



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

October 27, 2006

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington DC 20555

Subject: RAI for the NIST EIS

Docket Number 50-184

Gentlemen,

The responses to the RAI's concerning the NIST EIS are attached. Further questions should be directed to Dr. Wade J. Richards at (301)-975-6260 or wade.richards@nist.gov.

Sincerely,

Wade J. Richards

Wade J. Richards

Chief, Reactor Operations and Engineering

I certify under penalty of perjury that the forgoing is true and correct.

Executed on 10/27/06

BY *Wade J. Richards*

cc.

Marvin Mendonca
Project Manager

A020

NIST

**Responses to NRC RAI's
for the
NIST EIS (Oct. 23, 2006)**

A. While on the tour, the question was asked how many employees work at the NBSR each day. The answer given was 250—are those all at the NBSR specifically or does that include that employees working with experiments at the NCNR, as well?

Response

The 250 employee number would be those working at the NCNR per day. The number working at the NBSR per day would be approximately 50 employees.

B. When talking about other facilities that do similar work to NBSR (in reference to alternative options if NBSR were not licensed), several facilities were mentioned that were fully booked. Could you expand on those options a little bit? – We heard the HFIR at Oak Ridge, and ILL in Grenoble France, any others we need to include? Where is the spallation source that was referred to located? Any other reasons other facilities wouldn't be able to fulfill the research needs?

Response

The spallation source (Spallation Neutron Source (SNS)) is located at the Oak Ridge National Laboratory.

The NCNR is the only cold neutron source in the U.S. with the range of instrumentation that can meet the needs of the U.S. neutron scattering science program. The foreign neutron sources (i.e. Ill, PSI or FRM-II) are very difficult for U.S. researchers to get time on. The NCNR has the only very high inelastic cold neutron spectrometer, spin echo and backscattering instruments in the U.S.

**Information Received Verbally From NIST Staff
At the September 26, 2006 Site Audit
Which Will BE Relied On For Environmental Review**

1. Approximately daily reactor water use is 150,000 gallons/day, when in operation.

Response

This number is approximate as the usage varies from 150,000-175,000 depending on the season.

2. 250 Employees work at the NBSR each day.

Response

The number of employees working at the NCNR per day would be approximately 250. The number working at the NBSR per day would be approximately 50.

3. Refuel every 38.5 day operating cycle with 10-12 day shutdown.

Response

This is correct.

4. 4/30 fuel rods replaced each shutdown.

Response

We replace 4 of the 30 fuel elements each shutdown

5. Use NACLW-2 casks for shipping spent fuel. Transport spend fuel every 4 ½ years (126 elements, 3 casks) in 1 trip.

Response

We have used the NAC-LWT, Certificate of Compliance No. 9225 shipping cask for our past three rounds of spent fuel shipping. Each cask can hold up to 42 NBSR elements, or 84 fuel sections. We shipped 3 casks in 1997, 2 casks in 1999, and 3 in 2003. Each respective set of casks were shipped

together in one convoy of trucks. We can and have used other casks in the past.

6. Control Room – 2-3 operators on duty at all times, 4 shifts, 8 hour rotations.

Response

We have 4 crews rotating through three, eight hour shifts. The 2-3 operators on duty at all times is correct.

7. No Threatened or Endangered species on site. Deer and goose populations are managed on site by Fish and Wildlife Service and U.S. Humane Society.

Response

NIST works with USHS and they do a study on the wild life, mainly the deer population. NIST also works with Geese Police for the geese population. Fish and Wildlife are not directly involved with the management of wildlife on the NIST site.

8. Air effluents continually filtered through HEPA filters on stack. Detectors on system divert air through special (charcoal) filters if limits are exceeded.

Response

Air effluents from the confinement building are continually filtered through HEPA filters. The exhaust from these filters is directed to the reactor building stack. There are radiation detectors in the building exhaust system that will initiate emergency ventilation mode upon reaching high level set points. This building emergency exhaust system uses HEPA and charcoal filters for clean up and exhaust from the building.

9. Liquid effluents released by batch after sampling.

Response

Liquid effluents from the Confinement building and the B-Wing Radioactivity labs are collected in tanks located in a vault below ground, in front of building 235. These tanks are sampled, the samples analyzed, and the contents determined to be compliant with NIST policy and regulatory limits prior to release.

10. Environmental sampling. Soil and vegetation sampling done onsite only. Water monitoring done on and offsite. TLDs on site fence line.

Response

Environmental Sampling, soil and vegetation (grass) samples are collected from onsite locations. Water Samples are collected from on and off site locations. There are environmental TLDs positioned on the NIST fence line.

11. NIST site is now 575 acres. 1 acre used for freeway expansion a few years ago.

Response

This is incorrect. The total acreage of NIST is now 579.499 acres. The attached document is from NIST Plant Services and lists all of the acreage acquired over the years.

12. There are no alternatives available to relicensing the NBSR. There is nothing else currently available that can do this work. Other facilities with similar capabilities (HFIR at Oak Ridge, Ill in Grenoble France, Spallation source at Oak Ridge) are all booked to capacity. Cold neutron source not available elsewhere. Replacement cost for a new facility would be over one billion dollars.

Response

For further details see the response to question B above.

NIST Galthersburg - LAND

| Date | Project | Description | Acres | Cost |
|-------------|-----------------|--|----------------|----------------------|
| 7/11/1956 | Final Judgement | Declaration of taking | | |
| 11/19/1956 | Parcel #1 | | 260.226 | \$ 286,000.00 |
| 2/11/1962 | Parcel #9 | | 17.084 | |
| 2/11/1962 | Parcel #2 | | 2.445 | \$ 7,500.00 |
| 2/11/1962 | Parcel #4 | | 16.887 | |
| 11/25/1959 | Parcel #3 | | 16.411 | \$ 5,190.69 |
| 8/22/1958 | Parcel #5 | | 33.934 | \$ 73,000.00 |
| 10/29/1959 | Parcel #6 | | 1.716 | \$ 20,800.00 |
| 11/25/1959 | Parcel #7 | | 88.757 | \$ 70,927.01 |
| 10/25/1959 | Parcel #8 | | 97.791 | \$ 73,558.22 |
| 10/11/1961 | Parcel #10 | | 20.223 | \$ 14,000.00 |
| 11/8/1962 | Parcel #11 | | 9.861 | \$ 13,000.00 |
| 2/17/1964 | Parcel #12 | Exchanged .947 acres for .944 acres | -0.003 | |
| 6/24/1967 | Parcel #13 | Adair Property | 5.5 | \$ 74,600.00 |
| 5/15/1969 | Parcel #14 | Bowman Property | 5.3 | \$ 85,800.00 |
| 1980 | Parcel #15 | Quit Claim | 0.172 | \$ 11,002.50 |
| 7/1/1986 | Parcel #16 | Exchanged with SHA for easement along I-270 | 3.195 | \$ - |
| | | Total Value of Land | 579.499 | \$ 735,378.42 |