December 31, 1992

Mr. Tawfik M. Raby
Chairman, N-17
Building 235, Room A141
National Institute of Standards
and Technology
Gaithersburg, Maryland 20899

Dear Mr. Raby:

SUBJECT: ANS-15.7 N-17 COMMITTEE BALLOT

Enclosed is my ballot for ANS-15.7 "Research Reactor Site Evaluation." I have voted "approved with comments" and have included the required comments. Furthermore, I have reviewed the Scope, and have no objections.

If you have any questions concerning this ballot, please contact me at 301-504-1127.

Sincerely,
- original signed by -
Alexander Adams, Jr.
Senior Project Manager
Non-Power Reactors and Decommissioning
Project Directorate
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Enclosures:
1. Ballot
2. Comments

DISTRIBUTION: [ANS15.7] (A.Adams diskette)

Central Files	CAder
PDRs	JJoyner, RI
ONDD R/F	TDragoun, RI
BGrimes	DCollins, RII
SWeiss	CBassett, RII
EHylton	CPederson, RIII
AAdams	CCox, RIII
OGC	BMurray, RIV
ACRS (10)	RPate, RV
LCunningham	PQually, RV
GBagchi	

ONDD:LA	ONDD:PM	ONDD:D
EHylton	AAdams:mb	SWeiss
12/31/92	12/31/92	12/31/92

06-120

DF03 1/1
ANS-7

RETURN TO REGULATORY CENTRAL FILES

9301070150 921231
PDR ORG NRRB
PDR

ANS
X RD-7-3

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

December 31, 1992

Mr. Tawfik M. Raby
Chairman, N-17
Building 235, Room A141
National Institute of Standards
and Technology
Gaithersburg, Maryland 20899

Dear Mr. Raby:

SUBJECT: ANS-15.7 N-17 COMMITTEE BALLOT

Enclosed is my ballot for ANS-15.7 "Research Reactor Site Evaluation." I have voted "approved with comments" and have included the required comments. Furthermore, I have reviewed the Scope, and have no objections.

If you have any questions concerning this ballot, please contact me at 301-504-1127.

Sincerely,

Alexander Adams, Jr.

Alexander Adams, Jr.
Senior Project Manager
Non-Power Reactors and Decommissioning
Project Directorate
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Enclosures:
1. Ballot
2. Comments

ANSI N-17 COMMITTEE BALLOT

DOCUMENT: ANS-15.7 "Research Reactor Site Evaluation" (Revision)

BALLOT DUE: December 31, 1992

_____ Approved

___X___ Approved with Comments

_____ Not Approved

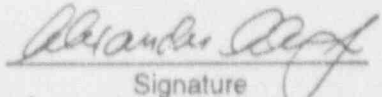
_____ Not Voting

Comments: (**NOTE** - all "Approved with Comments" and "Not Approved" ballots must include comments.

See attached.

Return ballot to:

Tawfik M. Raby
Chairman, N-17
National Institute of Standards & Technology
Building 235, Room A141
Gaithersburg, MD 20899



Signature
Alexander Adams Jr.
USNRC
Representing

December 31, 1992
Date

COMMENTS ON ANS-15.7

RESEARCH REACTOR SITE EVALUATION

1. Section 2., definitions, boundaries and zones, operations boundary. The definition discusses this area having evacuation procedures. This is an emergency planning requirement and should not directly bear on site selection.

2. Section 2., definitions, boundaries and zones, rural zone, and urban boundary. We recommend that any reference to an evacuation time be deleted. Application of the standard does not appear to require use of the evacuation times.

3. Section 2., definitions, capable fault. The term "capable fault" which has been borrowed from Appendix A to 10 CFR Part 100 is proposed to be replaced with the term "capable tectonic source" in the proposed Appendix B to 10 CFR Part 100. The proposed rule changes were published for public comment in the FEDERAL REGISTER on October 20, 1992. Associated draft regulatory guides were released for public comment in the FEDERAL REGISTER on November 25, 1992. The proposed revision would update the seismic siting and engineering criteria for new power plants based on advancements in the earth sciences and experience gained in the application of the procedures and methods used in the current regulations. These changes should be reviewed to determine if they are applicable to this standard.

4. Section 2., definitions, research reactor. Although this is the standard definition of research reactor used in ANS standards, for the case of this standard it should be clear that research reactors do not include testing facilities or test reactors. Test reactors must use 10 CFR Part 100 for siting criteria.

5. Section 2., definitions, total effective dose equivalent. Subsequent to the publishing of revised 10 CFR Part 20 in the FEDERAL REGISTER as an effective rule, the NRC staff is reviewing certain applicable regulations (Appendices A and I to 10 CFR Part 50 and paragraphs 100.11 of 10 CFR Part 100) to determine if the referenced individual doses in these regulations should be recast in terms of TEDE. The staff is planning to use this review as a basis for evaluating the need for future changes to regulatory guides and the standard review plan associated with these potential rule changes. Although these regulations do not apply to research reactors, we believe that the use of the TEDE concept for research reactor site evaluation is premature until the NRC completes its review and evaluation.

6. Section 3.1, population. This section states that the criteria listed in Sections 4, 5, and 6 are an acceptable method for dose calculations; actual data are to be preferred where available. What actual data does this refer to and how should the data be acquired if it is for a site under consideration?

7. Section 3.1.1, TEDE, persons within operations boundary. This section and the note to this section introduce emergency planning and escape time. See comment 2 above.

8. Sections 3.1.3 and 3.1.4, TEDE. It is not clear what the distinction is between the urban zone and the rural zone. If the distinction is that a 2 hour exposure period is to be assumed for persons in the rural zone, while a 24 hour exposure is to be assumed for persons beyond the urban boundary, then this should be clearly stated in the standard.

9. Section 3.2, Geology/Seismology. A basis should be given for siting a research reactor at least 400 meters from the surface location of a known capable fault. In 3.2 b., replace "intensity V" with "intensity Mercalli V" for improved clarity. Define design basis vibratory ground motion.

10. Section 3.4, Meteorology. Replace "dispersion of radioactivity" with dispersion of radioactive material."

11. Section 3.5.3 b., air traffic. The last line of this section discusses release of radioactivity. However, Section 3.1 discusses exposures. This appears to be conflicting.

12. Section 4, criteria for downwind concentration. This section describes concentration (χ) calculation methodologies for different conditions. However, this version of ANS-15.7 does not describe dose calculation methodologies nor guide the reader to obtain appropriate dose calculation methodologies for TEDE, dose commitment and others. Guidelines to calculate doses (e.g., doses from the different pathways for iodine release, beta and gamma air doses from noble gases) should be added or referenced clearly in the main body of the text, or the terms related to dose in the foreword, Section 2, and Section 3 should be deleted from the text.

13. In Section 4, the term radioactivity should be replaced with radioactive material when referring to dispersion. In the titles for Sections 4.1 and 4.2 diffusion should be replaced with dispersion. In the equations, σ, should be defined as a dispersion factor instead of standard deviation. In the equations, C, should be defined as a building shape factor instead of an arbitrary constant.

14. Section 5, criteria for radionuclide release from the reactor building. In line 2, experiment is misspelled.

15. Section 5. The amounts, release timing, and chemical compositions of fission products (source term) immediately available for leakage following a design basis accident are similar to those shown in Regulatory Guides 1.3 and 1.4, and in TID-14844. In light of the publication of NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants" for comment, the ANS Committee should consider reviewing the source term specified in the NUREG for future updating of the standard.

16. A difference between arriving at source terms using Regulatory Guides 1.3 and 1.4, and TID-14844 and the standard is the fact that the regulatory guide method uses a source term based on the percentage of noble gases and iodine of the full power operation of the core where the standard is based

on a damage fraction of the core, fuel element, or experiment. Because the analyst has latitude in the choice of a design basis accident, we recommend that a statement similar to that below be added to the standard:

> A design basis accident for use in evaluating the site shall be selected and described. The selection of a design basis accident should be based upon a thorough knowledge of the operational modes, potential vulnerabilities and release characteristics of the research reactor, fuel elements, and any experiments contemplated. The design basis accident selected should be among the most severe analyzed, in terms of radiological consequences, and one which leads to a quantity of fission products or radioactive material released into the reactor building that is not likely to be exceeded, based upon a realistic understanding of the reactor and the experiments contemplated.