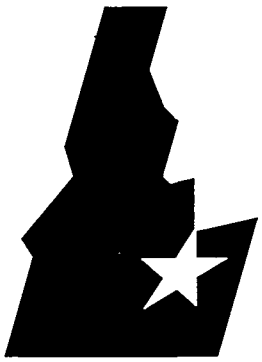
DOE/EA-1034
May 1995

Environmental Assessment

Replacement of the Idaho National Engineering Laboratory Health Physics Instrumentation Laboratory



Idaho National Engineering Laboratory

U.S. Department of Energy • Idaho Operations Office

DOE/EA-1034

Environmental Assessment

Replacement of the Idaho National Engineering Laboratory Health Physics Instrumentation Laboratory

Published May 1995

Prepared for the
U. S. Department of Energy
DOE Idaho Operations Office

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HELPFUL INFORMATION FOR THE GENERAL READER

Scientific Notation

Scientific notation is used to express numbers that are very small or very large. A very small number will be expressed with a negative exponent, such as 1.3×10^{-6}. To convert this number to the more commonly used form, the decimal point must be moved left by the number of places equal to the exponent (in this case 6). The number thus becomes 0.0000013.

For large numbers, those with a positive exponent, the decimal point is moved to the right by the number of places equal to the exponent. The number 1,000,000 (or one million) can be written as 1.0×10^{6}.

Units of Radioactivity and Radiation Exposure and Dose

The basic unit of radioactivity used in this report is the curie (Ci). The curie is based on the radionuclide Radium-226, of which one gram decays at the rate of 37 billion disintegrations per second. For any other radionuclide, one curie is the amount of that radionuclide that decays at this rate.

Radiation exposure is expressed as Roentgen (R), the amount of ionization produced by gamma radiation in air. Dose is given in units of "Roentgen equivalent man" or rem, that takes into account the effect of radiation on tissues.

Source of Radiation

Every person living in the United State (or the world) is exposed to sources of ionizing radiation--radiant energy that produces ions as it passes through cells. Three general types of radiation sources are: those of natural origin unaffected by human activities, those of natural origin but enhanced by human activities, and those produced by human activities.

The first group includes terrestrial radiation from natural radiation sources in the ground, cosmic radiation from outer space, and radiation from radionuclides naturally present in the body. Exposures to natural sources may vary depending upon the geographical location and even the altitude at which a person resides. When such exposures are much higher than the average, they are considered elevated.

The second group includes a variety of natural sources from which the radiation has been increased by human actions. For example, radon exposures in a given home may be elevated because of natural radionuclides in the soil and rock on which the house is built; however, the radon exposures of occupants may be enhanced by characteristics of the home, such as extensive insulation. Another example is the increased exposure to cosmic radiation that airplane passengers receive when traveling at high altitudes.

The third group includes a variety of exposures from materials and devices such as medical x-rays, radiopharmaceuticals used to diagnose and treat disease, and consumer products containing minute quantities of radioactive materials. Exposures may also result from radioactive fallout from nuclear weapons testing, accidents at nuclear power plants, and other episodic events caused by human activity in the nuclear industry. Except for major nuclear accidents, such as the one that occurred at Chernobyl, exposures to workers and members of the public from activities at nuclear industries are very small compared with exposures from natural sources[a].

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[a] Paraphrased from National Council on Radiation Protection and Measurements, *Ionizing Radiation Exposure of the Populations of the United States*, NCRP Report No. 93, September 1, 1987, p. 1.

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ACRONYMS & UNITS

Acronyms

ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
CFA	Central Facility Area
CFR	Code of Federal Regulations
D&D	decontamination and decommissioning
dB	decibels
DEQ	Division of Environmental Quality
DOE	U. S. Department of Energy
EDE	effective dose equivalent
FR	Federal Register
HPIL	Health Physics Instrumentation Laboratory
INEL	Idaho National Engineering Laboratory
MEI	maximally exposed individual
NEPA	National Environmental Policy Act
PTC	permit-to-construct
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan

Units

cm	centimeter(s)
ft	foot (feet)
ft^2	square foot (feet)
gal.	gallon(s)
in.	inch(es)
km	kilometer(s)
km^2	square kilometer(s)
L	liter(s)
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
mi.	mile(s)
$mi.^2$	square mile(s)
mrem	millirem (1/1000th of a rem)
rem	roentgen equivalent man (measure of radiation exposure)
yr	year(s)
°F	degree(s) Fahrenheit
°C	degree(s) Celsius

U. S. Department of Energy
Finding of No Significant Impact
Replacement of the Idaho National Engineering Laboratory
Health Physics Instrumentation Laboratory

Agency: U. S. Department of Energy (DOE)

Action: Finding of No Significant Impact (FONSI)

SUMMARY: The DOE-Idaho Operations Office (DOE-ID) has prepared an environmental assessment (EA) on the replacement of the Idaho National Engineering Laboratory Health Physics Instrumentation Laboratory at the Idaho National Engineering Laboratory (INEL). The purpose of this project is to replace the existing Health Physics Instrumentation Laboratory (HPIL) with a new facility to provide a safe environment for maintaining and calibrating radiation detection instruments used at the Idaho National Engineering Laboratory. The existing HPIL facility provides portable health physics monitoring instrumentation and direct reading dosimetry procurement, maintenance and calibration of radiation detection instruments, and research and development support-services to the INEL and others. However, the existing facility was not originally designed for laboratory activities and does not provide an adequate, safe environment for calibration activities.

The EA examined the potential environmental impacts of the proposed action and evaluated reasonable alternatives, including the no action alternative in accordance with the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508). Based on the environmental analysis in the attached EA, the proposed action will not have a significant effect on the human environment within the meaning of the National Environmental Policy Act (NEPA) and 40 CFR Parts 1508.18 and 1508.27.

The selected action (the proposed alternative) is composed of the following elements, each described or evaluated in the attached EA on the pages referenced. The proposed action is expected to begin in 1997 and will be completed within three years.

- Design and construction of a new facility at the Central Facility Area of the INEL.
- Operation of the facility, including instrument receipt, inspections and repairs, precision testing and calibration, and storage and issuance.

The selected action will result in no significant environmental impacts.

SUMMARY OF IMPACTS:

1) *Beneficial and adverse impacts* [40 CFR 1508.27 (b)(1)]:

- The selected action will provide a safe environment for maintaining and calibrating radiation detection instruments (p. 1, 15-16).

- No significant adverse impacts are associated with:
  - Construction activities (p. 15, Table 2)
  - Radiation emissions (pp. 15-16, Table 2)
  - Worker exposure (pp. 15-16, Table 2)
  - Generation of radioactive and nonradioactive waste (p. 16, Table 2)
  - Socioeconomic resources (p. 16)
  - Human-health risk (p. 16, Table 2)

2) *Public health and safety* [40 CFR 1508.27 (b)(2)]: No adverse health effects will occur in the exposed population or to workers from the selected action's low exposures.

- The radiological dose resulting from releases from operations at the new facility will contribute a negligible amount, 1.5×10^{-11} mrem/year, to the current and foreseeable dose from INEL operations of 0.05 mrem/year (pp. 15-16, Table 2).

- Radionuclide emission will result in a lifetime cancer risk of 8×10^{-17} to a maximally exposed individual. In the affected 80-km (50-mi) population of 120,000 people, this cancer risk translates into less than 3.0×10^{-10} additional cancers (pp. 15-16, Table 2).

- Maximum weekly radiation doses to workers are anticipated to be less than 2.0 mrem. Workers at the new facility will not be expected to incur harmful health effects from radiation exposure (pp. 15-16, Table 2).

3) *Unique characteristics of the geographic area* [40 CFR 1508.27(b)(3)]:

- No unique characteristics of the geographical area will be affected by the project (pp. 11-13).

4) *Effects on quality of the human environment* [40 CFR 1508.27 (B)(4)]:

- The project will result in no controversial effects on the quality of the human environment.

5) *Uncertain or unknown risks on the human environment* [40 CFR 1508.27 (B)(5)]:

- No unique, uncertain, or unknown risks to the human environment from construction or operation are associated with this project.

6) *Precedent for future actions* [40 CFR 1508.27 (B)(6)]:

- The project does not set a precedent for future actions that may have significant effects.

7) *Cumulatively significant effects* [40 CFR 1508.27 (b)(7)]:

- No significant cumulative impacts are associated with the project (Table 2, pp. 19-22).

8) *Effects on cultural or historical resources* [40 CFR 1508.27 (B)(8)]:

- No archaeological or cultural resources are anticipated to be affected (p. 15). However, the existing HPIL (building CFA-633), is 50 years old and is considered historically significant according to the State Historic Preservation Officer (SHPO). Therefore, before decontamination and dismantlement,

the SHPO will be consulted for a determination regarding the significance of the impact to the potentially historic structure and recommended appropriate mitigative measures.

9) *Effect on threatened or endangered species or habitat* [40 CFR 1508.27 (B)(9)]:

- No threatened or endangered species or habitats will be affected by the action (p. 15).

10) *Violations of Federal, State, or Local Laws* [40 CFR 1508.27 (B)(10)]:

- No violations of federal, state, or local laws will occur with this action.

DETERMINATION: Based on analysis presented in the attached EA, I have determined that this project does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, preparation of an environmental impact statement is not required and I am issuing this FONSI.

INFORMATION: Copies of the EA are available from: Brad Bugger, External Affairs, Idaho Operations Office, U. S. Department of Energy, 785 DOE Place, Idaho Falls, Idaho, 83402-1118, (208)526-0833 or by calling the INEL toll-free hotline (800)708-2680.

For further information on the NEPA process contact: Roger L. Twitchell, NEPA Compliance Officer, U. S. Department of Energy, 850 Energy Drive, Idaho Falls, Idaho 83401, (208)526-0776.

Issued at Idaho Falls, Idaho on this 25 day of May, 1995.

J. M. Wilcynski
Manager

Environmental Assessment
Replacement of the
Idaho National Engineering Laboratory
Health Physics Instrumentation Laboratory

1. PURPOSE AND NEED FOR ACTION

The U. S. Department of Energy (DOE) is proposing to replace, upgrade, or move the Health Physics Instrumentation Laboratory (HPIL), or its functions, to provide a safe environment for maintaining, calibrating, and verifying radiation detection instruments used at the Idaho National Engineering Laboratory (INEL). The existing HPIL facility provides portable health physics monitoring instrumentation and direct reading dosimetry procurement, maintenance, calibration, and verification of radiation detection instruments, and research and development support-services to the INEL and others. However, the existing facility was not originally designed for laboratory activities and does not provide an adequate, safe environment for maintenance, calibration, and verification activities.

The purpose of the proposed action is ". . . to provide a safe environment for maintaining, calibrating, and verifying radiation detection instruments. . ."

To ensure a safe environment for activities involving radioactive materials, a thorough maintenance and accurate calibration of radiation detection devices is necessary. To provide accurate exposure data, radiation detection instruments must routinely undergo testing, quality control, and quality assurance activities in accordance with DOE Order 5480.11 and the American National Standards Institute (ANSI) N323 guidelines. These functions are necessary INEL operations. Refer to Section 2.1.1.2 for a description of HPIL functions.

The existing facility is located in the Central Facility Area (CFA) Building 633. This building was originally designed to test naval guns during World War II and was not specifically designed to meet laboratory functions. Over the years, the facility has been modified to accommodate its many occupants, and as a result the laboratories are too small and poorly laid out. Also, radiation exposure to personnel is harder to control during the maintenance, calibration, and verification process. The existing facility also has significant safety and structure problems and inadequate environmental controls critical for accurate instrument calibration, which impact the efficiency and accuracy of laboratory operations. In addition, the current facility will not be able to meet the anticipated growth in the maintenance and calibration activities expected at the INEL.

The objective of this environmental assessment is to provide an evaluation of the potential environmental impacts of the proposed and alternative actions related to the maintenance and calibration of radiation detection capability. This document was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, as amended), as implemented by the Council on Environmental Quality [Code of Federal Regulations (CFR) 40 CFR Parts 1500-1508], DOE NEPA Implementing Procedures (10 CFR Part 1021), and DOE Order 5440.1E. This Environmental Assessment will serve as the basis for issuance of a Finding of No Significant Impact or lead to a determination that an environmental impact statement is required for the proposed action.

2. DESCRIPTION OF ALTERNATIVES

Alternatives --

a) HPIL Replacement Facility
b) Relocation of Existing HPIL Operations to CFA-617
c) Renovation and Expansion of CFA-633
d) Off-Site Vendor with a New On-Site Support Building
e) Off-Site Vendor with Renovation and Expansion of CFA-617
f) No Action

The following subsections discuss six alternatives related to the maintenance, calibration, and verification of radiation detection instruments at the INEL. These include a) constructing a replacement facility (proposed action), Section 2.1; b) relocating existing HPIL functions to the former Central Laundry and Respirator Facility, Building CFA-617, Section 2.2; c) renovating and expanding the current facility, CFA-633, Section 2.3; d) contracting with an off-site vendor and constructing a new on-site support building for shipping, receiving, storing, and verifying, Section 2.4; e) contracting with an off-site vendor and renovating and expanding CFA-617 for shipping, receiving, storing, and verifying, Section 2.5; and f) no action, Section 2.6.

Ten potential on-site locations for the proposed facility were evaluated based on the following criteria (Myers 1991a):

- Not within 610 m (2,000 ft) of the Radiological Environmental Science Laboratory
- Easily Accessible
- Not near electromagnetic fields or other sources that may affect calibration and verification of instruments
- Low background radiation
- Room for expansion
- Depth to bedrock greater than 9.1 m (30 ft)

Based on these criteria, the proposed location for the replacement facility is north of Ogden Avenue and northeast of the Environmental Chemistry Laboratory (CFA-625) at CFA (shown in Figure 1). These same criteria were used to evaluate the range of alternatives described in Sections 2.1 through 2.6 (see Table 1). The Proposed Action Alternative was the only on-site alternative that fully met all the criteria.

Standard construction practices would be used during land clearing and construction to avoid and minimize impacts or minimize impacts to the workers and the environment. The following practices would be used with construction related activity for any of the alternatives discussed below and will not be repeated in subsequent sections:

- Air Pollutants - Fugitive dust from construction activities would be controlled, if necessary, through use of water spray or approved soil fixatives.

- Water Runoff and Soil Erosion - Runoff and erosion from the construction site would be controlled by appropriate stormwater controls, such as grading and gradual slopes. A Storm Water Pollution Prevention Plan would be prepared (see Section 5.1). Also, after construction activities are completed, the site would be graded and leveled and areas next to the facility would be landscaped similar to other areas at CFA. Remaining disturbed areas would be revegetated in accordance with DOE guidelines.

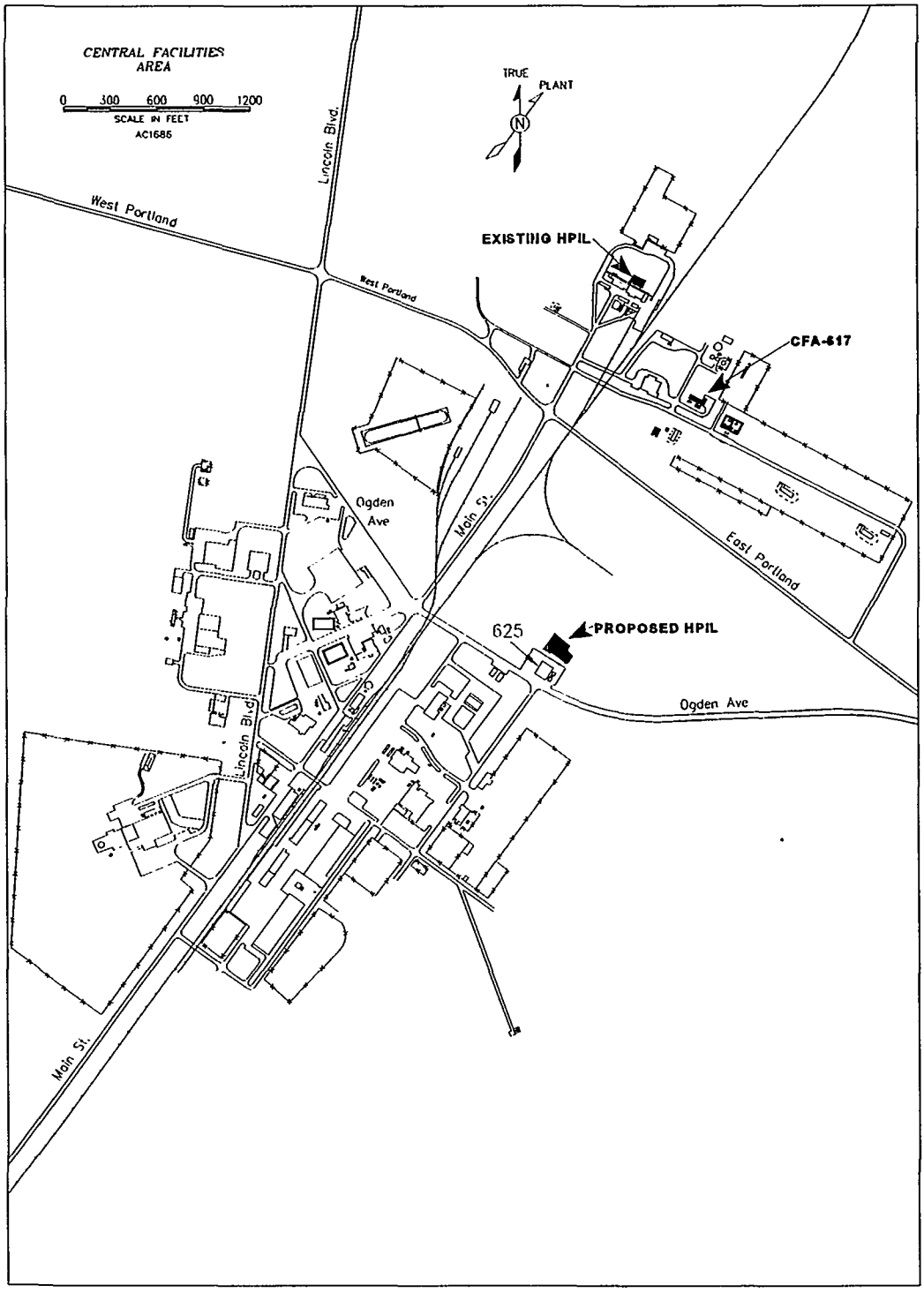

Figure 1. Proposed Health Physics Instrumentation Laboratory replacement and On-site Alternatives at the Central Facility Area, INEL.

Table 1. *Siting Criteria for the Health Physics and Instrumentation Laboratory*[a].

Siting Criteria	Alternative 1 (Proposed New Building)	Alternative 2 (Relocation to CFA-617)	Alternative 3 (Renovation & Expansion of CFA-633)	Alternative 4 (Off-site Vendor with Small On-Site Support Building	Alternative 5 (Off-stie Vendor with CFA-617 as On-site Support Building	Alternative 6 (No Action)
Not within 610 m of Radiological Environmental Science Laboratory	Yes	Yes	Yes	Yes[c]	Yes[c]	Yes
Easily Accessible Location	Yes	Yes	Yes	Yes[c]	Yes[c]	Yes
Not Near Electromagnetic Field or Radiological Sources	Yes	No, 230 KVa line and Radiological Waste Shipments pass nearby	No, Scoville substation, 230 KVa line, and Radiological Waste Shipments pass nearby	Yes[c]	No, 230 KVa line nearby, Radiological Waste Shipments pass nearby[c]	No, Scoville substation, 230 KVa line, and Radiological Waste Shipments pass nearby
Low Background Radiation	Yes	No, Decontamination necessary	Yes	Yes[c]	No, Decontamination necessary[c]	Yes
Room for Expansion	Yes	Yes	No	Yes[c]	Yes[c]	No
Depth to Bedrock 9.1 m	Yes	No, may be be within 9.1 m	--[b]	Yes[c]	No, may be within 9.1 m.[c]	--[b]

[a] CFA Health Physics Instrument Laboratory Siting Study, Engineering Design File HPIL-WRM-01, December 15, 1991.

[b] Radiation Source Wells are already in Building CFA-633

[c] Siting criteria apply only to the on-site facilities (new support structure or CFA-617), and not to any off-site facilities.

- Cultural Resources - If excavation activities encounter any unusual materials (such as bones, obsidian flakes, darkly stained soil horizons, arrowheads) construction activities would cease immediately, resuming only after professional cultural resource specialists are consulted and any necessary mitigative action completed.

- Construction Hazards - During construction or renovation activities appropriate measures would be taken to protect workers from construction hazards and potential radiation exposure. Also, personnel would wear hearing protection when necessary if noise levels exceed 85 decibels (dB) in accordance with DOE policy and 29 CFR 1910.95.

2.1 Alternative 1 (Proposed Action): HPIL Replacement Facility

2.1.1 Design and Construction, Operation, and Decontamination and Decommissioning

DOE proposes to design, construct, and operate a facility to replace the current HPIL. The following subsections discuss the various stages of this alternative: design and construction, Section 2.1.1.1; operation, Section 2.1.1.2; decontamination and decommissioning of proposed facility, Section 2.1.1.3; and disposition of the existing facility, Section 2.1.2. Construction of the new facility would cost an estimated $14,300,000 (Balls 1994). Annual operating and maintenance costs are estimated at $2,600,000 and $101,000, respectively (Balls 1994).

2.1.1.1 Design and Construction. The proposed replacement facility would provide approximately 1,950 m^2 (21,000 ft^2) of space and consist of four major areas devoted to a) shipping, receiving, and storage; b) instrument control and repair; c) laboratory operations; and d) offices and support areas. Radiation activities would occur in gamma well, gamma, beta, x-ray, low-level, low-scatter, alpha/beta irradiation, and panoramic laboratories. The design also includes two 9.1-m (30-ft) radiation source (gamma) wells for inspection and calibration of instruments (gamma well). Rock probes have shown that the depth to basalt at the proposed construction site is sufficient for installation of the source wells and rock excavation is anticipated to be minimal. In addition, radioactive source storage would be located in a sub-level concrete vault of the low-scatter laboratory. These laboratories would be used to inspect and calibrate instruments.

The new facility would include controlled access to hazardous areas within the facility and would separate administrative and other support personnel from operations and laboratory activities and areas. The arrangement and location of laboratory equipment would minimize exposure to radiation and other hazardous materials. The laboratory design would protect workers from hazards during normal operations, anticipated operational occurrences, and design basis accidents. The design would also ensure prompt, safe shutdowns in emergencies. In addition it would provide environmental controls (e.g., humidity, temperature, radiation shielding) to ensure accurate instrument calibration and repair.

Approximately 4,740 m^2 [51,000 ft^2 or 1.2 acres] of land would be developed. This land area would include 1,950 m^2 (21,000 ft^2) for the proposed building and 2,790 m^2 (30,000 ft^2) of paved areas for parking, service roads, and access areas. An additional 2,790 m^2 (30,000 ft^2) would be disturbed during construction activities for equipment storage and a laydown area.

2.1.1.2 Operation. Operation at the proposed facility would be comparable to current operations at the existing HPIL, CFA-633. The general flow of operation would include: (a) instrument receipt, (b) "as found" inspection and repair, (c) precision testing and calibration, and (d) storage and issuance of the instrument. Instruments received at the proposed facility for calibration and maintenance would be brought to the shipping and receiving area, logged in, and surveyed for contamination. Instruments with minor contamination (one microcurie or less) would be decontaminated using standard methodologies, while those with higher levels of contamination would be returned to the user for decontamination before acceptance.

Following repair and cleaning, instruments would be tested for precision, then calibrated by exposure to known radioactive sources in the low-scatter, gamma well, gamma, beta, or x-ray laboratories. Technical support and standard irradiations would be done in the alpha/beta irradiation, panoramic, low-level, or low-scatter laboratories. During calibration dosimeters would be exposed to known sources to ensure that radiation dose measurements are accurate.

Wastes generated at the proposed facility would be similar to wastes generated at the existing facility (see Section 4.1.2). These wastes would be stored in satellite accumulation areas until treated and disposed of at an Environmental Protection Agency approved location. Small quantities of radioactive wastes would be generated during decontamination of instruments (see Section 4.1.2). Radioactive wastes would be packaged and shipped to the appropriate INEL facility (e.g., Radioactive Waste Management Complex) for management and disposal in accordance with the facility's waste acceptance criteria. Office wastes would also be generated at the new facility and disposed of at the INEL landfill (see Section 4.1.2).

Air emissions would be limited to releases from chemicals used in decontamination and cleaning activities (see Section 4.1.2). The small quantities of chemicals used in these activities would consist primarily (>90%) of commercially-available household cleaning products, solvents, and paints. In a representative year (1992), existing operations used less than 38 L (10 gal.) of volatile chemicals.

2.1.1.3 Decontamination and Decommissioning. The proposed replacement facility would be decontaminated and decommissioned at the end of the useful life of the building. The facility would be characterized for the presence of radioactive or hazardous contaminants before and during decontamination and decommissioning (D&D) activities. After removal and disposal of any contaminants or contaminated surfaces, the building would be demolished, and the building site would be graded and revegetated with a native seed mix.

2.1.2 Disposition of the Existing HPIL (Building CFA-633)

When the existing HPIL operations and associated equipment from CFA-633 are moved to the new facility, vacated areas would be characterized and decontaminated. Surfaces contaminated with radioactive or hazardous materials would be decontaminated using standard methods such as surface wipes and scabbling. After removal of the radioactive sources, source wells would be capped or filled. CFA-633 also houses a gas chromatograph and mass spectrometer used in environmental chemistry operations. CFA-633 is currently scheduled for D&D in 2001. Appropriate NEPA analysis will be completed before D&D activities begin.

2.2 Alternative 2: Relocation of Existing HPIL Operations to CFA-617

This alternative proposes moving the existing HPIL operations to building CFA-617, the former Central Laundry and Respiratory Facility. Building CFA-617 was constructed in 1981 to house INEL hot (radioactive) laundry operations. The laundry facility cleaned radiologically contaminated and noncontaminated laundry and conducted respirator decontamination and maintenance. Laundry operations were suspended in February 1993 when a categorical exclusion determination placed the facility on standby awaiting further NEPA documentation. EG&G Idaho, Inc., awarded a one to two year contract to an off-site contractor for maintenance, cleaning, and decontamination of low-level radiologically contaminated laundry and respirators.

Because of laundry operations, some areas of the facility, including sumps and equipment, are contaminated with low levels of radioactivity. In addition, naturally occurring thorium is present in the building's cinder block walls and asphalt parking lot. Shielding of walls and removal of asphalt would be necessary to reduce radiation sources from the building and surrounding area. CFA-617 would be decontaminated to levels compatible with instrument calibration before occupancy. CFA-617 is not large enough to house all of the operations currently at the existing facility and would be expanded about 730 m^2 (7,860 ft^2) to house the proposed functions, including drilling two 9.1-m ((30-ft) deep radioactive source

wells. In addition, environmental controls (temperature, pressure, humidity, dust suppression) would need to be added during renovation of the building. Operation, under this alternative, would be similar to the existing HPIL (see Section 2.1.1.2).

Clearing, excavation, and drilling activities required under this alternative would disturb less than 1,000 m^2 (10,800 ft^2). Utility connections to CFA-617 are adequate and upgrades would not be required. Costs associated with remodeling and expansion of CFA-617 are estimated at $14,000,000 (Balls 1993a). In addition, it would cost an estimated $825,000 to decontaminate CFA-617 to a level that could accommodate HPIL operations without interference from background radiation. Annual operating and maintenance costs are an estimated $2,600,000 and $157,000, respectively (Balls 1994).

2.3 Alternative 3: Renovation and Expansion of CFA-633

This alternative would renovate and expand Building CFA-633. This action would require substantial modifications to nearly all systems within the building and adding approximately 790 m^2 (8,500 ft^2) of floor space to hold anticipated growth of maintenance and calibration operations. Renovating and expansion of CFA-633 would require excavation to adapt utility connections for the building addition upgrade at CFA-633. Operation, under this alternative, would be similar to the existing HPIL (see Section 2.1.1.2).

Building CFA-633 is 50 years old and is potentially historically significant according to the State Historic Preservation Officer (SHPO). Therefore, before initiating any modifications, the SHPO would be consulted for a determination regarding the significance of the impact to the structure and recommended appropriate mitigative measure.

Costs associated with renovating and expansion of CFA-633 have been estimated at $12,400,000 (Balls 1993b). Annual operating and maintenance costs are an estimated $2,600,000 and $101,000, respectively (Balls, 1994).

2.4 Alternative 4: Off-Site Vendor with a New On-Site Support Building

Under this alternative, the INEL would contract with an off-site vendor to conduct the maintenance and calibration functions now occurring at the existing facility. This alternative would still require a centralized on-site location for shipping, receiving, storing, and receipt verification of instrument performance . Without substantial modification to correct safety deficiencies, CFA-633 is not adequate for the shipping and receiving functions. Therefore, a new, smaller building (1,200 m^2 [13,000 ft^2]) would be built to ship, receive, store, and verify instruments. The current size and number of radioactive sources would be required for verification activities.

Operational activities for an off-site alternative would be different from the other alternatives. While maintenance and calibration activities would take place off-site, other activities, such as "as found" and verification inspections and decontamination of instruments would still occur on-site. This would ensure the shipment of uncontaminated instruments off-site and the use of properly calibrated instruments on-site.

Costs associated with contracting with an off-site vendor and constructing a new on-site support building are estimated at $9,300,000 (Balls 1993b). This includes the cost for a new but smaller replacement building to handle shipping, receiving, storing, and verifying of instruments. Annual operating and maintenance costs are an estimated $4,200,000 and $63,000, respectively (Balls 1994).

2.5 Alternative 5: Off-Site Vendor with Renovation and Expansion of CFA-617

This alternative is the same as the previous alternative (see Section 2.4), except instead of building a new on-site building, CFA-617 would be used to handle shipping, receiving, storing, and verifying activities.

Costs associated with contacting with an off-site vendor and using CFA-617 for centralized on-site support are estimated at $11,500,000 (Balls 1994). In addition, the annual operating and maintenance costs are an estimated $4,200,000 and $79,000, respectively (Balls 1994). Also, it would cost an estimated $825,000 to decontaminate CFA-617 to a level that could accommodate HPIL operations without interference from background radiation.

2.6 Alternative 6: No Action

Under this alternative, the functions and operations of the existing facility would remain in building CFA-633. No construction would occur with this alternative. Also, operational activities would remain the same as in the existing HPIL (see Section 2.1.1.1). The condition of the building would continue to cause performance and safety concerns (see Sections 1.0 and 4.6). The following deficiencies would exist in CFA-633:

- Inadequate number of shielded rooms to conduct X-ray, gamma, and neutron source calibrations. In addition, these rooms have not been upgraded to adapt to current uses.
- Potential radiation exposure at several locations accessible to personnel.
- Absence of central environmental control capabilities may cause gross variations in conditions throughout the building on a daily and seasonal basis. This may affect temperature- and humidity-sensitive calibration methods.
- Insufficient space for growth.
- Proximity to an electrical substation, which may influence calibration activities.
- Building safety deficiencies and health concerns including, asbestos in walls, floor tiles, and ceiling materials throughout the building; absence of a fire sprinkler system; electrical safety problems; lead-based paint on all painted surfaces and peeling paint in some rooms; significant roof leakage in many places aggravating electrical deficiencies in some places; subsidence of the floor in some rooms; bacterial contamination of potable water; freeze protection problems in the winter; and inability to find commercially or economically fabricate parts to replace failed components in antiquated plumbing and electrical fixtures.

Current annual operations and maintenance costs are $3,300,000 and $167,000, respectively (Balls 1994). Maintenance costs would likely increase as annual maintenance and emergency repairs increase. Without renovation or expansion, CFA-633 cannot meet current regulatory standards or the anticipated growth for the maintenance and calibrations activities expected at the INEL.

3. AFFECTED ENVIRONMENT

The INEL is a 2,305 km^2 (890 mi.^{2}) DOE research facility located on the Eastern Snake River Plain in southeastern Idaho (Figure 2). The physical and biological environment of the region, in general and the INEL in particular, has been extensively described by Bowman et al. (1984) and Irving (1993). All land within the INEL is controlled by DOE, and public access is restricted to highways, DOE-sponsored tours, special use permits, and the Experimental Breeder Reactor I National Historic Landmark. The INEL occupies portions of five Idaho counties. CFA is located in Butte County. The area surrounding the INEL is classified as a Prevention of Significant Deterioration Class II area, designated under the Clean Air Act as an area with reasonable or moderately good air quality while still allowing moderate industrial growth.

Physical characteristics of the proposed location for the replacement facility are typical of the INEL. The climate is semidesert, with warm summers and cold winters. Average annual precipitation is 22 cm (9 in.), and the annual mean temperature is 5.6°C (42°F) (Clawson et al. 1989). Elevation at the preferred CFA location is approximately 1,505 m (4,940 ft). The Snake River Plain Aquifer, which was designated a sole source aquifer in 1991 (56 Federal Register [FR] 50634), underlies the CFA at a depth of approximately 140 m (460 ft).

The Big Lost River passes within 5 km (3 mi.) of the CFA. The probable maximum flood crest (10,000 year flood) has been estimated to be 1,500 m (4,920 ft) above mean sea level (Henry et al. 1981). CFA would not be flooded by this event. An analysis of flooding that could occur on the INEL because of a failure of both Mackay Dam and the INEL diversion dam indicates that the CFA would not be inundated (Koslow and Van Haaften 1986).

Dominant vegetation at the proposed construction site consists of crested wheatgrass (*Agropyron cristatum*), a European perennial seeded in disturbed areas to provide cover and hold soil. No known resident endangered or threatened species reside on the INEL. However, the bald eagle (*Haliaeetus leucocephalus*), an endangered species, has been observed wintering on or near the INEL (U.S. Fish and Wildlife Service 1993). The Idaho Conservation Data Center maintains a database listing plant and animal species considered rare, threatened, or endangered in Idaho by State and Federal agencies (Moseley and Groves 1992). DOE Idaho Operations Office has determined that a biological assessment would not be necessary and that construction within the administrative boundary of CFA would not involve the loss of critical wildlife habitats.[b]

Cultural resources in the vicinity of the CFA have been identified and mapped (Reed et al. 1987), and no archaeological or historical resources were identified during a survey of the proposed construction site.[c] The present facility, CFA-633, is a 50-year-old building and was associated with a historic event and therefore may be historically significant. Over the years, the building has been extensively modified to adapt to DOE operations.

Population centers in the region include Idaho Falls (1990 population was 43,929), Pocatello (46,080), Blackfoot (9,646), Arco (1,016), and Atomic City (25) (U.S. Department of Commerce, Bureau of Census 1990). Idaho Falls, the nearest large population center, is approximately 71 km (44 mi.) east of the CFA. The town nearest to the CFA is Atomic City, approximately 15 km (9 mi.) to the southeast. No permanent residents reside on the INEL. The total work force at the INEL is approximately 10,000. Of these, approximately 1,300 work at the CFA and 13 work at the HPIL.

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[b] Memorandum from T. D. Reynolds, Ph.D., DOE Radiological and Environmental Sciences Laboratory, to T. L. Perkins, DOE/ID NEPA Compliance Officer. "CFA Boundary. " AM/EP-RESL-93-341, July 16, 1993.

[c] Letter from B. L. Ringe, INEL Cultural Resource Office, to S. K. Gray, EG&G, Idaho, Inc., "Archaeological Clearance Recommendation for Construction of a New HPIL at CFA on the INEL," BLR-08-93, February 2, 1993.

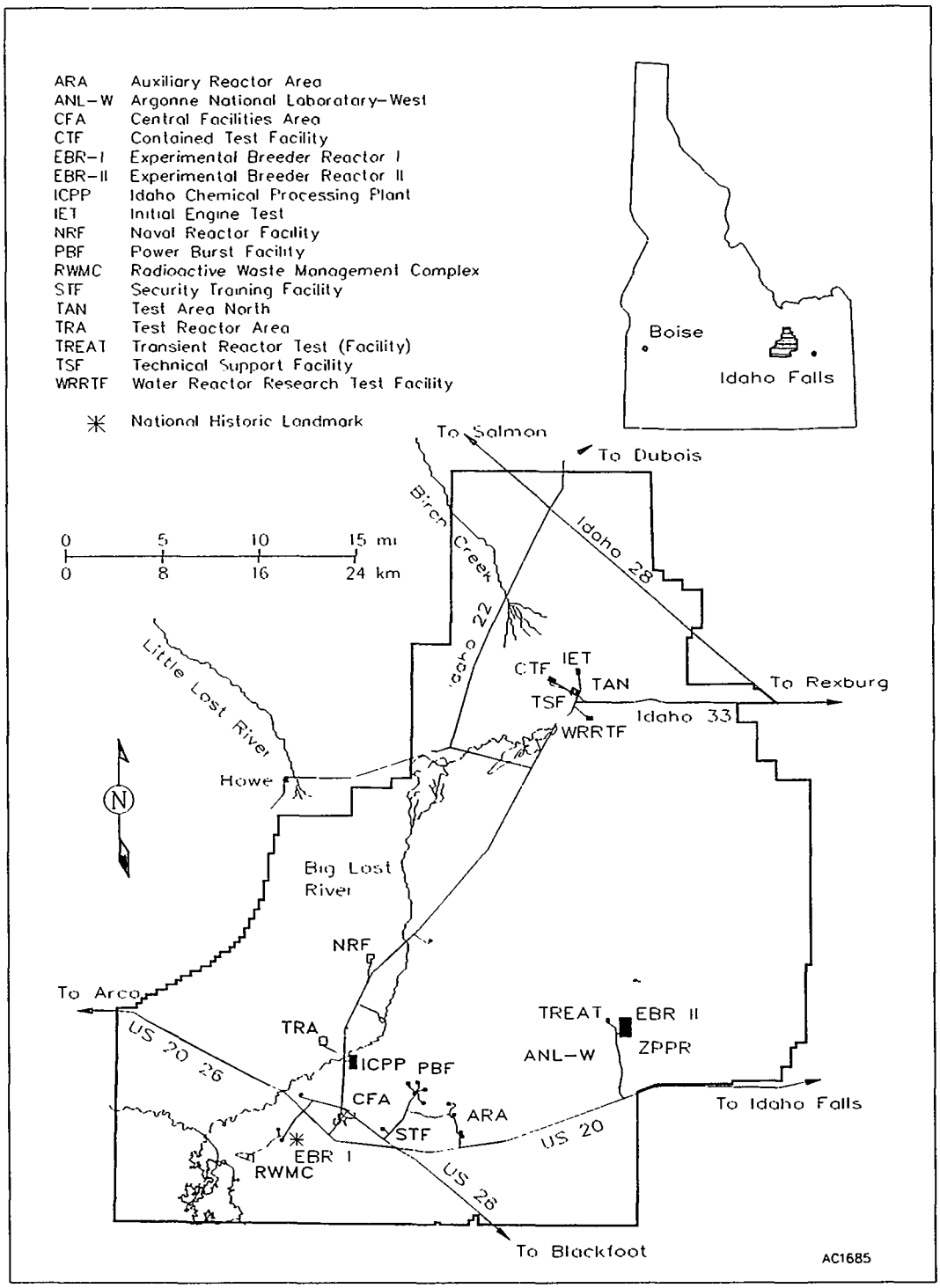

Figure 2. Location of major facilities on the INEL.

Background radiation[d] near the INEL results in an estimated total effective dose equivalent (EDE) to an average member of the public residing near the INEL of 351 mrem/yr. Health effects from exposure to airborne radionuclides at the INEL are discussed in the SNF and INEL ER&WM EIS[e] (DOE 1995). A summary of the EIS information is presented below. The human health risk associated with radiological air emissions is assessed based on risk factors provided by the International Commission on Radiological Protection. The measure of impact used for evaluating potential radiation exposures is risk of fatal cancers. Population effects are reported as collective radiation dose (in person-rem) and the estimated number of fatal cancers in the affected population. The maximum individual effects are reported as individual radiation dose (in mrem) and the estimated lifetime probability of fatal cancer.

INEL operations, including HPIL operations, result in an annual dose of 0.05 mrem/year to an off-site individual. This corresponds to a lifetime increase in cancer risk of approximately one in 40 million. The worker dose of 0.32 mrem/year corresponds to a lifetime increase in fatal cancer risk of approximately 1 in 7 million. The surrounding population consists of approximately 120,000 people within a 80-km (50-mi.) radius of the individual INEL sources. The total baseline collective population dose of 0.30 person-rem corresponds to approximately 0.0002 fatal cancers occurring within the population over the next 70 years.

"A hypothetical off-site resident near the INEL boundary received an average dose of 0.05 mrem/yr from INEL operations . . . For perspective, the average television viewer receives a dose of 0.05 to 0.1 mrem/yr . . ."

[d] For a discussion on background radiation see Helpful Information for the General Reader, page iii.

[e] Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement, Volume 2, Section 4.12.1.1.1 Radiological Health Risk, page 4.12-2.

4. ENVIRONMENTAL IMPACTS

The following sections describe environmental impacts that are likely to occur from the alternatives described in Section 2.

4.1 HPIL Replacement Facility (Proposed Action Alternative)

4.1.1 Construction Impacts

Land clearing for building construction and equipment laydown activities would disturb about 7,500 m^2 (80,700 ft^2) of native habitat. This would result in the loss of less-mobile organisms (e.g., small mammals, insects, plants). However, no wetlands or unique habitats occur within the CFA. Also, no threatened or endangered species commonly use the area. Therefore, DOE has determined that a biological assessment would not be required for the proposed action.[f] Also, no cultural resources were identified during a survey of the proposed construction site.[g] Air pollutants would temporarily increase around the construction site due to increases in vehicle traffic emissions and fugitive dust from excavation and grading activities. Temporary and intermittent increases in ambient noise levels would occur during clearing, excavation, and construction of the building. Soil disturbance, fugitive dust, and potential cultural resource impacts would be mitigated using standard construction practices (see Section 2.0). Construction activities would also generate solid wastes. These wastes would be typical of any construction job and would not be hazardous or radioactive. Construction wastes would be disposed of in the existing INEL landfill complex or recycled as appropriate. No unusual worker hazards would be associated with construction of the proposed replacement facility. Construction activities would use standard earthmoving machinery and carpentry, mechanical, and electrical equipment. Protective equipment and barricaded control zones would prevent personnel injury.

4.1.2 Operation Impacts

Measurable atmospheric emissions of radionuclides from the Proposed Action Alternative are extremely unlikely, but possible as a result of decontaminating instruments. Emissions from the proposed facility are not expected to be different from the current facility. Calculated emissions of radionuclides from sources at the existing HPIL resulted in a conservative exposure of 1.5×10^{-11} mrem/year effective dose equivalent (EDE) to the maximally exposed individual (MEI).[h] The MEI is a hypothetical person, whose habits and proximity to the INEL site are such that the person would receive the highest dose projected to result from sitewide radiological emissions.

Worker exposure to radiation under normal operations would be controlled under established DOE orders and as low as reasonably achievable principle (ALARA) policies and procedures. These requirements would limit the radiological dose received by any individual to less than 5.0 rem/year (DOE Order 5480.11). Based on historical radiation exposures resulting from the existing facility operations, DOE anticipates that the maximum radiation exposure for personnel at HPIL would be less than 0.2 rem/year. The sum of the radiation dose potentially received by all workers at HPIL would not exceed 1.0 rem/year. Design of the proposed new facility would incorporate adequate shielding to protect workers from radiation exposure.

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[f] Memorandum from T. D. Reynolds, Ph.D., DOE Radiological and Environmental Sciences Laboratory, to T. L. Perkins, DOE/ID NEPA Compliance Officer. "Biological Assessment HPIL," OID-RESL-94-004, January 6, 1994.

[g] Letter from B. L. Ringe, INEL Cultural Resource Office, to S. K. Gray, EG&G, Idaho, Inc., "Archaeological Clearance Recommendation for Construction of a New HPIL at CFA on the INEL," BLR-08-93, February 2, 1993.

[h] Calculation based on Memorandum from P. R. Leonard, to J. W. Tkachyk, LITCO, Regulatory Affairs Division, "Calculation of Dose to the Maximally Exposed Individual Due to the Release of one Curie of AM-241 from CFA," PRL-24-94, December 1994.

Maximum weekly radiation doses to workers are anticipated to be less than 2.0 mrem. Workers at the new facility would not be expected to incur harmful health effects from radiation exposure.

It is anticipated that the proposed operations would generate less than 115 L (30 gal.) of Resource Conservation and Recovery Act (RCRA) controlled waste (e.g., solvent bags, lead contaminated debris, mercury batteries) and 170 L (45 gal.) of industrial waste (e.g., lithium batteries) annually. About 0.5 L (1 pint) of radioactive wastes (e.g., Q-tips, swipes) would be generated annually during decontamination of instruments. About 300 L (80 gal.) of uncontaminated solid waste would also be generated annually at the new facility and disposed of at the INEL landfill. Disposal of wastes generated from new operations would not require expansion of any existing waste management facilities at the INEL. About 100 L (26 gal.) of this waste would be recycled (e.g., mercury batteries, RCRA scrap metal). Waste not recycled would be stored or disposed of in an approved manner (see Section 2.1.1.2). Disposal of wastes generated from new operations would not require expansion of any existing waste management facilities at the INEL.

Operation of the new facility is not expected to have an impact on the socioeconomics of the region. The construction work force would be drawn from the regional labor pool and existing INEL employees. The operational work force would consist of existing employees, with additional staff added when the demand for maintenance and calibration services increases. Changes in INEL employment resulting from operation of the proposed facility would be within normal fluctuations in INEL employment.

A safety analysis for the existing facility operations shows that the maximum credible accident scenario would be if a radioactive source housed in a source well became stuck in the up position (the position for instrument calibration). Procedures and equipment exist, in the current facility, to dislodge or remove the source and still maintain personnel exposure within satisfactory ALARA limits. Procedures to ensure safe evacuation of employees in case of excessive radiation exposure exist in the existing facility and would be established for the proposed facility.

4.1.3 Human-Health Risk

The off-site population may receive a radiation dose from radiological conditions directly attributable to INEL site operations. The dose associated with baseline radiological emissions (existing facilities and those expected to become operational before June 1, 1995) is assessed for a maximally exposed individual and for the populations within 80 km (50 mi.). The dose calculated from current and foreseeable sitewide emissions is about 0.05 mrem/year for the MEI, which is well below the National Emissions Standard for Hazardous Air Pollutants dose limit (10 mrem/year) and the dose received from background sources (351 mrem/year) (see Section 3.0) (DOE 1995).

The radiological dose resulting from releases from the proposed facility would contribute a negligible amount, 1.5×10^{-11} mrem/year (see Section 4.1.2), to the current and foreseeable dose from INEL operations of 0.05 mrem/year. Radionuclide emission from the Proposed Action Alternative would result in a lifetime cancer risk of 8×10^{-17} to a maximally exposed individual. In the affected 80-km (50-mi.) population of 120,000 people, this cancer risk translates into less than 3.0×10^{-10} additional cancers. No adverse health effects would be expected to occur in the exposed population from these low exposures.

4.2 Relocation of Existing HPIL Operations to CFA-617

Clearing, excavation, and drilling activities would disturb about 1,000 m^2 (10,800 ft^2) next to CFA-617. The area surrounding CFA-617 is highly disturbed and presently covered with gravel or asphalt. No impacts to biological organisms, including threatened and endangered species, or unique habitats are anticipated. Construction impacts and controls for cultural resources, soil disturbance, air emissions, and noise would be less than or similar to the Proposed Action Alternative (see Section 2.1.1.1).

Operational impacts and controls associated with population radiation exposure, socioeconomics, and waste generation for this alternative would be similar to those in the Proposed Action Alternative (see Section 4.1.2). However, maximizing safety and minimizing worker health risks from radiation exposure cannot be fully achieved when retrofitting CFA-617. Therefore, worker exposure would be greater than that for the Proposed Action Alternative, but less than the current exposure of 350 mrem/year (see Section 4.6).

4.3 Renovation and Expansion of CFA-633

Clearing, excavation, and drilling activities would disturb about 800 m^2 (8,600 ft^2) next to CFA-633. The area surrounding CFA-633 is highly disturbed and presently covered with gravel or asphalt. No impacts to biological organisms, including threatened and endangered species, or unique habitats are anticipated. Construction impacts and controls for cultural resources, soil disturbance, air emissions, and noise would be less than or similar to the Proposed Action Alternative (see Section 2.1.1.1). However, building CFA-633 is 50 years old and is considered historically significant according to the State Historic Preservation Officer (SHPO). Therefore, before initiating any modifications, the SHPO would be consulted for a determination regarding the significance of the impact to the potentially historic structure and recommended appropriate mitigative measures.

Operational impacts and controls associated with population radiation exposure, socioeconomics, and waste generation for this alternative are similar to those in the Proposed Action Alternative (see Section 4.1). However, maximizing safety and minimizing worker health risks from radiation exposure cannot be fully achieved when retrofitting CFA-633. Therefore, worker exposure would be greater than that for the Proposed Action Alternative, but less than the current exposure of 350 mrem/year (see Section 4.6).

4.4 Off-Site Vendor with a New On-Site Support Building

This alternative would disturb about 1,200 m^2 (13,000 ft^2) through clearing, excavation, and drilling activities to construct a smaller on-site support building. Construction impacts and controls would be less than those for the Proposed Action Alternative because of the smaller size of the support building. However, operational impacts are likely to be higher for this alternative than for the Proposed Action Alternative and possibly other on-site alternatives. Several factors support this conclusion. First, off-site vendors attach disclaimers to the health physics instruments they calibrate and repair that disavows them of any liability for the instrument's performance or calibration once it leaves their facility. The risk of using instruments that are not calibrated is not acceptable under 10 CFR 835. Therefore, the INEL would verify the instruments once they return to the site, thus resulting in one additional exposure to on-site health physics workers.

Second, the risk of lost or damaged instruments is greater during shipping, thus, requiring replacement of those instruments. Also, the risk of cross-contamination at off-site laboratories is higher, since laboratory technicians most likely handle instruments from several different sources. In addition, because of longer turnaround times, and instruments returned for recalibration, the INEL would need a larger inventory of instruments to ensure a sufficient number of instruments for on-site activities. These factors would add to worker exposure and operational cost. While these exposures and costs are not quantified, "process knowledge" is sufficient to suggest that operational impacts are greater off-site than on-site.

4.5 Off-site Vendor with Renovation and Expansion of CFA-617

Construction impacts and controls for this alternative would be similar to Alternative 2, Relocation to CFA-617 (see Section 4.2). Operational alternatives would be similar to Alternative 4, Off-site Vendor with a New On-site Support Structure (see Section 4.4).

4.6 No Action

No construction or land disturbance would occur with this alternative. Operations would remain the same as current processes at CFA-633. Operational impacts related to population radiation exposure would be the same as described for the Proposed Action Alternative (see Section 4.1). However, because of safety deficiencies and current laboratory layout, worker exposure would continue at about 350 mrem/year (this would be in addition to the region's background radiation level of 351 mrem/year (see Section 4.1.3). However, inadequate space and facility deficiencies would inhibit performance of essential HPIL functions. Continued use of the facility without correction of deficiencies would violate ANSI standards, and best management practices and pose unacceptable risk to personnel and equipment (Myers 1992b). In addition, the continued deterioration of the building, inadequate laboratory space, safety concerns, and other potential problems could impact the current or future operation of the laboratory's function and to the safety of personnel. Also, because of safety deficiencies, potential worker exposure to radiation would be greatest under this alternative.

Due to the expected frequent maintenance and repair of Building CFA-633, operations and programs dependent on maintenance and calibration of radiation instruments may encounter excessive and unscheduled disruption. CFA-633, without renovation and expansion, could not support expansion of maintenance and calibration functions, leading to programmatic impacts associated with longer turnaround time for maintenance and calibration activities.

4.7 Comparison of Alternatives

The impacts of the Proposed Action Alternative and other alternatives are given in Sections 4.1 through 4.6. Table 2 summarizes construction and operation impacts and controls, remaining impacts, and costs for all alternatives. Construction impacts would include temporary increases in air emissions, soil disturbance, and noise levels; potential impacts to cultural resources; and permanent loss of habitat, plants, and less mobile animals. The Proposed Action Alternative would disturb the largest amount of land. The other alternatives would disturb lesser amounts with no land disturbance associated with the No Action Alternative. Operational impacts would include air emissions, population and worker radiation exposure, and waste generation. Air emissions would be the same across all alternatives. Radiation exposure to the population surrounding the INEL would also be the same across all alternatives. Radiation worker exposure would be the smallest for the Proposed Action Alternative and the highest for the No Action alternative. Waste generation would be the same across all alternatives. All of the alternatives, except No Action, would improve the safety and process flow of maintenance and calibration activities.

"All of the alternatives, except no action, would improve the safety and process flow . . ."

Some impacts would remain even after construction and operation controls. Construction activities would result in increases in air emissions from construction vehicles, etc. Also, construction activities would result in increases in ambient noise levels. However, these impacts would be temporary for all alternatives and only during construction activities. Population radiation risks and worker radiation exposure would exist across all alternatives. However, difference in worker exposure levels would occur depending on the alternative (see Table 2). Population exposure would remain the same across all alternatives, including the off-site alternatives.

Construction (or capital) costs would be highest for the Proposed Action Alternative, followed closely by Alternative 2 (Relocation to CFA-617) and lowest for the No Action Alternative. Operation and maintenance costs would be the highest for the No Action Alternative and lowest for the Proposed Action Alternative (Table 2).

Table 2. Summary of Impacts, Controls, and Remaining Impacts for the Proposed and Other Alternatives.

Impacts and Controls	Alternative 1 (Proposed New Building)	Alternative 2 (Relocation to CFA-617)	Alternative 3 (Renovation & Expansion of CFA-633)	Alternative 4 (Off-site Vendor with Small On-Site Support Building	Alternative 5 (Off-site Vendor with CFA-617 as On-site Support Building	Alternative 6 (No Action)
Construction Impacts						
Permanently Disturbed Area	4,740 m^2 land permanently disturbed from constructing new building	1,000 m^2 land permanently disturbed from expansion of CFA-617	800 m^2 permanently disturbed from expansion of CFA-633	1,208 m^2 land permanently disturbed from constructing new smaller support structure	Similar to Alternative No. 2	None
Emissions	Temporary increase in construction vehicle exhaust	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	None
Soil Disturbance	Temporary disturbance of soil and increase in fugitive dust	Same as Alternative No. 1, except less because of smaller area	Same as Alternative No. 1, except less because of smaller area	Same as Alternative No. 1, except less because of smaller area	Same as Alternative No. 1, except less because of smaller area	None
Noise	Temporary increase in ambient noise	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	None, no large scale construction anticipated	None
Archaeological	Disturbance of cultural resources not anticipated	Same as Alternative No. 1	Potential impact to Historic Structure[a]	Same as Alternative No. 1	None, no disturbance anticipated	None
Biological Resources	Loss of small mammals, insects, native plants, and other less mobile organisms in the disturbed area (4,740 m^2)	None	None	Loss of small mammals, insects, native plants, and other less mobile organisms in the disturbed area (1,208 m^2)	None	None
Threatened and Endangered species	None, No T&E species commonly use the disturbed area	None	None	Same as Alternative No. 1	None	None
Constructions Controls						
Soil Disturbance	Stormwater and erosion controls and water spray or soil fixative for dust control	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	None
Noise	Hearing protection if noise levels exceed 85 dB	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	None

Table 2. Continued.

Impacts and Controls	Alternative 1 (Proposed New Building)	Alternative 2 (Relocation to CFA-617)	Alternative 3 (Renovation & Expansion of CFA-633)	Alternative 4 (Off-site Vendor with Small On-Site Support Building	Alternative 5 (Off-site Vendor with CFA-617 as On-site Support Building	Alternative 6 (No Action)
Construction Controls (continued)						
Archaeological	If bones, obsidian flakes, darkly stained soil, etc. encountered construction activities would cease	Same as Alternative No. 1	Contact State Historical Preservation Officer for appropriate mitigation measures[a]	Same as Alternative No. 1	Same as Alternative No. 1	None
Biological Resources	Revegetation of remaining disturbed area with native vegetation	None	None	Same as Alternative No. 1	None	None
Operational Impacts						
Population Radiation Exposure	-1.5×10^{-11} mrem/year EDE to MEI -Life time cancer risk of 8×10^{-17} -Cancer risk translates into less then 3.0×10^{-10} additional cancers	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1
Worker Radiation Exposure	0.2 mrem/year, with sum of radiation dose potentially received by all workers at HPIL would not exceed 1.0 rem/year	Greater than Alternative No. 1	Greater than Alternative No. 1	Greater than Alternative No. 1	Greater than Alternative No. 1	350 mrem/year
Radioactive Waste Generation	<0.5 L	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1
Hazardous Waste Generation	<115 L	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1
Solid & Other Waste Generation	<473 L	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1

Table 2. Continued.

Impacts and Controls	Alternative 1 (Proposed New Building)	Alternative 2 (Relocation to CFA-617)	Alternative 3 (Renovation & Expansion of CFA-633)	Alternative 4 (Off-site Vendor with Small On-Site Support Building	Alternative 5 (Off-site Vendor with CFA-617 as On-site Support Building	Alternative 6 (No Action)
Operational Impacts (continued)						
Effluent	None	None	None	None	None	None
Operational Controls						
Radiation and Chemical Exposure	ALARA, controlled access, better lab design, improved environmental controls	Same as Alternative No. 1, however, some compromises likely due to lab design because retrofitting existing building	Same as Alternative No. 1, however, some compromises likely due to lab design because retrofitting existing building	Same as Alternative No. 1, however, workers are exposed three, instead of two times	Same as Alternative No. 1, however, workers are exposed three, instead of two times	Same as Alternative No. 1, however, some compromises to lab design because of existing lab design
Waste Minimization	100 L by recycling[b]	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1
Impacts Remaining After Controls						
Emissions	Temporary increase in construction vehicle exhaust	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	None
Noise	Temporary increase in ambient noise	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1	None
Population Radiation Exposure	-1.5×10^{-11} mrem/year EDE to MEI -Life time cancer risk of 8×10^{-17} to MEI -Cancer risk translates into less than 3.0×10^{-10} additional cancers	Same as Alternative No. 1	Same as Alternative No. 1	Same as Alternative No. 1[c]	Same as Alternative No. 1[c]	Same as Alternative No. 1
Worker Radiation Exposure	0.2 rem/year, with sum of radiation dose potentially received by all workers at HPIL would not exceed 1.0 rem/year[d]	Greater than Alternative No. 1[e]	Greater than Alternative No. 1[e]	Greater than Alternative No. 1[f]	Greater than Alternative No. 1[g]	Greater than Alternative No. 1[h]

Table 2. Continued.

Impacts and Controls	Alternative 1 (Proposed New Building)	Alternative 2 (Relocation to CFA-617)	Alternative 3 (Renovation & Expansion of CFA-633)	Alternative 4 (Off-site Vendor with Small On-Site Support Building	Alternative 5 (Off-site Vendor with CFA-617 as On-site Support Building	Alternative 6 (No Action)
Costs						
Capital	$14.3 million	$14.0 million	$12.4 million	$9.3 million	$11.5 million[l]	None
Operational[j]	$2.6 million	$2.6 million	$2.6 million	$4.2 million	$4.2 million	$3.3 million[k]
Maintenance	$101 thousand	$157 thousand	$101 thousand	$63 thousand	$79 thousand	$167 thousand
Decontamination	None	$825 thousand[l]	None	None	$825 thousand[l]	None

a Building CFA-633 is over 50 years old and is considered historically significant.
b Includes recyclable items (e.g., Nickel-Cadmium batteries, Resource Conservation and Recovery Act scrap metal).
c If necessary, instruments are cleaned on-site. This is true even if shipped off-site for repair and calibration, therefore radiation exposure to the public remains the same as Alternative No. 1.
d All exposure would remain below these Administrative limits.
e Worker exposure would remain below the Administrative limits no matter where performed on-site, however, worker exposure will likely be greater than Alternative No. 1 because of design compromises forced by fitting the process into an existing structure.
f On-site exposure would be within Administrative limits, and similar to Alternative No. 1. Off-site facilities are not required to meet DOE's & LITCO's Administrative limits, therefore worker exposure may be greater than Alternative No. 1.
g On-site exposure would be within Administrative limits, however, worker exposure will likely be greater than Alternative No. 1 because of design compromises forced by fitting the process into an existing structure. Off-site facilities are not required to meet DOE's & LITCO's Administrative limits, therefore worker exposure may be greater than Alternative No. 1.
h. Greater than Alternative No. 1 because of poor laboratory design.
i Based on Alternative 2 capital costs and adjusted for smaller size.
j Annual maintenance and operating costs were calculated from information in the HPIL Design Report (Ball 1994) and current maintenance and operating costs standards.
k Operating costs do not include programmatic impacts due to eventual loss of services from building degradation to DOE and non-DOE agencies.
l Cost of decontamination to meet requirements for instrument calibration and verification.

5. PERMIT AND REGULATORY REQUIREMENTS

5.1 Permit Requirements

The State of Idaho Division of Environmental Quality (DEQ), *Rules and Regulations for the Control of Pollution in Idaho Manual*, Title 1, Chapter 1, requires a Permit-to-Construct (PTC) for any facility with the potential to release radionuclides. The permitting process also addresses other pollutants and ensures ambient air quality is protected through Prevention of Significant Deterioration review. An application for a PTC addressing atmospheric emissions of radionuclides and other pollutants would be submitted to DEQ.

Before construction of the HPIL replacement building, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared in accordance with the INEL SWPPP (DOE 1993) and the regulations for "National Pollution Discharge Elimination System General Permit for Stormwater Discharge Associated with Construction Sites" (57 FR 44412). The SWPPP would address the prevention of erosion products and sediment from leaving the site during construction.

5.2 Regulatory Requirements

The HPIL facility would continue to operate under the following regulatory requirements and INEL policy and procedures. Radiological emissions from DOE facilities are regulated under 40 CFR 61, Subpart H, entitled "National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities."

RCRA (40 USC §6901 *et seq.*, as amended; 40 CFR Part 260-266, 268, and 270) applies to management of hazardous and mixed wastes (those wastes identified in 40 CFR Part 261). The State of Idaho has authority for hazardous waste management (40 CFR Part 272 Subpart N), pursuant to the Idaho Hazardous Waste Management Act, Idaho Code §39-4401 *eq seq.* (Idaho Administrative Procedures Act 16.01.05000 *et seq.*). Hazardous wastes generated at HPIL would be managed in accordance with the requirements of these laws.

National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61, Subpart M) and OSHA requirements for removal procedures (29 CFR 1926.58) apply to asbestos removal. For large asbestos removal jobs, the Environmental Protection Agency must be notified at least 10 working days before starting the removal job (40 CFR Part 61.145).

Endangered and *threatened* species are defined in Section 7 of 50 CFR 424.02. DOE is required to review as guidance the most current U.S. Fish and Wildlife Service list for threatened and endangered species. If after reviewing the list DOE determines a proposed action would not impact any threatened or endangered species, DOE may determine or document that formal consultation with the U.S. Fish and Wildlife Service is not required for this action. DOE has determined that a biological assessment would not be required for the proposed or alternative actions.

Section 106 of the National Historic Preservation Act of 1966, as amended, requires agencies to consider the impact of activities on properties listed or eligible for listing in the National Register of Historic Places. Section 110 directs federal agencies to establish programs to find, evaluate, and nominate eligible properties to the National Register of Historic Places, including previously unidentified historic properties that may be discovered during the implementation of a project (36 CFR Part 800). Locations of proposed activities must also be evaluated for resources protected by the American Indian Religious Freedom Act of 1978 and the Archaeological Resources Protection Act of 1979, as amended. No cultural resources have been identified at the proposed construction site. However, CFA-633 may have historic significance due to the age of the structure and its relationship with the U.S. Navy during World War II.

Pursuant to the policy goals found in NEPA Section 101 and the procedural requirements found in NEPA Section 102 and in the CEQ regulations, the federal departments and agencies should take every opportunity to include pollution prevention considerations in the early planning and decision making processes for their actions, and, where appropriate, should document those considerations in any EISs or EAs prepared for those actions. DOE's Waste Reduction Policy Statement, issued June 27, 1990, states that "waste reduction will be a prime consideration in research activities, process design, facility upgrade or modernization, new facility design, facility operations, and facility decontamination and decommissioning." DOE's Policy on Waste Minimization and Pollution Prevention (August 20, 1992) uses a similar approach. The HPIL currently has a waste minimization plan authorized by INEL's Pollution Prevention Unit. Since 1990, waste streams at HPIL have been reduced about 90 percent.

6. COORDINATION AND CONSULTATION

This Environmental Assessment was provided to the State of Idaho and the Shoshone-Bannock Tribe and public for review. Contacts with State and Federal agencies were as follows:

Clearance / Permit	Lead Agency	Contact
Species list	U. S. Fish and Wildlife Service	C. H. Lobdell[i]

[i] Letter from Charles H. Lobdell, State Supervisor, U. S. Department of Interior, Fish and Wildlife Service, to Dr. Tim Reynolds, Ph.D., DOE Radiological and Sciences Laboratory, "INEL Species List Update," January 1994.

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8. REFERENCES

Balls, V. J., 1993a, "Use of CFA 617 Laundry Facility for HPIL," In: Appendix J of reference Balls, 1994.

Balls, V. J., 1993b, "HPIL Construction Justification Study," In: Appendix J of reference Balls, 1994.

Balls, V. J., 1994, "CFA Health Physics Instrument Laboratory (HPIL)", AE Conceptual Design Report, 020565-CDR, Revision 2, March 4, 1994.

Bowman, A. L., W. F. Downs, K. S. Moor, and B. F. Russell, 1984, *INEL Site Characterization*, EGG-NPR-6688.

Clawson, K. L., G. E. Start, and N. R. Ricks, 1989, *Climatography of the Idaho National Engineering Laboratory*, 2nd Edition, IDO-12118, U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, Environmental Research Laboratory, Field Research Division.

DOE, 1993, *INEL Stormwater Pollution Prevention Plan for Construction Activities*, DOE/ID-10425, February 1993.

DOE, 1995, *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*, DOE/EIS-0203-F, April 1995.

Henry, R. N., et al., 1981, *Final Safety Analysis Report, New Waste Calcining Facility*, Allied Chemical Corporation, pp. 2.1-1 to 2.1-3.

Irving, J. S., 1993, *Environmental Resource Document for the Idaho National Engineering Laboratory*, Volumes 1 and 2, EGG-WMO-10279.

Koslow, K. N., and D. H. Van Haaften, 1986, *Flood Routing Analysis for a Failure of Mackay Dam*, EGG-EP-7184.

Moseley, R., and C. Groves, 1992, *Rare, Threatened and Endangered Plants and Animals of Idaho, 2nd Edition*, Conservation Data Center, Nongame and Endangered Wildlife Program, Idaho Department of Fish and Game.

Myers, W. R., 1991a, "CFA Health Physics Instrument Laboratory Siting Study." EG&G Idaho, Inc., Engineering Design File, HPIL-WRM-01, December 15, 1991.

Myers, W. R., 1991b, "CFA-633 Health Physics Instrumentation Laboratory Existing Facility Study 5.1.2," HPIL-WRM-02, December 20, 1991.

Reed, W. G., R. N. Holmer, B. L. Ringe, and J. W. Ross, 1987, *Archaeological Investigations on the Idaho National Engineering Laboratory: 1984-1985*, Idaho State University, Swanson/Crabtree Anthropological Research Laboratory Reports of Investigation, 87-1.

U.S. Department of Commerce, Bureau of Census, 1990, *Census of Population and Housing, 1990, Public Law 94-171 Data on CD-ROM Technical Documentation (prepared 1991)*.

U.S. Fish and Wildlife Service, 1993, *INEL Species List Update*, SP# 1-4-93-SP-362/ updates 1-4-93-SP-84/File # 506.0000.

APPENDIX A

Responses to Public Comments

In accordance with the U. S. Department of Energy, Idaho Operations Office policy, the draft Environmental Assessment for the Replacement of the Idaho National Engineering Laboratory Health Physics Instrumentation Laboratory was provided to the State of Idaho and Shoshone-Bannock Tribes for their review on January 22, 1995. In addition the draft EA and/or a fact sheet was distributed to federal, state, and local government officials, regional newspapers, public libraries, INEL regional outreach offices, and interested stakeholders on January 22, 1995, for a 30-day public review and comment period.

Comments were received from the State of Idaho, U. S. Department of Commerce, and a private individual. This appendix contains our responses to those comments..

Comments are designated as "General" or "Specific."

Idaho Department of Health and Welfare, INEL Oversight Program:

General Comment: The description of alternatives does not present similar information in a way that would provide a meaningful comparison.

Response: The Description of Alternative's section has been rewritten to be consistent across alternatives. In addition, a matrix (Table 2) showing construction and operation impacts, their controls, and remaining impacts was added to Section 2 of the EA.

General Comment: The description of alternatives should identify standard development practices that will be taken to control impacts.

Response: For the construction contract the "guidelines and contractual obligations for environmental assessment construction impacts" and "construction controls" are placed upon the subcontractor by the subcontract standard documents in the general conditions and general provisions. The following areas will be covered under this contract for the proposed action and all alternatives: a) emissions, b) soil disturbance, c) noise, and d) archaeological. The HPIL EA has been revised to include these standard practices in one location in the EA (see Section 2).

Specific Comment (Section 2): NEPA does not require the evaluation of unreasonable alternatives. Alternatives 2, 4, and 5 all include aspects that could make them unreasonable. The EA needs to address this issue and explain why they are reasonable or how they can be made reasonable. Otherwise, the alternatives should be rejected.

Response: All the alternatives discussed in the EA are reasonable. There are factors that may contribute to them not being the preferred or proposed alternative. However, these factors do not preclude their evaluation as alternatives in the EA. The EA has been revised to clarify this point.

Specific Comment (Section 2): Exploratory work should be done to substantiate the facts about the suitability of CFA-617 for radioactive source wells.

Response: Basalt (or lava rock) outcrops and subsurface formations are part of the INEL's geologic features. When building on the INEL, it is assumed that subsurface formations of lava rock will be encountered. The normal practice of building in these formations includes drilling and blasting. Since blasting too close to an existing building may damage the integrity of the building, construction of the radiation source wells would require drilling with alternatives involving CFA-617.

Specific Comment (Section 2): If alternatives 4 and 5 include measures that would verify the calibration of instruments, then the risk is eliminated and the EA should not conclude that such a risk exists.

Response: We agree that no risk exists since all instruments would be verified before use on-site. The EA has been revised accordingly (see Section 2.4 and 2.5).

Specific Comment (Section 2): With DOE's rules regarding waste minimization, it is important that the EA focus more carefully on this issue. A comparative analysis of relative waste streams should be provided for each alternative.

Response: The EA has been revised to include a discussion on waste streams and comparison between alternatives (see Section 2 and Table 2).

Specific Comment (Section 5): . . . Section 5 of the EA (Permit and Regulatory Requirements), could be expanded to include a discussion about compliance with DOE's Policy on Waste Minimization and Pollution Prevention (August 20, 1992), which expresses DOE's commitment to "the inclusion of cost-effective waste minimization and pollution prevention in all of its activities . . .

Response: Section 5 of the EA has been revised to include a discussion of DOE's Policy on Waste Minimization and Pollution Prevention.

General Comment: The current EA is neither concise nor to the point.

Response: Where necessary, the EA has been revised to provide a more concise description of alternatives and impacts.

Specific Comment (Section 2): Building a new HPIL will be more expensive than the alternatives. There is little else to differentiate this proposed action from its alternative. Why is this action preferred?

Response: While building a new HPIL facility is the most expensive alternative, it would result in the least radiation exposure to workers and the most suitable environment for instrument calibration. Also, buildings CFA-617 and CFA-633 are near electromagnetic fields and radiological waste shipment routes. This reduces their suitability for instrument calibration activities because of additional uncontrolled radiation sources. Also, since the draft EA, the cost of renovating CFA-633 was more closely evaluated, and as a result increased to $12.4K instead of $5.2K.

Specific Comment (p. 6, 2nd Col., last ¶): Explain why lava rock located under Building CFA-617 may interfere with construction of radiation source wells?

Response: Basalt (or lava rock) outcrops and subsurface formations are part of the INEL's geologic features. When building on the INEL, it is assumed that subsurface formations of lava rock will been encountered. The normal practice of building in these formations includes drilling and blasting. Since blasting too close to an existing building may damage the integrity of the building, construction of the source would require drilling. Drilling adds to the construction costs.

Specific Comment (p. 7, 1st col., 1st. ¶): What kind of environmental controls?

Response: Building CFA-617 lacks the equipment to control the building's environment for calibration and repair of instruments. Environmental controls required for calibration facilities of health physics instruments include those found in ANSI N323-1978 (e.g., control of temperature, pressure, and humidity). In addition, controlling dust is important. The lack of these environmental controls in the existing facility has caused difficulty in the calibration and repair of health physics instruments.

Specific Comment (p. 7, 1st col., 3rd ¶ & p. 8, 1st col., 1st ¶): CFA-617 will have to be decontaminated whether or not a HPIL is built. Therefore, the cost of decontamination activities related to CFA-617 should be included in all the alternatives, or not included at all.

Response: The decontamination costs discussed for CFA-617 are not associated with dismantlement of the building. These costs refer to the decontamination that must be done for CFA-617 to be suitable for HPIL functions. However, CFA-617 could be used for other functions (e.g., storage) without major decontamination. Therefore, it is justified to add the cost of decontamination to Alternatives 2 and 5.

Specific Comment (p. 7, 1st col., 3rd ¶ & p. 8, 1st col., 1st ¶): . . . does this cost estimate, as well as others provided in the EA, include the cost of waste treatment and disposal?

Response: Disposal of construction waste and debris are included in the capital costs of each alternative. The treatment of waste streams from day to day functions are included in the operation costs.

Specific Comment (p. 7, 2nd col., 3rd & 5th ¶): It is misleading to conclude that operation impacts would be less than the proposed alternative since maintenance and calibration functions would take place off-site. Operation impacts will be a possibility whether they occur on-site or off-site.

Responses: Operational impacts are likely to be higher for off-site alternatives (Alternatives 4 and 5) than for the proposed action. Several factors support this conclusion. First, off-site vendors attach disclaimers to the health physics instruments they calibrate and repair that disavows them of any liability for the instruments performance or calibration once it leaves their facility. The risk of using instruments that are not calibrated is not acceptable under 10 CFR 835. Therefore, the INEL would need to verify the instruments once they return to the site, thus resulting in additional exposure to health physics workers doing the verifications. This is one additional exposure than if the instruments were calibrated and repaired on-site. Second, the risk of lost or damaged instruments is greater during shipping, thus, requiring replacement of those instruments, at the rate of $1500.00/instrument. Also, the risk of cross-contamination at off-site laboratories is higher, since laboratory technicians likely handle instruments from several different sources. These factors may add up to additional operational impacts to workers and costs. While these exposures and costs are not quantified, "process knowledge" is sufficient to suggest that operational impacts are greater off-site than on-site. Section 2.4 and 2.5 have been revised to clarify these differences.

Specific Comment (p. 9, 1st col., 1st ¶): Are the operation costs the same for all alternatives?

Response: Operational costs are not the same for the proposed action and each alternative. See the individual descriptions in Section 2 and Table 2.

Specific Comment (p. 13, 2nd col., 2nd ¶): Is the reported worker dose of 0.32 mrem an annual estimate?

Response: The EA was revised to show that a worker dose of 0.32 mrem is an annual dose as described in the SNF and INEL ER&WM EIS.

Specific Comment (p. 15, 1st col., 4th ¶): The EA must address potential impacts to the groundwater if two radioactive source wells are excavated. If there will be no groundwater or water intrusion into the wells then this must be stated. It would be appropriate to describe the source wells in more detail in the description of alternatives.

Response: The depth of groundwater at the sites proposed for on-site alternatives is below the 34 feet needed for the radioactive source wells. Therefore, drilling or blasting the holes for these wells is not expected to affect groundwater. However, the two wells would be designed to preclude contact with any subsurface water. The design consists of sealed sources in sealed stainless steel tubes encased in reinforced concrete to maintain source well integrity. This type of construction would prevent contact with incidental water from surface drainage.

Specific Comment (p. 16, 2nd col., 2nd ¶): Do not draw conclusions as to radiation impacts. Such conclusions should be reserved for the FONSI, if the decision-makers believe there will be no significant impact.

Response: This paragraph provides quantitative exposure data for the descision-maker. In addition, the paragraph provides interpretative statements that will help decision-makers in determining which alternative to select and whether or not a Finding of No Significant Impact should be issued.

Specific Comment (p. 17, 2nd col., 3rd ¶, last sent.): Alternative 5 should be Alternative 4.

Response: Done, the HPIL EA has been revised.

U. S. Department of Commerce:

General Comment: What relative improvements are expected in potential exposure, and will those improvements result in credible accomplishments and meaningful differences?

Response: Worker radiation exposure levels are projected to decrease to less than one-half of the current annual exposure. Reductions would occur through enhanced design and addition of shielding around radioactive calibration sources in the new facility. The current facility was not designed for calibrations with radioactive sources, and exposures in fiscal year 1995 are estimated at 350 mrem. Worker exposure goals in the new facility should be less than 150 mrem. Neutron radiation exposures make up a large portion of worker exposure in the existing facility. Neutron exposures, in the new facility, will be almost nonexistent by putting the neutron source underground and using technology that is not possible in the current facility to do the calibrations.

Walt Hampton (private individual):

General Comment: Why is existing facility inadequate

Response: The existing facility has been modified over the years to accommodate many uses. As a result, the laboratories are small and poorly laid out. This poor layout makes it difficult to reduce worker exposure to radiation (see Section 1, Purpose and Need for Action). Also, the condition of the building continues to cause performance and safety concern (see Section 2.6, No Action).

General Comment: Why not expand the present one?

Response: The present facility is over 50 years old and in poor condition. Renovation and expansion of CFA-633 is discussed as an alternative in Section 2.3.

General Comment: What safety standards cannot be met in existing or modified facility?

Response: Building CFA-633 (existing building) has had many inspections, audits, and analysis done to keep inhabitants aware of its condition and noncompliance to several codes. These visits have found the existing structure not in compliance with:

- 29 CFR 1910.1001, Asbestos Standard
- 29 CFR 1910.94, Ventilation Standard
- 29 CFR 1910.141, Sanitation Standard
- 29 CFR 1910.159, Fire Protection (Sprinkling Systems)
- 29 CFR 1910.164, Fire Protection (Detection Systems)
- 29 CFR 1910.302 through .307, Electrical Compliance
- 29 CFR 1910.1025, Air Contamination
- 29 CFR 1910.212, Air Quality
- 29 CFR 1910.106, Radiant Heat
- 29 CFR 1910.212, Fan Guarding
- 29 CFR 1910.213, Building Equipment and Light Guarding
- 29 CFR 1910.23, Floor and Wall Openings
- PL-91-596, Williams-Steiger Occupational Safety and Health Act
- ANSI 43.2, General Safety Standard for Installations Using Non Medical X-Ray and Sealed Gamma Ray Sources
- ANSI 43.7, Radiological Safety Standard for the Design of Radiographic and Fluoroscopic X-Ray Equipment
- ANSI 323, Radiation Protection Instrumentation Test and Calibration, General Requirements and Portable Survey Instruments