

TO: Nuclear Regulatory Commission, public hearing, September 29, 2005

FROM: Jean Puchstein, 505 E. Dominion Blvd., Columbus, Ohio 43214

I am speaking today as a concerned member of the public.

For the past 20 years, I have been reading and critiquing Environmental Impact Statements for licenses that would continue to endanger the public by the spread of radioactive materials. I offer my congratulations to your staff for writing the best looking DEIS, I have ever seen – also the longest at some 450 pages.

Quoting from NRC's DEIS (1.2; p. 1-1, 1-2): "This proposed action is the issuance of an NRC license for USEC (United States Enrichment Corp.) under the provisions of the *Atomic Energy Act*. This license would authorize USEC to possess and use special nuclear material, source material, and byproduct material at the proposed ACP (American Centrifuge Plant), in accordance with the NRC's regulations in 10 CFP Parts 70, 40, and 30, respectively. The scope of activities to be conducted under the license would include the construction, operation and decommissioning of the proposed plant."

The "Glossary" included at the end of your DEIS (p. I-10 and I-2) defines (quote):
"Special nuclear material: Plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235. **Source material:** Uranium or thorium ores containing 0.05 percent Uranium or Thorium regulated under the *Atomic Energy Act*. **In general, this includes all materials containing radioactive isotopes in concentrations greater than natural and the byproduct (tailing) from the formation of this concentrated materials.** **Byproduct material:** The tailing or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. See also source material."

These very broad definitions seem to include ANY and ALL radioactive materials (greater than natural) that USEC will be authorized to "possess and use" if NRC grants this license?

Quoting again from your DEIS (p. 2.61): **2.5 Staff Preliminary Recommendation Regarding the Proposed Action.** After weighing the impacts of the proposed action and comparing alternatives, the NRC staff, in accordance with 10CFR 51.71(e), sets forth its NEPA (National Environmental Policy Act) recommendation regarding the proposed action. The NRC staff recommends that, unless safety issues mandate otherwise, the proposed license to be issued to USEC. In this regard, the NRC staff has concluded that environmental impacts are generally SMALL (bulleted note at top of 2-26), although they could be as high as MODERATE in the areas of air quality, socioeconomics, and transportation."

'SMALL is defined in the introduction p. xxii as "The environmental effects are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource. MODERATE is defined as "The environmental effects are sufficient to noticeably alter but not destabilize important attributes of the

resource. LARGE is defined as “The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.”

The NRC staff did not find ANY environmental effects that they considered LARGE, very few SMALL to MODERATE and almost all of their analysis and conclusions in this 450+ page report, would have SMALL effects.

Some of the examples effects judged to be SMALL just on one page xxii:
“construction of the new large (24 acre) cylinder storage yard...would result in small impacts to the flora and fauna in and around the tributaries of Little Beaver Creek.” On this same page, the noise impact is rated “Small” for a “Catastrophic failure of a centrifuge could cause a sudden but brief loud noise, due to the high rotational speed of the centrifuge. However, the likelihood of a single centrifuge catastrophically failing is very low.” No mention is made of several centrifuges failing or the loud large screams of the employee victims. On the same page under the heading **Transportation**, sub heading Small Radiological Impacts from Routine Transportation and Transportation Accidents. “The transportation of materials containing radionuclides would result in some increased cancer risk to both the occupational workers transporting and handling the material and to members of the public driving along the road or living along the transportation routes.... The probability of a severe transportation accident that releases sufficient quantities of UF6 that could pose health risk is low, but the consequences of such an accident, should it occur are high. Based on this analysis, the impacts associated with such an accident as part of the proposed action are considered MODERATE. No mention is made of accidents to enriched radioactive material leaving the plant to become fuel for nuclear power plants.

Pat Marolda — Central Ohio Science Club

RADIATION: THE MYTH OF THE MILLIREM

Natural and Human-Made Radiation

The Nuclear Age generates and processes massive amounts of radioactive material and waste. Processing uranium for use as nuclear fuel for generating electricity, in nuclear weapons and other nuclear applications, has exposed millions of workers and ordinary people worldwide to radiation. Fission in nuclear reactors and the detonation of nuclear weapons result in the generation of new sources of radioactivity. All life on Earth is exposed to and impacted by natural sources of ionizing radiation. Radiation exposures are increasing due to planned and accidental releases of man-made radioactivity.

Ionizing radiation is the emission of energetic particles (alpha, beta, neutron) or rays (gamma and x-rays) from a radioactive isotope—also called a radionuclide. These emissions may knock off an electron in its target, thus resulting in ionization. When something absorbs the energy of the ray or the particle, irradiation occurs. When a living being absorbs it, that individual has received a “dose” of radiation.

Curies, Rads, and Rems

The pioneers of the Nuclear Age invented units for measuring radioactivity. The measure of radio - active decay—the curie (named for Madame Marie Curie)—is the count, per second, of radioactive emissions, also called “disintegrations.” One curie is that amount of a radioactive material that gives off 37 billion radioactive particles or rays per second. This unit is a fixed standard, and concentrations in curies (or fractions of a curie) per gram or per liter, and per second or per minute, can be verified with proper instrumentation.

Translating the curie amount into a potential dose to a living organism is far from precise. Unlike the curie, which has a clear definition, the units for estimating impacts of radiation on living tissues—rads, rems and millirems—are based on models and assumptions. Estimates of the biological impacts of exposure to specific types of radiation have been based on animal experiments and on a limited number of human experiments. Some estimates of dose are based on data collected from the survivors of the Hiroshima and Nagasaki bombs, even when the given situation is different.

The Rad is used to measure the energy absorbed by tissue that is exposed to radioactivity. In Europe the unit for 100 Rads is called a Gray.

The Rem combines the amount of radiation exposure (Rad) with its alleged impact on health. The estimated damage or “biological effectiveness” of the radiation is based on models. In Europe the unit for 100 Rems is called a Sievert. The prefix, “milli,” denotes one-thousandth of a unit. For example: one rem equals 1,000 millirems.

The Rem (the unit of radiation dose) is not based upon a standard unit that can be verified. One must know the duration of exposure, amount and type of radioactivity involved, the size of the body that absorbed it, and what that radiation event did to the particular body in question. Even under very controlled conditions, it is virtually impossible to derive each of these data points with certainty. In uncontrolled conditions, such as accidental releases and doses to the “general population,” as we are known, it is even less possible to gather this information accurately.

The Standard Man

Emblematic of the arbitrary nature of dose assessment is the invention of the Standard Man: a fictional or contrived individual whose physical characteristics have been defined by officials who set radiation standards. Sadly, the nuclear pioneers who were charged with overseeing a work force of not-so-standard men did not take variability into account. Nor did they assess the differing impacts on women, fetuses, infants, children and elders. The work of the late Dr. Alice Stewart confirms that many groups of human beings are not comparable to the Standard Man.

When a radioactive release happens, and the dose to those impacted is estimated or “reconstructed,” the characteristics of the Standard Man and the standardized assumptions about the impact of radiation on the Standard Man are used as the basis for the estimated dose. The many differences between real people and the Standard Man are not considered when estimating the official dose to individual members of the public.

(over)

□ Rittenour Home

□ Sargent Home

X-330 Building

Old Gaseous Diffusion Plant

X-326 Building

Existing Buildings to be used by ACP

Proposed New ACP Buildings

Wakefield Mound Road (originally the Scioto Trail, then the Chillicothe and Portsmouth Turnpike)

Southwest Access Road

A-Plant Perimeter Road

DOE Reservation Site Boundary

Approximate boundary of "GCEP Water Field"

USEC wells that will supply ACP with water

linear earthwork (possibly a section of the Great Hopewell Road)

Barnes Works

(Seal Township or Scioto Township Works)

SCIOTO RIVER

N

one mile

Historic Sites in relation to American Centrifuge Project

Map © 2005 by Geoffrey Sea

Creek diverted around outer enclosure

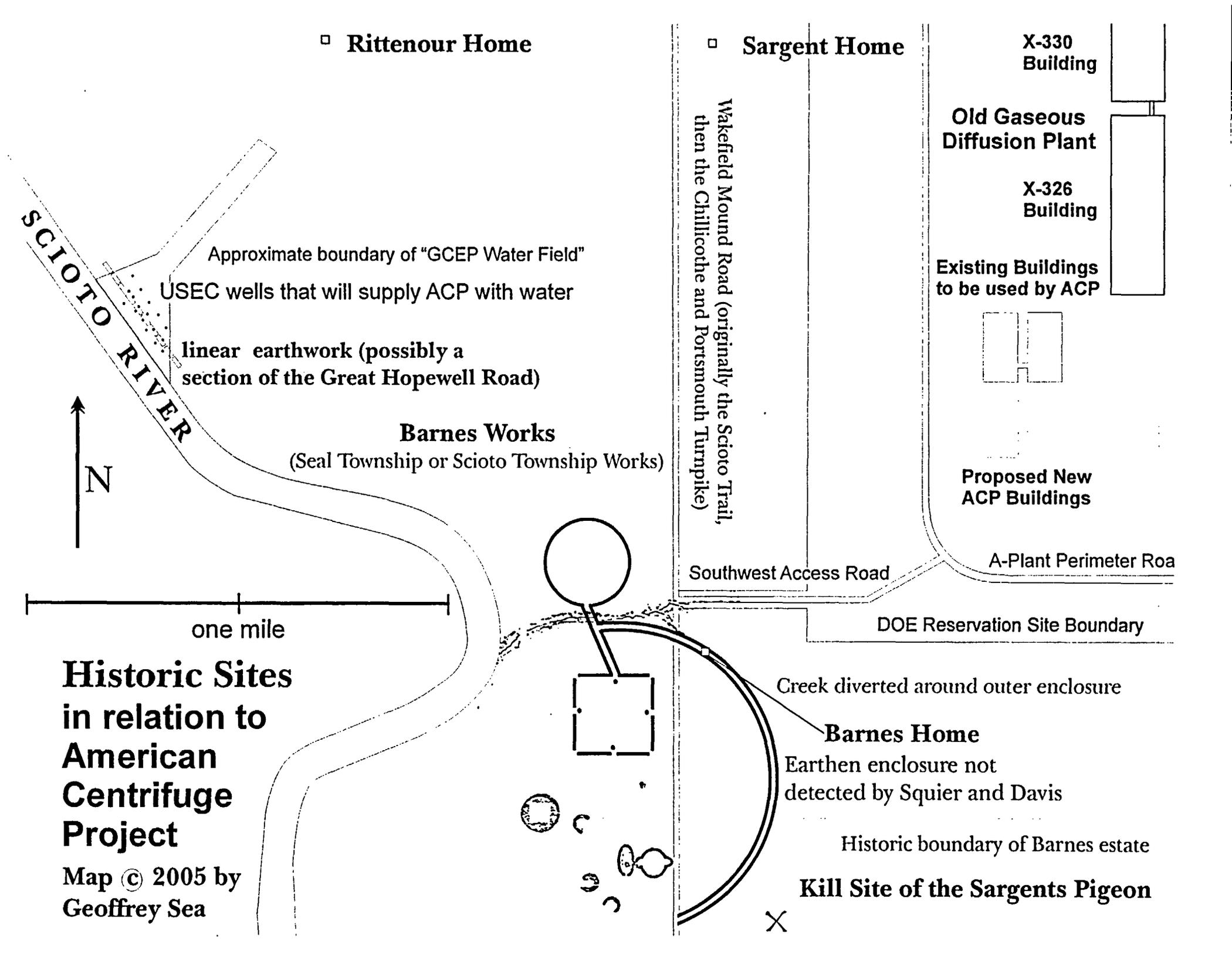
Barnes Home

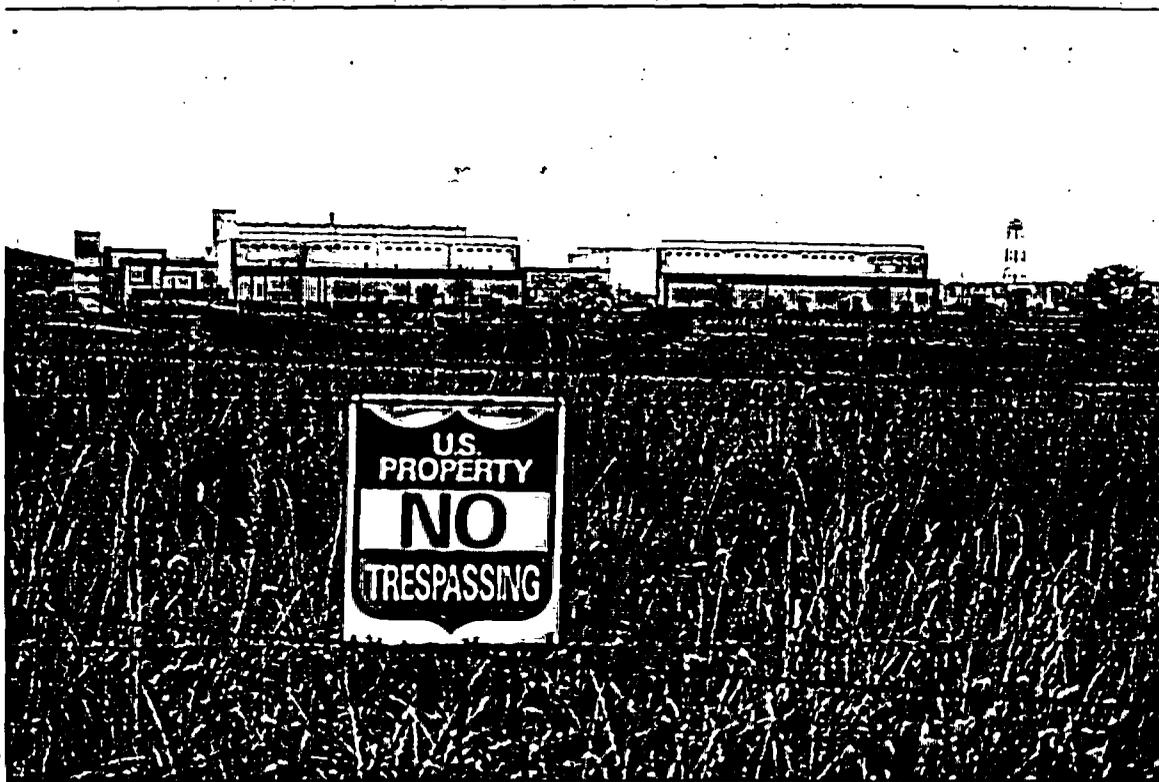
Earthen enclosure not detected by Squier and Davis

Historic boundary of Barnes estate

Kill Site of the Sargents Pigeon

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

Docket No. 70-7004

USEC Inc.
American Centrifuge Plant (ACP)

PRESS Oral DEIS Comments

According to the DEIS, the ACP would cost about \$3 billion to construct with centrifuges. The Enterprize Zone program of the State of Ohio would expect about 15 thousand new jobs to be created for that scale of capital investment. On page 3-50 of the DEIS we find that USEC currently employs 1,223 workers at the site. On page 4-34 of the DEIS we learn that, in the operations phase the ACP is expected to create 600 direct full-time jobs. This is clarified on page 4-94 of USEC's ACP application, where it states that "operation of the ACP is projected to employ 600 personnel." In other words, the ACP would result in a net loss of 623 jobs. We estimate that the indirect jobs lost, based on 900 indirect ACP jobs created, would be about 935, for a total net loss of 1,558 jobs caused by the ACP. That's not counting the 759 jobs that would be lost at Paducah. However, even if we assume that those 600 created jobs result from the \$3 billion investment, the ACP underperforms in job creation by a factor of 25, by Enterprize Zone standards. Differently put, the Enterprize Zone program would create the same number of new jobs for an investment of just \$120 million in capital.

In the building phase, the assessment of impacts to tax revenue is treated differently from the impacts to population characteristics. For tax impacts, the DEIS states that building will create 3,362 jobs. But for population impacts, the DEIS states that 2,988 of those jobs

“are a continuation of existing jobs generated or supported by current USEC activities.” Thus, the DEIS tells us, 374 new jobs would be created during construction.

To summarize the job situation, the DEIS contains enough information for us to predict that the ACP would create 374 new jobs over the short-term building period, followed by a net loss of 1,558 jobs in the operations period.

On safety, if we add up all the deaths and injuries presented in the DEIS due to routine transport and due to transport accidents and occupational accidents, we get a total of just six deaths and 1,117 injuries. However, the DEIS neglects to express the injury rates in several significant categories related to routine and accidental radiological exposures in both the occupational and transport categories at both the operations stage and in the decommissioning stage. Further, the DEIS treatment of occupational injury rates depends on statistics from the Bureau of Labor Statistics, the BLS, but it overlooks an important statement in the BLS study, which says, “Some conditions (for example, long-term latent illnesses caused by exposure to carcinogens) often are difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be understated in the survey’s illness measures.” On page 4-62, the DEIS describes that workers may be exposed to “puff releases” of uranium hexafluoride gas, which is exactly the type of exposure that would result in a long term latent illnesses.

To be fair, the DEIS does show, in table 3-29, that mortality rates in Pike County due to renal failure are between 2 and 4 times that of the rates in Ross County and Scioto County. However, although renal failure is associated with uranium poisoning, the DEIS suggests that this death rate may instead be associated with diabetes and hypertension. The NRC Staff has made no attempt to determine whether uranium poisoning has, in fact, caused these deaths.

Blindly following USEC’s analysis, the DEIS compares potential ACP occupational injury rates to those from the broad, and now obsolete, Standard Industrial Classification, “Industrial Inorganic Chemicals, not elsewhere classified.” Not only is this inappropriate,

but the ACP occupational injury rates are projected using Piketon operations in 2002 and 2003. Uranium enrichment operations at the DOE reservation in Piketon, Ohio, ceased in May 2001.

In fact, as measured by the NRC's enforcement action notices, USEC has by far the worst safety record of all NRC materials licensees. Of 516 materials licensees that have been issued with NRC enforcement notices, USEC has the most, with 16, followed by Mallinckrodt Inc. with 9, and Westinghouse Electric Inc. with 6. Most violators have just one or two notices.

On security, this type of plant has a poor history. The URENCO centrifuge plant is responsible for allowing the Khan network access to the centrifuge technology behind the enrichment programs of Pakistan, Iran, Iraq, and Libya. Some of USEC's violations notices have involved lax control over classified computers.

Remarks on the DEIS

Although we have yet to complete our analysis of the 470-page Draft Environmental Impact Statement itself, we have already identified contradictions, bad advice, poor treatment of alternatives, incompetent data entry, and incompetent modeling based on unverifiable methods. Moreover, the DEIS has overlooked some obvious problems, and it overlooks the possibility that USEC may have misled the State about the costs of the ACP, or that the ACP may be too expensive for investors to back it. Further, the DEIS contains little in the way of independent investigation and it does little to open the details of the project to public scrutiny from under two layers of secrecy: classified information and proprietary information.

In addition to this we feel that the NRC Staff has neglected its obligations, under 40 CFR 1503, to respond in a satisfactory manner to the scoping comments submitted by opponents of the ACP for the Draft Environmental Impact Statement.

Most of these flaws seem to result from the NRC Staff repeating, rather too uncritically,

the assertions and analysis of the USEC ACP Application documents. We should remember that the ACP Application is such a high quality application that although it models the highest possible flood using a flow rate five times that of the historical flood of 1937, it finds that the highest possible flood actually reaches a lower height than the 1937 flood.

The DEIS contradicts itself. For example, the annual number of feed cylinders is different on page 2-22 than it is on page 4-47.

The DEIS offers bad advice. For example, on page 2-18, it is recommended that GCEP documents from the 1980s be destroyed. This would make it more difficult to determine what contaminants have historically polluted the groundwater at the site, thereby impeding cleanup.

The DEIS treats alternatives very poorly. For example, there is very little discussion of the potential benefits of simply cleaning the site up, once and for all, and using Enterprise Zone incentives to reindustrialize the site.

Another alternative, for the industry, would be a scheme in which laser isotope separation units were located at all the major power stations. Laser isotope separation costs less in capital startup, and in electricity for operations, and is capable of processing smaller amounts of fuel. Moreover, by processing fuel at a reactor site, the risks to the public due to transportation of low enriched uranium would be effectively eliminated. In cost and benefit, it is a superior scheme.

The DEIS makes trivially false statements. For example, on page 3-69, the DEIS states that "Calendar year 2003 Bureau of Labor Statistics' average incidence rate of nonfatal occupational injuries and illnesses are not currently published." In fact they were published in December 2004 and reissued in Reissue June 2005, so this statement is false. Clearly, this error arose because the USEC application text was cut and pasted into the DEIS.

~~The DEIS purports to assess unknowable risks. For example, the footnote on page 4-53 states that "No 2.5-ton cylinder is currently certified to ship uranium enriched to higher than 5 weight percent of uranium-235. Yet the DEIS goes on to assess the risks associated~~

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Erratum page 5

→ The DEIS purports to assess unknowable risks. For example, the footnote on page 4-53 states that “No 2.5-ton cylinder is currently certified to ship uranium enriched to higher than 5 weight percent of uranium-235.” Yet the DEIS goes on to assess the risks associated with transport of 10% enriched uranium in a cylinder that doesn’t exist. Incidentally, USEC has yet to explain why it requires a license for 10% enrichment. It’s competitor in New Mexico has only asked for a 5% license, and the power industry doesn’t require fuel enriched above 5%.

— Portsmouth / Piketon Residents for Environmental Safety and Security (PRESS).

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10asked for a 5enriched above 5~~

The DEIS has incompetent data entry. For example, Table 4-15, “Estimated Latent Cancer Fatalities from the Transportation of Radioactive Materials for One Year of Operation,” is seriously messed up. None of the totals is the sum of its column or row. Moreover, by comparison to Table D-12, we can see that the risks to the public, whether following a cylinder on the road, living by a road where cylinders are transported, or pulling into a rest stop where a cylinder truck is, these risks have obviously been understated by a factor of 10,000.

The DEIS shows incompetent modeling. For example, in tables D-12 and D-14, the trip from Piketon to Clive, Utah indicates that the trip includes rest stops and inspection stops. The modeling is based on the WebTRAGIS system, and the WebTRAGIS manual only mentions rest stops and inspection stops in association with road transport, not rail transport. So the Piketon-Clive trip is clearly modeled for road transport, yet on page D-5 it is clearly stated that this trip is a rail trip. Furthermore, we tried to register with the ORNL WebTRAGIS system on 23rd of September, but we have received no reply. We suppose that the system admits only classified access, and that the system is, in any case, not available for public scrutiny. The risk analysis is therefore unverifiable by the public.

The DEIS overlooks obvious problems. For example, on page 4-76, the DEIS informs us that the DoE conversion utility is designed to operate until 2024 and to handle a capacity of 243,000 metric tons of depleted uranium hexafluoride, but that the ACP is designed to operate until 2040 and to generate 571,000 metric tons. Thus the DOE conversion facility is designed to be decommissioned 16 years too early and to have a capacity that is less than one third of the ACP waste.

The DEIS overlooks the possibility that USEC may have misled the State of Ohio in order to win various incentives. For example, on page 7-1 of USEC’s ACP Environmental report, we find that “On August 15, 2003, USEC issued Requests For Proposals to the Commonwealth

of Kentucky and State of Ohio to site the ACP at the respective Gaseous Diffusion Plant. Both states were offered an opportunity to provide financial or other incentives to reduce the cost of the ACP.” By all accounts, the cost of the ACP, as understood by the State of Ohio, was \$1.5 billion. However, page 7-2 of the DEIS gives the cost of building the ACP and manufacturing centrifuges at \$2.872 billion.

The DEIS doesn’t consider that the cost of the ACP is unlikely to be met by private investors. For example, in addition to the costs mentioned above, disposition would cost \$2.758 billion based on 571,000 metric tons of tails (7 MSWU plant) and \$4.83/kg disposition cost. This compares with the License application’s estimate of \$0.728 billion for tails disposition (License Application page 10-16). Further, decommissioning would cost \$0.435 billion according to DEIS page 7-2. Note, also, that USEC had estimated decommissioning and decontamination at \$0.130 billion (License Application page 10-14). So USEC appears to have uniformly underestimated costs by a factor of between 3 and 4. So the total cost, even without the withheld information about running costs, is about \$6.065 billion.

By comparison, when USEC went public it raised just \$1.5 billion in its initial public offering. This was \$1 billion short of the \$2.5 billion it required for its AVLIS program. The AVLIS program was cancelled.

Finally, the DEIS presents little evidence that it contains the results of independent investigation. For example, PRESS has released the results of two analyses of radioactivity in Big Run Creek water to cast sufficient doubt that DOE, USEC and Ohio EPA data from offsite sampling locations may be flawed. Yet the DEIS uses data from these sources. A comprehensive, independent survey is warranted.

In summary, the ACP would cause a net loss of 1,558 jobs. The DEIS treatment of safety and security to the public and to workers is unsatisfactory. The DEIS contains contradictions, bad advice, poor treatment of alternatives, incompetent data entry, and incompetent modeling based on unverifiable methods. Moreover, the DEIS has overlooked some obvious problems, and it overlooks the possibility that USEC may have misled the State about the

costs of the ACP, or that the ACP may be too expensive for investors to back it. Further, the DEIS contains little in the way of independent investigation and it does little to open the details of the project to public scrutiny from under two layers of secrecy: classified information and proprietary information.

These deficiencies seem to result mainly from the NRC Staff following the assertions and analysis of the USEC ACP Application documents too closely and uncritically.