AREVA

April 18, 2008
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U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Jeannette Arce
Mail Stop T-2F1
Washington, D.C. 20555

Dear Ms. Arce:

Subject: **Response to Request for Additional Information (RAI) Regarding the Environmental Assessment for AREVA NP Inc. Richland Fuel Fabrication Facility License Renewal; License No. SNM-1227, Docket No. 70-1257 (TAC No. L31975)**

Reference: Letter, George F. Suber to Robert E. Link, "Request for Additional Information Regarding the Environmental Assessment for AREVA NP Inc. Richland Fuel Fabrication Facility Materials License SNM-1227 Renewal (TAC No. L31975); March 4, 2008.

Attached please find AREVA NP Inc.'s responses to questions conveyed by the referenced RAI letter, received by AREVA on March 14, 2008. If you have questions, please feel free to contact me at 509-375-8409.

Very truly yours,

R. E. Link, Manager
Environmental, Health, Safety & Licensing

cc: MN Baker, USNRC

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bc: LJ Maas

ENVIRONMENTAL ASSESSMENT FOR THE RENEWAL OF U.S. NUCLEAR REGULATORY COMMISSION LICENSE NO. SNM-1227 FOR AREVA NP, INC. RICHLAND FUEL FABRICATION FACILITY

RAI 1

Provide a Description of Planned Developments in the Horn Rapids Triangle Area over the 40-Year Licensing Period

Although the license renewal application (ER) (AREVA NP Inc., 2006a) and the environmental report (AREVA NP Inc., 2006b) included a current description of the Horn Rapids Triangle area, recent history indicates that the Tri-Cities Metropolitan Statistical Area (MSA) has undergone consistent growth that may lead to potential impacts that have not been evaluated. Per NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with Nuclear Material Safety and Safeguards Programs, Section 6.3.1, an ER should describe land use around the facility for the duration of the licensing period, including future and proposed land-use plans and staged plans, which must go through phases of development, including those that are incomplete. Please provide a description of all reasonably foreseeable developments in the Horn Rapids area during the 40-year licensing period.

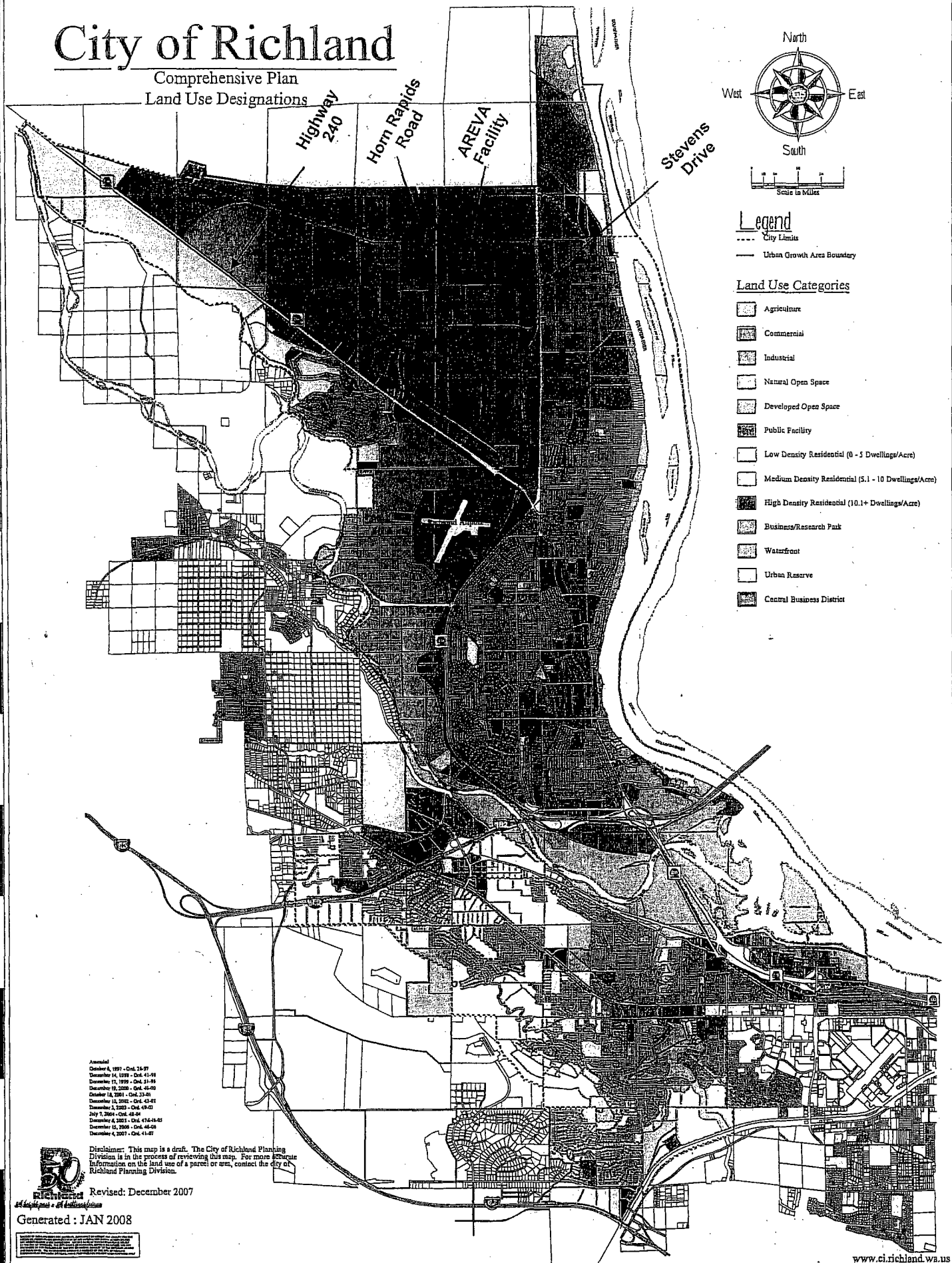
AREVA Response

As noted in Section 1.3.2 of AREVA's pending NRC license renewal application (October 24, 2006), the AREVA Richland facility is located within the Horn Rapids Industrial Park. On the City of Richland Comprehensive Plan Land Use Designations map provided below, the Horn Rapids Industrial Park is the triangular area bounded by Horn Rapids Road on the north, Stevens Drive on the east, and Highway 240 on the south. As noted on the map, the majority of the land within the industrial park, including the AREVA site and the land adjoining it, is designated for industrial usage. Per the City of Richland Comprehensive Land Use Plan (2007), the industrial category "includes a variety of light and heavy manufacturing, assembly, and warehousing and distribution uses. It also includes uses devoted to the sale of retail and wholesale products manufactured on-site, and a variety of research and development uses for science-related activities." Contact with the City of Richland Planning Department indicates that the area surrounding and including the AREVA facility is further designated heavy manufacturing. More significantly, the City indicates that within their official 20-year long-term planning horizon, there are no plans for any of the industrially-designated lands within the industrial park to be re-designated to any other designation. Furthermore, there is no expectation for any such changes beyond the 20-year time period, however this is the officially designated long-term planning horizon for comprehensive land use plans in the state of Washington.

Whereas the City of Richland map shows the industrially-designated area to extend north of Horn Rapids Road, this road actually constitutes the northern boundary of the Richland city limits. Land north of AREVA across Horn Rapids Road is part of the federally-owned U.S. Department of Energy Hanford nuclear reservation. Land use planning for the Hanford Site is in accordance with the 1999 Final Hanford Land-Use Plan Environmental Impact Statement (HCP EIS) prepared by the U.S. Department of

City of Richland

Comprehensive Plan
Land Use Designations



Amended
October 6, 1997 - Ord. 28-97
December 14, 1999 - Ord. 41-99
December 19, 1999 - Ord. 31-99
December 19, 2000 - Ord. 46-00
October 16, 2001 - Ord. 33-01
December 10, 2002 - Ord. 43-02
December 2, 2003 - Ord. 49-03
July 7, 2004 - Ord. 48-04
December 6, 2005 - Ord. 47A-05-05
December 19, 2006 - Ord. 46-06
December 4, 2007 - Ord. 41-07

Disclaimer: This map is a draft. The City of Richland Planning Division is in the process of reviewing this map. For more accurate information on the land use of a parcel or area, contact the city of Richland Planning Division.

Revised: December 2007

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Energy. Cooperating agencies included the U.S. Department of Interior; Benton, Franklin, and Grant Counties; and the City of Richland. Consulting tribal governments included the Nez Perce and the Confederated Tribes of the Umatilla Indian Reservation. The planning horizon for the HCP EIS is 50 years from 1999, or 2049.

The preferred U.S. DOE alternative under the HCP EIS designates a large portion of the reservation north of Horn Rapids Road as industrial usage, which is defined as "area suitable and desirable for activities such as reactor operations, rail, barge transport facilities, mining, manufacturing, food processing, assembly, warehouse, and distribution operations". Contact with the U.S. DOE indicates no plans on their part to relinquish management and control of reservation lands. It is noteworthy that alternatives Two, Three, and Four, written by the Nez Perce Tribe, local government planners from the surrounding counties and City of Richland, and the Confederated Tribes of the Umatilla Indian Reservation, respectively, all provide for industrial zones of varying sizes north of AREVA across Horn Rapids Road. Only Alternative One, written by the U.S. DOE with input from the U.S. Fish and Wildlife Service, designates this area as anything other than industrial, designating it, along with the vast majority of all reservation land, as "preservation". This would entail management for the preservation of archeological, cultural, ecological, and natural resources with limitations on new consumptive uses and public access.

The closest non-industrially-designated block of land with respect to the AREVA site is the land located approximately 0.8 miles east of AREVA across Stevens Drive and designated as Business/Research Park. Per the Richland Comprehensive Land Use Plan, this designation provides for "a variety of office and research and development facilities in a planned business park setting. Permitted uses include science-related research and development and testing facilities; administrative offices for these uses; and other general office uses." This is consistent with the current usage of this land. The most significant of the facilities currently in this area are those of the Pacific Northwest National Laboratory (PNNL) operated by Battelle. Battelle/PNNL is increasing its long term commitment to this location via the current construction of major facilities north and south of Horn Rapids Road.

In summary, the AREVA facility is located within a heavy manufacturing-designated land use area, surrounded on all sides by other industrially-designated properties. Major pertinent planning agencies (U.S. DOE, City of Richland, Benton County) call for long-term maintenance of the current land use designation. Placement of facilities or initiation of land uses incompatible with the AREVA facility in the direct vicinity of the AREVA plant would not be anticipated.

RAI 2

Identify the Types and Levels of Non-radiological Air Emissions and Compare to Regulatory Limits

Air effluents are regulated under an order administered by the Benton Clean Air Authority. The ER (AREVA NP Inc., 2006b) states that the plant has consistently complied with all aspects of the order since its inception in 1995; however, no supporting data is present. The order requires stack emission tests and imposes limits on the annual process throughputs of uranium and the amount of nitrogen oxides emitted. Please provide the following:

(1) Emission levels (over the past 5 years at a minimum) for relevant National Ambient Air Quality Standard Pollutants and National Emissions Standards for Hazardous Air Pollutants for comparison to regulatory limits.

(2) Historical throughput production levels (over the past 5 years at a minimum).

(3) The associated throughput production level limits prescribed in the order.

AREVA Response

The purpose of Benton Clean Air Authority Order 95-05 is to impose operational and emission limitations such that the annual oxides of nitrogen (NO_x) emissions from AREVA's Richland facility will be less than 100 tons per year, the level at which a Title V Federal Air Operating Permit would be required. To accomplish this, the Order imposes throughput limitations on the plant's nitric acid-based uranium dissolvers and an effluent NO_x emission limit per unit mass of uranium dissolved. Records of dissolver uranium throughput are required to be maintained on a 12 month rolling sum basis; compliance with the NO_x emission limit must be verified via annual stack emission tests during normal dissolver operations.

(1) NO_x emissions from the three dissolver systems over the last five years (2003-2007) as compared to BCAA Order 95-05 limits are as follows:

Year	Lb. NO_x/kg UO_2 Dissolved			Total Combined NO_x Emissions, Tons
	UO_2 Pellet	UO_2 Powder	ELO GSUR	
2003	0.065	0.033	0.098	1.13
2004	0.100	0.049	0.16	3.24
2005	0.080	0.058	0.043	5.37
2006	0.103	0.037	0.105	3.80
2007	0.092	0.058	0.090	4.71
Order 95-05 Limit	0.36			100

(2) Uranium throughputs for the three dissolver systems over the last five years (2003-2007) as compared to BCAA Order 95-05 limits are as follows:

Year	UO_2 Throughput, Max. 12-Month Rolling Sum, kgs	
	UO_2 Pellet + UO_2 Powder	ELO GSUR
2003	38,826	12,804
2004	72,406	6,559
2005	134,824	19,561
2006	141,015	22,716
2007	109,191	18,970
Order 95-05 Limit	400,000	90,000

(3) Production throughput limits for the dissolver systems as imposed by Order 95-05 are provided in (2) above.

RAI 3

Provide information on Seismic Activity in the Area 16 km [10 mi] Along the Columbia River North of Horn Rapids Road

Per NUREG-1748, Section 6.3.3, the ER should provide an analysis and evaluation of the local and regional seismicity data or any information that may indicate a geologic hazard at the site. Please provide information on seismic activity in the area 16 km [10 mi] along the Columbia River north of Horn Rapids road.

AREVA Response

A discussion of seismic risk/earthquake history for the AREVA site was provided in Chapter 1, Section 1.3.5 of AREVA's pending renewal application (10/24/06) for License SNM-1227. That information was derived primarily from studies of the U.S. Department of Energy Hanford Site located immediately adjacent to, and north of, the AREVA site. Additional investigation for information specific to the area within ten miles to the north of the AREVA site along the Columbia River corridor yielded the following information:

- Figure 4.3-7 from Document PNNL-6415, Rev. 17, Hanford Site National Environmental Policy Act (NEPA) Characterization (September 2005), showed no earthquakes within this corridor, or on the Hanford Site in general, between the years 1890-1970 with a Modified Mercalli Intensity V or larger and/or a magnitude 4 or larger. Note that this data pre-dates the installation of a comprehensive network of seismic stations that could provide accurate locating information for earthquakes in Eastern Washington. Such a network capable of providing accurate location information for most earthquakes of magnitude greater than 2.5 was not installed in Eastern Washington until 1969.

- Figure 4.3-8 from the same PNNL (Battelle) document depicts earthquake activity in the Columbia Basin and surrounding areas as measured by seismographs. All earthquakes between 1970 and 2005 with Richter magnitudes of 3 or larger are shown. The figure indicates that for the 35 year period, a single earthquake in the 3.0-3.9 Richter range occurred on or near the Columbia River north of Richland in the vicinity of the AREVA plant.

- Lastly, a 1996 study conducted by Geomatrix on behalf of the Westinghouse Hanford Company (Probabilistic Seismic Hazard Analysis DOE Hanford Site, Washington; WHC-SO-W236A-TI-002, Rev. 1) provides seismic hazard results for horizontal motions at particular Hanford Site locations. Table 5-1 for the 300 Area, located on the Columbia River approximately three miles north of the AREVA site, is reproduced below.

Seismic Hazard Results for Horizontal Motions at the Individual Sites
300 Area
Peak or 5%-damped Spectral Acceleration (g) for Return Period (yrs.) of:

Period	100	500	1,000	2,000	5,000	10,000
0.03	0.043	0.109	0.153	0.206	0.293	0.370
0.08	0.051	0.159	0.219	0.317	0.464	0.567
0.10	0.062	0.180	0.260	0.368	0.538	0.690
0.20	0.081	0.226	0.332	0.460	0.676	0.875
0.30	0.081	0.219	0.318	0.438	0.640	0.823
0.50	0.071	0.182	0.251	0.347	0.503	0.652
1.00	0.037	0.110	0.168	0.225	0.334	0.427
2.00	0.017	0.063	0.088	0.114	0.178	0.224
4.00	0.006	0.020	0.031	0.044	0.065	0.086

RAI 4

Provide information on Geothermal Activity in the Region Surrounding AREVA NP

Per NUREG-1748, Section 6.3.3, the ER should provide an analysis and evaluation of the local and regional volcanism or any information that may indicate a geologic hazard at the site. Please provide information on geothermal activity in the affected area around the AREVA NP site.

AREVA Response

Information on volcanic eruption history relevant to the AREVA site was provided in Section 1.3.5, Geology, of Chapter 1 of AREVA's pending license renewal application (10/24/06) for License SNM-1227. Most notable was the minor ash fall associated with the 1980 eruption of Mt. St. Helens.

According to the Final Environmental Impact Statement for the Tank Waste Remediation System at the adjacent U.S. Department of Energy Hanford Site, two types of volcanic activity have impacted the Pasco Basin (in which the AREVA site is located) in the past, i.e., basaltic flood volcanism and cascade-style diacitic volcanism to the west. The basaltic volcanism has been latent for the past eight million years and appears unlikely to resume because of changes in the plate tectonic regime of the region.

The cascade-style diacitic volcanism would be related to the Cascade Mountain Range, located more than 60 miles west of the AREVA Site. The eruption of Mt. St. Helens in 1980 was an example of such a volcanic event. Although a major eruption, impact to the AREVA Site was limited to ashfall. The Washington Department of Health, in its scoping comments relative to the EIS for the Northwest Compact Commercial Low-Level Radioactive Waste Disposal Site, also located on the Hanford Site, concludes that "known active and dormant volcanoes present a minor threat because of their distance from the facility". Once again, ashfall was the only postulated impact.

Based on both earthquake history and earthquake risk, AREVA does not consider geothermal activity to constitute a significant risk to its Richland facility.

RAI 5

Provide Information on Previous Historic and Cultural Resources Surveys or Consultations

Per NUREG-1748, Section 6.3.6, the ER should provide information on previous surveys or consultations related to historic and cultural resources. Please provide information on previous historic and cultural surveys that have been conducted for the AREVA NP site.

AREVA Response

A review was conducted of environmental reports pertaining to the AREVA site, including the original 1970 Applicant's Environmental Report filed by Jersey Nuclear, an Environmental Statement filed in 1974 for the Mixed Oxide (MO_x) Fabrication Plant by Exxon Nuclear, and 1994 and 2000 Supplements to Applicant's Environmental Report filed by Siemens. None of these reports indicated that an historic and/or cultural survey had been conducted for the specific plot of land on which the plant is built, however it stands to reason that the references/lists accessed by the authors would have identified any recognized historical/cultural resources of significance on the AREVA property. A summary of the historical/cultural information cited in the previously mentioned environmental reports follows.

- JN-14, Applicant's Environmental Report, Jersey Nuclear Company, September 1970. This original environmental report for the AREVA site notes an Indian fishing ground on the Yakima River about five miles west of the site; the 120 acre Arid Lands Ecology (ALE) Reserve starting approximately six miles west of the site and extending westward along the northern slope of Rattlesnake Mountain, maintained in near pristine condition on the Hanford Site; and the Hanford Reservation itself. The report concludes that the "Jersey Nuclear facilities will not impinge upon these or other historic areas."

- Environmental Statement Related to Operation of the Mixed Oxide Fabrication Plant, Exxon Nuclear Company, June 1974. This environment report supporting startup of the former Mixed Oxide Facility on the AREVA site notes the closest National Historical Place - the Whitman Mission located roughly 44 miles southeast of the site; the closest National Natural Landmark - the Ginkgo Petrified Forest located approximately 50 miles northwest of the site; two sites nominated by the State Advisory Council on Historical Preservation - Columbia Park Island approximately 8 miles southeast of the site and Sacagawea State Park located roughly 17 miles southeast of the site; archeological sites along the Snake River and along the west bank of the Columbia River from North Richland to beyond the Hanford 300 Area; the previously mentioned ALE Reserve; a 32,000 acre Fish and Wildlife Refuge in the northwest corner of the Hanford Reservation; and the Hanford Reservation itself. In closest proximity to the AREVA Site, the report notes pre-WWII homesteads in the Horn Rapids Triangle, then evidenced only by a few remaining scrub trees. Although left unstated, the implication is that these resources were not being adversely affected by site operations.

- Supplement to Applicant's Environmental Report, Siemens Power Corporation, July 1994 and October 2000, EMF-4, Rev. 4 and Rev. 5, respectively. Both

these reports indicate the lack of known significant cultural resource sites in the immediate vicinity of the SPC facility. The reports note archeological districts and sites along the Columbia River's Hanford Reach; the historically-designated Hanford B-reactor, and the Wamwasha Indian Cemetery overlooking the Yakima River within the Horn Rapids Triangle. Both reports contain a table listing the sites within Benton and Franklin Counties included in the National Register of Historic Places as of the date of the report.

RAI 6

Describe Any Noise Impacts on Workers and the Environment

Per NUREG-1748, Section 6.4.7, the ER should describe the noise impacts of AREVA NP operations. This could include predicted noise levels, major point and line sources, comparison to appropriate standards or guidelines, potential impacts to sensitive receptors, mitigation measures to reduce impacts of noise, and noise-related cumulative impacts. Please describe any studies that have been completed or any known noise impacts on workers and/or the environment.

AREVA Response

Work areas and work activities on the AREVA Richland site have historically been, and continue to be, well characterized with respect to noise levels. By common industrial standards, the Richland site's major operating facilities would not be considered noisy work environments, and areas with the highest steady state noise levels are in many cases not routinely occupied, e.g. mechanical/equipment rooms. Worker exposures are measured and managed in accordance with the applicable State of Washington Department of Labor and Industries hearing loss prevention (noise) regulation (WAC 296-817). This entails application of feasible controls for exposures exceeding 90 dBA as an 8-hour time weighted average (8-hr TWA) and imposition of a hearing conservation program for workers whose 8-hr TWA exposure exceeds 85 dBA. The hearing conservation program includes requirements for use of hearing protection, receipt of annual training, and annual audiograms. The hearing conservation program is conservatively applied by AREVA; in actuality very few workers receive 8-hr TWA exposures exceeding 85 dBA on anything but a sporadic basis.

Site activities do not impose significant environmental noise effects. Activities conducted inside the facilities are typically inaudible outside the facilities, with the major contributors to outdoor sound levels being HVAC equipment located external to the buildings. Plant fenceline sound levels are very low, with typical measured levels in the 40-55 dBA range. The plant fenceline is in all cases located at some distance from the plant property line, making the fenceline sound levels conservative with respect to impacts on adjacent properties.

In this regard it should be noted that AREVA's plant and the land of its adjacent neighbors are zoned industrial/heavy manufacturing. Under the Washington Department of Ecology's environmental noise regulation (Chapter 173-60 WAC), the impact of an Environmental Designation for Noise Abatement (EDNA) Class C (industrial/agricultural) facility on an EDNA Class C receptor shall not exceed 70 dBA. AREVA noise levels do not approach this criterion even at its fenceline, much less its property line. The Ecology regulation exempts a significant list of sounds from the receptor sound impact criterion,

most notably the sounds resulting from temporary construction activity, operation of motor vehicles off public highways, and operation of safety and protective devices.

In summary, occupational noise impacts at the AREVA Richland facility are extensively characterized and well controlled. Environmental noise impacts are not noteworthy. Significant increases in either area are not anticipated in out years.

RAI 7

Clarify the Short-Term and Long-Term Management of Low-Level Radioactive Waste

Per NUREG-1748, Section 6.4.13, the ER should describe the waste management system designed to collect, store, and dispose of all wastes. Clarification is needed for management of non-combustible low level radiological waste. Please clarify the long term plans (over the 40-year license renewal period) for managing non-combustible low level waste if shipping to a waste repository is not an option.

AREVA Response

AREVA has no expectation of losing access to either of its currently utilized low-level radioactive waste disposal sites (the Northwest Compact Site located at Hanford or the Energy Solutions Clive, Utah site). Under current operating conditions, the Hanford and Utah sites have predicted operating lifetimes of approximately 50 and 25 years respectively, without benefit of expansion.

In the event that both of these sites would reach their capacity prior to securing expanded capacity or prior to emergence of replacement LLRW disposal options, AREVA would investigate/undertake the following:

- increased decontamination efforts to allow for the possible free release of some materials and equipment currently sent for burial;
- increased volume reduction activities beyond those currently pursued;
- dismantlement of HEPA filters to allow incineration of wooden frames and on-site compaction of filter media; and
- increased long term storage of wastes, primarily in 93 ft^3 B-25 waste boxes.

The Richland site has more than adequate space within its currently fenced restricted area to accommodate all of the non-combustible LLRW that it would generate over the full 40 year re-licensing period. Additional storage pad area could be readily provided and, if deemed necessary, covered storage and enhanced inspection protocols would be considered to detect/prevent any unacceptable degree of container deterioration due to aging or prolonged exposure to the elements. The site already has in-place a waste tracking database that has proven highly effective in tracking the contents and locations of all its waste containers. This database would continue to be used to support day-to-day plant operations as well as to support decommissioning cost estimates.

RAI 8

Provide Historical Radiological Dose Exposure Data for Occupational Workers

Per NUREG-1748, Section 6.4.12.2.2, the ER should provide calculated dose to the workforce including all models, assumptions, and input data in order to determine compliance with 10 CFR Part 20. The ER should also include a summary of external radiation monitoring and airborne radiation monitoring programs.

AREVA Response

Internal doses are generally calculated from an airborne radioactivity measuring system. For monitored individuals, airborne concentrations [expressed in terms of Derived Air Concentration (DAC)] where a person worked are multiplied by stay times (in hours) and by the appropriate factor for respiratory protection, if respirators were utilized. DAC-hours are summed for each individual and the total is multiplied by 2.5 mrem/DAC-hr to determine the internal dose [Committed Effective Dose Equivalent (CEDE)] for an individual.

DAC is based upon ICRP 66 and ICRP 68. Airborne concentrations may be multiplied by correction factors which may be based upon sampling representativeness studies, bioassay studies, and particle size corrections. Respiratory protection factors are determined from 10 CFR 20.

In lieu of air sampling, internal doses may be calculated from bioassay results. Generally bioassay results are only used for evaluating incidents. IMBA-Uran software, which is based upon ICRP 66, is generally used for evaluations. An in-house program, also based upon ICRP 66, may be used.

Thermal luminescent dosimeters (TLDs) provide results for monitored individuals to determine their Deep Dose Equivalent (DDE) and Shallow Dose Equivalent (SDE). These TLDs are accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

Recorded CEDE and DDE are summed to derive Total Effective Dose Equivalent (TEDE). For personnel who require NRC form 5s to be completed, all applicable dose data are given.

Below is a table of maximum dosimetry results for the last five years, demonstrating that the maximally exposed individual workers in each exposure category remain well below NRC occupational dose limits (5 Rem in any one exposure category). For any year the maximum dose in each category may be for a different person than the other two categories.

Year	Maximum DDE (Rem)	Maximum CEDE (Rem)	Maximum TEDE (Rem)
2003	0.800	0.860	1.079
2004	0.491	1.235	1.596
2005	0.503	1.016	1.360
2006	0.427	1.593	1.741
2007	0.477	1.209	1.398

RAI 9

Provide Information on Occupational Injury and Fatality Rates and Summarize Health Effects Studies

Per NUREG-1748, Section 6.3.11, the ER should provide occupational worker injury rates and fatality rates and a summary of any health effect studies. Occupational health data for workers is not included in the ER (AREVA NP, 2006b). Please provide the following and note if the information is for the entire AREVA NP site or the NRC-regulated portion:

(1) Injury rates such as the total recordable incident rate

(2) Occupational fatality rates or fatalities.

(3) The existence and summary information or any health effects studies.

AREVA Response

The information provided below relative to injuries, fatalities, and health effects studies applies to the entire AREVA NP site, inclusive of NRC-regulated and non-NRC-regulated activities.

(1) Injury rates for the indicated years are as follows:

Year	OSHA Total Recordable Incident Rate 12-Month Trend*	OSHA Lost Time Incident Rate 12-Month Trend **
2007	2.57	1.28
2006	1.68	0.84
2005	2.39	1.75
2004	1.59	0.58
2003	2.64	1.56

* $$\frac{12-\text{Month Rolling Total Recordable Accident Count} \times 200{,}000}{12-\text{Month Man-Hours Rolling Total}}$$

** $$\frac{12-\text{Month Rolling Total Lost Time Accident Count} \times 200{,}000}{12-\text{Month Man-Hours Rolling Total}}$$

(2) There have been no work-related fatalities over the course of the AREVA site's operating history.

(3) There have been no formally commissioned health effects studies specific to the AREVA Richland operations. However since their inception, plant activities have been accompanied by a comprehensive radiation protection program and industrial hygiene surveillance activities. These programs have provided workplace environmental monitoring, bioassay testing (radiological), engineering controls, personal protective equipment and respiratory protection (as required) to assure that exposures to radiological, chemical, and physical hazards are maintained well below applicable regulatory limits. Radiological exposures are further controlled under a formal ALARA program. These workplace evaluation/control programs have been, and continue to be, supplemented by a medical surveillance and testing program that includes medical history tracking, vision testing, audiometry, physical exams, and blood and urine testing.

No evidence exists to implicate plant operations as adversely impacting the health of its workforce relative to radiological, chemical, or physical agents.

RAI 10

Discuss Reasonable and Foreseeable Changes to Facilities Associated With the License Renewal During the License Period of 40 Years, Including a Description of Reasonable and Foreseeable Facility Upgrades and Maintenance Involving Contaminated Equipment and the Associated Impacts

Per NUREG-1748, Section 6.2.1.2, an ER should describe the proposed action, including the activities over the time span of the project, and the impacts from performing those activities. The ER (AREVA NP, 2006b) did not identify any activities (i.e., replacement or major maintenance of facilities or equipment) that AREVA NP would need to perform over the 40-year license renewal period in support of the current proposed action. Please identify any substantive replacement or maintenance activity that AREVA NP would need to perform over the 40-year license renewal period to support the current proposed action and describe the associated impacts.

AREVA Response

As would be anticipated, continuation of efficient and state-of-the-art production operations for another 40 years will be accompanied by on-going maintenance and, from time to time, major component replacements and/or process upgrades. Reasonable and foreseeable maintenance and upgrade activities may include, but not be limited to, the following:

Maintenance Activities

- Dry conversion reactors - regular maintenance with replacement every 10-20 years as needed;

- Sintering furnaces - regular maintenance, periodic heater replacement, rebricking every 10-15 years as needed;

- Process vessels, piping, pumps and equipment - regular maintenance with replacement/upgrades as needed;

- HVAC system equipment - regular maintenance plus replacement every 10-20 years as needed;

- Electrical supply conductors and switchgear - replacement as needed;

- Control systems, instrumentation, and manufacturing execution systems and software - regular maintenance and replacement/upgrades as needed or when obsolete;

- Utility system piping and support equipment - regular maintenance with replacement as needed;

- Ancillary and support facilities (roadways, offices, warehouses, security systems and buildings, maintenance shops, waste treatment facilities, etc.) - regular maintenance and replacement/upgrades as needed.

Facility/Process Upgrades

- Potential capacity and/or process upgrades to chemical conversion, ceramics, rod loading, bundle assembly, uranium recovery, waste treatment areas as dictated by customer demands and technology advancements;

- Additional construction of special nuclear material receipt and storage facilities as dictated by business demands;

- Potential process replacement to eliminate need for on-site storage of anhydrous ammonia;

- Potential installation of liquid effluent denitration facility if dictated by uranium recovery throughput and sewering permit limits.

Facility/process maintenance, upgrades, and replacements of the sort listed above have accompanied the first 40 years of Richland plant operations, however similar expansions in plant capability and capacity as evidenced in the first 40 years are not anticipated over the requested license renewal period. Significant increases in facility airborne, liquid, or solid waste effluents are not expected to occur. Environmental management activities going forward will seek to build on the significant environment ALARA gains realized over the last ten years, e.g. transition from wet chemical conversion to the dry conversion technology, replacement of the surface impoundment system with a significantly smaller capacity tank-based system, reduction of stored LLRW inventory and reduction in LLRW generation rates, and enhanced utilization of recycling options. Due to the significant amount of land made available by the environmental remediation of the former surface impoundment area, expansion of the plant's restricted area footprint to accommodate new or expanded SNM processing facilities is not anticipated.

RAI 11

Characterize the Production Capacity of the Current Facility

Per NUREG-1748, Section 6.2.3, an ER should discuss any reasonably foreseeable future action. The ER (AREVA NP, 2006b) does not include a characterization of the production capacity in terms of possible expansion. Please indicate the historical capability for the currently existing Dry Conversion Process facility to meet AREVA NP's client demand and indicate if expansion would require expansion outside the existing facility footprint.

AREVA Response

The Dry Conversion Process Facility includes three conversion lines which have been in operation for eleven years. AREVA currently supplies approximately 30% of the US Commercial Fuel market, and the facility was originally sized to meet up to 80% of the current US demand. We hope the pending nuclear renaissance will increase our production load; most likely the conversion process aspects can be accommodated in the existing facility. However if replacement or expansion of the current Dry Conversion Process Facility is warranted, there is sufficient acreage available within the existing facility footprint.

RAI 12

Identify the Amount of Wastes and Byproduct Materials Produced by AREVA NP

Per NUREG-1748, Section 6.4.13, the ER should describe the quantity of hazardous materials used and waste produced. The license renewal application (AREVA NP, 2006a) states that anhydrous and aqua ammonia, nitric acid, nitrogen, and sodium hydroxide are produced as waste and that byproducts include hydrofluoric acid recovered from the dry conversion process and ammonium hydroxide (aqua ammonia) recovered from the ADU process. Please identify the amount of these wastes and byproduct materials generated by AREVA NP and verify the characterization or nature of the waste and the management (i.e., treatment and disposal) of this waste.

AREVA Response

Chapter 1, Section 1.1.4, Raw Materials, Products, By-Products and Wastes, identifies anhydrous ammonia, aqua ammonia, nitric acid, nitrogen, and sodium hydroxide as non-radiological chemical materials that support the plant's production, production-support, and waste processing activities, i.e. they are utilized by the plant, not produced as wastes from plant activities.

Anhydrous ammonia is dissociated to produce hydrogen, used in the plant as a reducing agent and cover gas. Aqua ammonia, recovered from the liquid effluent from the ammonium diuranate (ADU) conversion line via the Ammonia Recovery Facility (ARF), is recycled into the ADU process as an active chemical agent. The ADU process consumes all of the aqua ammonia recovered at ARF; on rare occasions anhydrous ammonia may be used to make-up aqua ammonia for the ADU process. Nitric acid is utilized in the plant's uranium dissolvers; nitrogen as an inert diluent, drying agent, or

cover gas; and sodium hydroxide as an active chemical agent in the ammonia recovery process.

The process support materials discussed above are utilized in processes that in some cases do produce waste liquid effluents. The site's management of its liquid wastes is discussed in Chapter 1, Section 1.1.4 of the pending renewal application for License SNM-1227.

As previously noted, all the aqua ammonia recovered from the ADU process effluent at the Ammonia Recovery Facility is routed back into the ADU process as an active chemical agent. While the plant was processing, and recovering aqua ammonia from, the liquids stored in its legacy surface impoundments, the plant was recovering more aqua ammonia than the ADU process could consume. Over those years (1996-2004), the plant was selling its excess aqua ammonia to an agricultural chemical broker for eventual use as fertilizer. This activity is authorized by a specific authorization in the site's NRC license as well as a fertilizer registration from the Washington Department of Agriculture. Over the course of the surface impoundment inventory processing, the plant sold approximately 8000 tons (3 million gallons) of excess aqua ammonia into the agricultural sector. The likelihood of the plant having excess aqua ammonia for offsite release going forward is very low. As a contingency measure, the plant is nonetheless retaining its NRC and Washington Department of Agriculture authorizations for this activity.

Hydrofluoric acid is recovered by concurrently condensing water and hydrogen fluoride from the process offgas from the dry conversion process. The ultra-pure hydrofluoric acid is sold to a commercial chemical company for ultimate industrial use. This activity is specifically authorized under the plant's NRC license and will continue going forward. The hydrofluoric acid is approximately 45% strength and the amount shipped averaged approximately 1.7 million gallons over the 2003-2007 time period, ranging from approximately 1.3 million gallons in 2006 to approximately 2.0 million gallons in 2005.