed the seismic design criteria and related calculations for the walls and roof of a proposed irradiator facility in West Memphis, Arkansas. The calculations were performed by ICE, Inc., Consulting Engineers. The calculations were reviewed by staff from the College of Engineering, University of Arkansas-Fayetteville. A letter from the College of Engineering, University of Arkansas-Fayetteville to the Arkansas Department of Health indicates that its staff concurs with ICE's conclusion and concludes that the structure meets seismic design requirements. Our review results indicate that the seismic design criteria used by ICE are adequate, and its application to the design of the irradiator is acceptable.

The State of Arkansas is in the process of licensing an irradiator facility in the eastern part of the state. The facility was licensed as an irradiator from 1980-1994, not utilized from 1994-1998, and decommissioned with license termination in October 1998. The new owner purchased the facility in January 1999 and is seeking to begin its operation.

The irradiator consists of a concrete roof supported by concrete bearing walls, and the bearing walls also act as shear walls to resist seismic forces. The seismic design criteria of the irradiator were based on the 1997 Standard Building Code. The seismic base shear of the irradiator was calculated by the equivalent lateral force procedure specified in the Code. The base shear was redistributed to individual concrete shear walls in proportional to wall stiffness values. Each shear wall was checked against vertical load from the roof, the shear force from the seismic, and the bending moment from seismic. Building Code Requirements for Reinforced Concrete (ACI 318-95) were used to verify the adequacy of the irradiator. The results indicated that all of the walls are adequate. The roofs were checked against bending moments generated due to dead and live loads, and found acceptable.

This completes EMEB's review effort relating to TAC No. J00158.

CONTACT: J. Ma, NRR/EMEB
415-2732

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