Natural Resources
Defense Council

1350 New York Ave., N.W.
Washington, DC 20005
202 783-7800
Fax 202 783-5917

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COMMENTS

on Behalf of the

NATURAL RESOURCES DEFENSE COUNCIL

on the

DEPARTMENT OF ENERGY'S

May 1992

PREDECISIONAL DRAFT ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT FIVE-YEAR PLAN

James D. Werner
Senior Engineer

Susan Barvenik
Intern

June 17, 1992

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40 West 20th Street
New York, New York 10011
212 727-2700
Fax 212 727-1773

71 Stevenson Street
San Francisco, CA 94105
415 777-0220
Fax 415 495-5996

617 South Olive Street
Los Angeles, CA 90014
213 892-1500
Fax 213 629-5389

33230

Natural Resources
Defense Council

1350 New York Ave., N.W.
Washington, DC 2000.
202 783-7800
Fax 202 783-5917

June 17, 1992

Mr. Leo P. Duffy
Assistant Secretary of Energy for
Environmental Restoration and Waste Management
U.S. Department of Energy; EM-1
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Leo:

Thank you for your May 26, 1992 invitation to attend the 1992 "Stakeholders Forum" to review the predecisional draft of the Department's Five-Year Plan for FY 1994-1998. Unfortunately, the dates of your meeting exactly corresponded to a conference in Moscow, Russia I was attending with some of your DOE colleagues regarding nuclear waste and nuclear warhead dismantlement, and a similar conference in Chelyabinsk, Russia.

In response to a request by your office for comments by the Natural Resources Defense Council, I am pleased to submit the attached comments based on a very quick review of the document. I must note, however, that the Department has essentially ignored our previous comments on the Five-Year Plan. We look forward to your response to these comments.

Please do not hesitate to call if you have any questions. Thank you for your consideration.

Sincerely,

James D. Werner
Senior Engineer

Att.

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40 West 20th Street
New York, New York 10011
212 727-2700
Fax 212 727-1773

71 Stevenson Street
San Francisco, CA 94105
415 777-0220
Fax 415 495-5996

617 South Olive Street
Los Angeles, CA 90014
213 892-1500
Fax 213 629-5389

212 Merchant St., Suite 203
Honolulu, Hawai'i 96813
808 533-1075
Fax 808 521-6841

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1. Introduction.

DOE first published its Five-Year Plan (FYP) in 1989 to attempt to begin a rational planning process for its Environmental Restoration and Waste Management (ERWM) program. The Natural Resources Defense Council (NRDC) commented on that plan[1], but our comments were virtually disregarded by DOE in preparing the 1990 FYP. In 1991, NRDC submitted brief comments on the FYP indicating that DOE's response to our original comments did not warrant the effort required to provide additional substantive comments. Later in 1991, Congress codified the preparation of the FYP in the FY 1992 Defense Authorization Act. NRDC is submitting these comments because of the elevated importance of the FYP resulting from this mandate, and because of a direct personal request by DOE staff for NRDC's comments, with the assurance that public comments would be considered more carefully than was the case in previous FYP efforts.

The legislative mandate for the FYP resulted in part from Congress' concerns about the increasing costs of the Department's ERWM program and the use of ERWM resources. The FYP provides an opportunity for DOE to address these concerns. The DOE should use the Plan to demonstrate its capabilities for managing its environmental problems by (1) cataloging the environmental problems facing the Department; (2) indicating what actions have been taken to address these problems; and (3) establishing short-term and long-term plans for addressing the problems. Based on our review, the "Predecisional" Draft FYP reflects either a missed opportunity by the Department, or a demonstration that it is not capable of managing its environmental problems. In either case, the Draft FYP fails to provide the necessary assurance required by Congress and the public to continue providing additional funding for DOE ERWM

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[1] Werner, James D. and Dan W. Reicher, NRDC, "Comments on the Department of Energy's Environmental Restoration and Waste Management Five-Year Plan," November 30, 1989.

programs. We strongly urge DOE to revise the Draft FYP to provide the necessary information to demonstrate that the resources devoted to ERWM programs are being used wisely.

2. **The Draft Five-Year Plan Fails to Provide a Useful Plan for Accomplishing the 30-Year Cleanup Goal.**

The Draft FYP lacks many of the basic elements of planning such as a clear goal, interim milestone goals, and clear identification of tasks to achieve the milestones and goals. DOE has established an overall goal of cleanup of its sites by the year 2019.[2] But, the Draft FYP provides no clear roadmap for how that goal will be achieved. For example, although the Draft FYP appears to articulate a plan to perform site assessments, it only indicates the number of assessments (150) to be performed during the next five years. There is no overall goal of completing by a certain date the necessary site assessments required to meet the 2019 goal.

This accounting is more than merely bureaucratic "bean-counting." Although it may be an imprecise measure of progress, it provides an indication that some overall vision exists in completing certain goals. Any program costing tens of billions of dollars requires this type of vision to prevent resources from being diffused and squandered. The Draft FYP reflects a lack of vision in planning the ERWM programs. DOE has narrowed its 2019 cleanup goal to addressing

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[2] DOE's commitment to this goal appears to have been eroded significantly since it was articulated in the original 1989 Five-Year Plan (FYP) (DOE/S-0070, August 1989). That FYP established the "goal of cleanup of all sites within 30 years" (p. 2). "This Plan announces DOE's commitment to a 30-year goal to clean up and restore the environment at its nuclear sites." (p.4). In contrast, the 1992 Draft FYP appears to be considerably more circumspect and qualified with regard to which sites can be addressed and what level of cleanup will be achieved. See Attachment A.

the "1989 inventory of inactive and surplus facilities."[3] But, the Draft FYP fails to provide an accounting of the "1989 inventory" - which sites and how many sites. Moreover, the Draft FYP fails to indicate the percentage of sites at which assessments have been initiated or completed, or the target for initiating and completing assessments for all sites on the "1989 inventory". If 3,000 assessments will be required, then the completion of 150 site assessments every five years will result in the completion of all site assessments in 100 years.

3. The Draft FYP Represents a Step Backwards in Disclosure of Environmental Information to the Public.

The Draft FYP appears to reflect a response by DOE to concerns expressed by certain participants in the 1991 Stakeholders Forum about the readability of the FYP document. The Department should be applauded for several changes in the Draft FYP including separation into three volumes and elimination of the rote use of "two-pagers" for each subject without regard to the complexity of the topic. Despite these general changes to improve readability, the Draft FYP still contains a significant amount of unexplained jargon such as "Complete D&D of the BORAX V..." and "ARVFS NaK."[4] Symbols for elements such as NaK (sodium potassium) are commonly useful for technical documents but are <u>unnecessary</u> for the FYP in which specific elements can probably be spelled out unless they are repeated frequently.

Moreover, the Draft FYP fails to include some very basic information. To the extent that some of this basic information was provided in earlier versions of the FYP, the Draft 1992 FYP

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[3] DOE, "Draft FYP", page I-7.

[4] DOE, Draft FYP, p. II - 117.

represents a step backwards in the disclosure of environmental information to the public. Perhaps the most obvious omission from the Draft FYP is the lack of funding information. Previous versions of the FYP included tables of funding information indicating previous, current and planned funding levels[5]. No such information was included in the Draft FYP. Previous draft FYPs included blank tables to be filled in and discussions in the text about funding. If outyear funding estimates were not available for inclusion in the Draft FYP, the funding issue could have been discussed with regard to Executive Order 12088 (10/17/78), which requires that "[t]he head of each Executive agency shall ensure that sufficient funds for compliance with applicable pollution control standards are requested in the agency budget." This issue dominated the Department's FY 1993 Budget Request preparation but is not mentioned in the Draft FYP discussion of the Interagency Review Group.[6] Given the dominance of questions about funding levels in Congressional hearings and other discussions of the Department's environmental programs, this omission is troubling.

Congress' mandate for the FYP includes a requirement to "Provide estimated costs and personnel for planning period." The Department, therefore, is legally required to provide this information along with several other items specified by the legislation. In the tabulation of legal requirements for the FYP listed in Figures ES-1 and 1.0a, the Draft FYP addresses each of the requirements and refers to the corresponding response. The Draft FYP is silent, however, with regard to the requirement to provide funding information. This information is important, among other reasons, to provide an indication of DOE's commitment to fulfilling its compliance agreement

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[5] The 1991 FYP included two funding cases: "Preliminary Unvalidated Costs" and "Validated Target Level."

[6] DOE, 1992 Draft FYP, p. I-25.

requirements. If the public and regulatory agencies discover at the time of the submission of the annual DOE Budget Request that certain required projects will not be funded, then it may be too late to make the necessary changes. Even if specific dollar funding information is not yet available, the Activity Data Sheets (ADS)[7] should identify which projects and compliance agreement milestones will be funded. This system has been discussed in negotiations with Department representatives (from the Office of Environmental Restoration) as part of the Federal Facilities Environmental Management Advisory Committee convened by the Environmental Protection Agency. These DOE officials have indicated that the Department could provide this information in the ADSs or in another form. Does the Draft FYP represent a reversal of this commitment or merely a failure of different DOE offices to coordinate these activities?

Another example of the reduction in the environmental information provided by the Draft 1992 FYP compared to earlier Plans is the level of "Landlord Activities," which provide "general site support, maintenance, operations, and physical infrastructure support."[8] It is disturbing that DOE eliminated virtually any discussion about this growing element of its ERWM program from its FYP even though it was described in earlier versions of the Plan and in the Department's Congressional Budget Request.[9] The 1991 FYP provided limited information on the landlord

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[7] The 1992 Draft FYP erroneously referred to Section D as ADSs. In fact, this section of the FYP will likely include, at best, a list of ADSs. More importantly, it is unclear which years will be covered by the ADSs.

[8] Duffy, Leo, DOE, "Statement Before the DOE Defense Nuclear Facilities Panel, House Committee on Armed Services," 3/30/92, p. 19.

[9] The 1992 Draft FYP discusses proposed changes to security operations, which are part of its new landlord function (p. I-24).

activities at certain sites (e.g., Idaho National Engineering Laboratory)[10]. This information should have been expanded, not eliminated. Reference to Landlord Activities in the 1992 FYP is limited to a Table of "Transition Projects."[11] Because this Table is not mentioned in the text to put it in context, it is unclear whether these four facilities (Hanford, INEL, ORNL, and Fernald) constitute all of DOE's landlord activities or merely a portion. No systematic accounting of landlord responsibilities is included in specific site listings in Volume II. The use of environmental resources for landlord activities has been questioned by some State and private environmental analysts. The Department will not enhance the credibility of its position regarding the need to provide support for environmental tasks by failing to disclose information on these activities.

4. **The Draft FYP Fails to Provide Adequate Information on DOE Waste Management.**

The potential for the greatest savings in the Department's environmental budget can be realized, not surprisingly, where most of the environmental spending occurs -- the handling, storage, treatment and disposal of waste generated as a result of production operations ("waste management"). For FY 1993, DOE has requested more than three billion dollars for waste management operations -- nearly 60 percent of the ERWM budget request and a 27 percent increase over FY 1992. Despite this large expenditure of resources for Waste Management, the Department does not seem to have a fundamental understanding of how this money is being used.

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[10] DOE, 1992 Draft FYP, pp. 422-426.

[11] DOE, 1992 Draft FYP, p. I-49.

The Department indicated in its FY 1993 Budget Request that the Waste Management budget is intended primarily for storage and treatment of existing waste and only a small amount of newly-generated waste.[12] However, in its presentation of the latest Five-Year Plan (1991), DOE indicated, without citation or supporting analysis, that more than half of its waste management funding is directed to handling newly generated wastes from ongoing production facilities.[13] Despite numerous requests by NRDC, the Department has failed to provide any data or analysis supporting either assertion.

The question of how much waste management funding is devoted to handling existing stored wastes versus newly generated waste is fundamental to planning the Energy Department's waste management program. For example, to the extent that resources are devoted to handling new waste, the potential exists to save money by reevaluating whether the projects generating the waste are justified in light of the additional waste management costs. In the long run, an understanding of the relative importance of newly generated versus existing waste will be required to plan for new waste treatment facilities in a reconfigured DOE complex.

Each Activity Data Sheet should contain information on whether, or to what extent, each project is intended to address: (1) newly generated waste from defense or non-defense operations; (2) existing waste being temporarily stored awaiting treatment or disposal; or (3) waste generated

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[12] "...Waste Management is [for] management of a large volume of stored radioactive waste resulting from past operations [and] a relatively small volume of new radioactive, hazardous and sanitary waste resulting from current operations of DOE." DOE, FY 1993 Budget Request, Volume 5, p. 241.

[13] "Current Production, DP Waste" and "Current Production, Non-DP Waste" were estimated at 26 and 27 percent, respectively, of the total Waste Management "Validated Target Level" planning estimate. DOE, "Five-Year Plan (FY 1993-1997) Briefing Charts," September 1991.

from environmental restoration activities. The Department appears to have already begun to incorporate this type of accounting into its ADSs. The 1991 ADSs included the following entry:

Pre-Existing Waste: 0%	Current/Future DP Waste: 0%
Current/Future EM-40 Waste: 0%	Current/Future Other Waste: 0%

Unfortunately, no numbers were given in the percentage space. Does the Department intend to implement a plan to provide this information in 1992? How will the terms be defined? How will the calculations be performed?

5. **The Draft FYP Includes Misleading, Inaccurate and Useless Graphics.**

The Draft FYP includes a large number of graphics presumably intended to illustrate points made in the text and to display data. Graphics can be an extremely useful for these purposes, but should be used carefully to avoid distributing inaccurate, misleading or confusing information and should not be used without a purpose. Inadequate care was exercised in preparing the draft FYP, thereby allowing all of these problems with graphics to occur, which undermines the credibility and usefulness of the document.

One example of an inaccurate graphic in the draft FYP is the illustration of waste volumes portrayed as depths on a football field.[14] The volume of high level waste (HLW) is portrayed as covering a football field to a depth of 102 yards. This depth would correspond to a HLW volume of 499,131 cubic meters (652,800 cubic yards).[15] In contrast, the draft FYP indicates in an

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[14] Draft FYP, page I-182, May 1992.

[15] Assuming a 6,400 square yard field, 120 yards long (with endzones) by 53 1/3 yards wide. Without endzones the field would be 5,333 square yards. The graphic indicated that endzones

(continued...)

earlier section, that approximately 381,000 cubic meters of HLW are being stored.[16] The smaller number more closely corresponds to the volume (399,000 cubic meters) given in another DOE data base, which suggest that the graphic, not the earlier section is incorrect.[17] Nonetheless, inconsistencies within the FYP and between the FYP and other DOE documents raise questions about the credibility of all of the estimates. Similarly, the football field graphic indicates that DOE stores 114,180 cubic meters of mixed LLW compared to a volume of 70,000 cubic meters listed in an earlier section of the draft FYP.[18] Hence, the FYP does not appear to be a reliable source of this waste information.

Another graphic error in the draft Five-year Plan is the location of the Battelle Columbus Laboratory Environmental Restoration Project in northern Illinois rather than central Ohio.[19] These errors do not necessarily change the overall point of the section. But, they undermine the potential usefulness of the Five-Year Plan as a reference tool for persons interested in DOE environmental issues.

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[15](...continued)
were included although the goal posts were incorrectly located.

[16] DOE, FYP 1992 "Predecisional Draft", p. I-96. May 1992.

[17] DOE, "Integrated Data Base for 1991: U.S. Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics", DOE/RW-0006, Rev.7, October 1991, page 43. Excluding the West Valley HLW, the volume is approximately 397 cubic meters, which does not account for the discrepancy in the draft FYP volumes.

[18] DOE, FYP 1992 "Predecisional Draft", p. I-111. May 1992.

[19] DOE, Draft FYP, p. I-133.

An example of a useless and confusing graphic is the portrayal of the transition activities as cartoon motor boats on pages I-48 and I-164. It is unclear what aspect of transition planning is being referred to by the illustration. Moreover, why is the Rocky Flats Plant ahead of the PUREX facility or the N-reactor? These facilities at Hanford have been inactive for a longer period than the Rocky Flats Plant and are presumably further along the decontamination and decommissioning process. Also, why is there a wave to be crested in the first figure, and flat water with an island on which the boats appear poised to run aground in the second figure? Why is N-reactor ahead of PUREX in the second graphic? Why is N-reactor labeled as under the control of Defense Programs furthest from transfer, but Rocky Flats appears to be on the verge of being transferred to the Environmental Restoration and Waste Management program. The text offers neither an explanation nor a mere reference to the figure. All figures and tables should be explicitly tied to the text with a reference. The failure to refer to the figure in the text should have provided the Draft FYP authors with a clue that the graphics were irrelevant to the document. If there is no purpose served by graphics, they should be eliminated.

An example of a misleading graphic is the pie chart on page I-102, which displays the "Curie quantity of retrievably stored DOE TRU waste". Because the pie chart is displayed as a tilted disk, visual foreshortening causes the 34 percent slice for ORNL in the foreground to appear larger, because of perspective, than the 36 percent for SRS. No apparent policy advantage explains the use of this illusion.

Another example of a misleading graphic is the untitled figure 2.5.0 (page I-206) portraying the number of shipments of hazardous, non-hazardous and radioactive cargos. The figure is meaningless at best, and implicitly misleading. The number of shipments appears to be an implied

surrogate measure for the level of effort or the transportation risks of DOE's activities. The graphic implicitly suggests that the level of effort and the risks from DOE's transportation activities are proportional to the number of shipments. Other factors such as the volume, curie content, mass, distance per shipment or volume per shipment are also important parameters that should be displayed. The graphic seems to cynically assume that the reader will regard air, rail and road shipments equally, when, in fact, the average load, the distance and the risk for these modes may vary significantly. No objective purpose seems to be served by this graphic.

Although imprecise and overstylized graphics are commonly used in the popular media, it is unworthy of DOE's important technical mandate to employ inaccurate data display methods. The clarity and accuracy of graphics in a document are not merely an aesthetic concern. Graphic integrity is an important element of the overall credibility of a document. To the extent that the document is credible, it warrants the public trust, which the government should strive to earn. To the extent that the document is merely a deceptive public relations piece, it contributes to the further erosion of DOE's credibility, which the Department claims to be attempting to restore. We strongly recommend that DOE abide by the recommendations contained in standard reference texts on the accurate use of graphics for illustrating information.[20]

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[20] See e.g., Tufte, Edward R., Yale University, "The Visual Display of Quantitative Information", Graphics Press, Cheshire, Connecticut, 1983.

6. **The Draft Five-Year Plan Arbitrarily Distinguishes Between "High-Level Waste" and "Spent Nuclear Fuel."**

The Nuclear Waste Policy Act defines "high level radioactive waste" as

> (A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and
>
> (B) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.[21]

The Nuclear Regulatory Commission (NRC) has defined "other highly radioactive material" in the second part of the definition to include spent nuclear fuel rods.[22] The Draft Five-Year Plan muddles this definition by distinguishing between high level radioactive waste and spent nuclear fuel.[23]

Historically, the U.S. Government has reprocessed spent nuclear fuel to extract special nuclear material such as plutonium and highly enriched uranium. Therefore, because DOE spent nuclear fuel was not to be directly disposed of in a repository, and because the Energy Department was exempted from most NRC regulations, only the DOE waste resulting from reprocessing was considered high level waste. But, as the Draft FYP acknowledges, the Department has announced that reprocessing will not be continued. This discontinuation of reprocessing should be a watershed event in DOE's waste management operations. Perhaps more than any other

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[21] 42 U.S.C.A. 10101(1a).

[22] 10 CFR 60.2. The EPA's High Level Waste regulations include separate definitions for "spent nuclear fuel" and "high-level radioactive waste." (40 CFR 191.02.) The EPA definition of high-level waste, however, references the Nuclear Waste Policy Act definition, and therefore includes spent nuclear fuel intended for "permanent isolation."

[23] DOE, Draft 1992 FYP, p. I-96 & 97.

activity in the nuclear weapons complex, reprocessing has been responsible for much of the massive environmental contamination that distinguishes the defense nuclear enterprise from U.S. civilian nuclear operations.

Since 1944, the United States has operated a number of nuclear reprocessing facilities to produce an estimated 100 metric tons (MT) of plutonium and 500 MT of highly enriched uranium[24] for defense missions.[25] The F-Canyon at the Savannah River Site (SRS) and the PUREX facility at Hanford primarily produced weapon-grade plutonium. The H-Canyon at SRS and the Idaho Chemical Processing Plant at the Idaho National Engineering Laboratory (INEL) primarily produced uranium. The historic justifications for reprocessing, to produce these materials, no longer exist.

In its Reconfiguration Study released last year, the Energy Department acknowledge that

> ...plutonium requirements are reduced sufficiently to be satisfied by plutonium from retired warheads alone...it may be possible to produce new pits using only plutonium recovered from pits of retired warheads. Plutonium contained in existing oxides, wastes or residues would not be required and the scale of plutonium operations could be reduced.[26]

Hence, the need for the F-Canyon and PUREX essentially disappeared. More recently, Energy Secretary Watkins indicated in an internal memorandum that

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[24] See Cochran, T.B., and R.S. Norris, "U.S. Nuclear Warhead Production", Ballinger Inc., Cambridge, MA, 1987.

[25] In addition, operation of a reprocessing facility primarily for civilian spent fuel at a site near West Valley, New York, produced 123,000 cubic meters (32 million gallons, 0.3 percent of the HLW by volume, and 2.6 percent of the HLW by curie content).

[26] DOE, Nuclear Weapons Complex Reconfiguration Study, DOE/DP-0083, January 1991, pp. 65 and 160.

> ...[highly enriched uranium (HEU)] required for the nuclear weapons program can now be made available by means other than reprocessing [and that] the weapons complex of the future will not require the use of reprocessing facilities for HEU recovery.[27]

Consequently, Energy Secretary Watkins directed that "site specific actions and timetables" for the "most practical and prompt phaseout of reprocessing activities" be drawn up.

With the shutdown of its reprocessing facilities the Department's spent nuclear fuel rods require "permanent isolation" and should, therefore, be defined as "high level waste." The Draft Five-Year Plan indicates that "DOE spent nuclear fuel will be disposed of directly in a repository."[28] Therefore, no technical justification exists for DOE's distinction between "high level waste" and "spent nuclear fuel." DOE's only possible justification for maintaining this distinction is a legal one -- DOE continues to be exempted from NRC regulation for many issues. The Draft FYP appears to ignore the new technical situation regarding reprocessing and to flaunt its legal exemption.

A clue to the Draft FYP's unsubstantiated distinction between high level waste and spent fuel rods, may lie in another brief phrase regarding spent fuel rods: "Treatment prior to disposal will be required."[29] The Draft FYP, however, provides no useful technical information regarding what is meant by "[t]reatment." Nor does the Draft FYP indicate why treatment is "required" and who has made this determination. Because of the long legacy of massive environmental contamination resulting from reprocessing and because of the Department's recently thwarted

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[27] Watkins, James D., DOE, "Memorandum to Assistant Secretary for Defense Programs, et al., Subject: Highly Enriched Uranium Task Force Report," February 24, 1991.

[28] DOE, 1992 Draft FYP, p. I-97.

[29] DOE, 1992 Draft FYP, p. I-97.

attempt to redefine reprocessing operations at PUREX as "waste treatment," readers of the Draft FYP should be concerned about the prospect of this brief phrase providing a pretext for continued reprocessing under the guise of "treatment".

The Draft FYP indicates that "[I]nitial research will address metal, oxide, and graphite spent nuclear fuel stored at INEL."[30] Hence, the provocative statement that "treatment...is required" may refer to the plan outlined with much fanfare by DOE in its spent fuel management plan for the Idaho Chemical Processing Plant issued personally by DOE's Assistant Secretary for ERWM to the Governor of Idaho. But, this plan is not referenced in the Draft FYP. Even if the Idaho plan were referenced by the Draft FYP to justify the unexplained need for "treatment", it provides very little specific technical information on what treatment options are being considered. For example, does the term "treatment" envision chemical separations technologies? Does "treatment" mean the possible use of an Advanced Liquid Metal Reactor as an actinide burner, as proposed by Argonne National Laboratory and the General Electric Company? Does the Draft FYP suggestion that "treatment...is required" indicate a different technology for disposing of commercial spent fuel compared to DOE spent fuel? Does the Draft FYP suggest that "treatment" is required for highly enriched uranium containing fuel rods, U-238/plutonium targets, neptunium/Pu-238 targets, graphite fuel elements or integrated D-9 stainless steel alloy metal fuel assembly but not zirconium-clad slightly enriched fuel rods?

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[30] Ibid.

7. **Miscellaneous.**

A. Mixed Low-Level Waste.

The section in the Draft FYP on mixed low-level waste (pages I-111 and I-179) is wholly inadequate for a number of reasons. First, the section fails to convey accurately to a reader not familiar with the issue that this is one of the major crises now confronting the Energy Department. There are currently inadequate means for treating or disposing of mixed waste in the U.S. As a result most DOE facilities are currently violating federal hazardous waste law, which prohibits the storage of certain hazardous wastes except for the "purpose of the accumulation of such quantities ...as necessary to facilitate proper recovery, treatment of disposal...."[31] Instead of acknowledging the need to deal technically with these wastes in compliance with the law, DOE spent years resisting the legal imposition of such controls. As a result the problem of how to treat these waste is one of the major subjects under negotiation in the U.S. Congress now finalizing the Federal Facilities Compliance Act.

Second, although the Draft FYP accurately summarizes two options available under RCRA for certain wastes[32], it falsely states that "DOE currently plans to treat all mixed low-level wastes to RCRA standards before disposal."[33] In fact, DOE obtained in October 1990 a conditional "No-Migration Variance" for mixed low-level transuranic waste to be disposed of in the Waste

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[31] 40 CFR 268.50(a)(1)

[32] A typo in the draft FYP may lead to confusion among some readers: "If it can be demonstrated that migration from a land disposal unit will [NOT] occur for as long as the waste remains hazardous." (Page I-111)

[33] DOE, "Draft FYP", p. I-111.

Isolation Pilot Plant.[34] The Department should correct this misstatement in the FYP. The correction should address all mixed waste and not selectively discuss non-transuranic mixed waste.

B. Transuranic Waste.

The FYP released in 1991 indicated that DOE currently stored 61,600 m^3 of transuranic (TRU) waste, and that approximately 2000 m^3 of additional TRU waste were generated annually. The Draft 1992 FYP, however, indicates that only 60,000 m^3 (1,600 m^3 less than indicated in the 1991 FYP) were being stored (page I-101). It is not clear whether this discrepancy is merely a result of numerical rounding or an actual volume decrease from compaction. The section also fails to mention that more than three times as much TRU waste has been buried as the amount retrievably stored. This information is discretely disclosed in the very problematic graphic on page I-182, which is not referred to in any text.

[34] 55 Fed. Reg. 47700, November 14, 1990.

ATTACHMENT A

DOE'S 30-YEAR CLEANUP GOAL: THE FADING CHESHIRE CAT COMMITMENT

The Department of Energy used the Five-Year Plan in 1989 to announce its goal of cleaning up its sites in 30 years. After nearly one-sixth of the time to achieve that goal has elapsed, the Department's restatement of that goal in subsequent Five-Year Plans raises questions about the Department's commitment to meeting this goal. Each succeeding restatement includes more and more qualifying language resulting in the clarity of the commitment becoming fuzzier and fuzzier, so that the 30-year cleanup goal (27 years and counting) seems to fade like the Cheshire Cat from "Alice in Wonderland" who slowly disappeared until all that remained visible was a taunting, toothy grin.[35] Readers of the Draft FYP will reasonably wonder what will remain visible from DOE's original 1989 commitment to clean up its sites within 30 years.

August 1989[36]

- "...and its goal of cleanup at all sites within 30 years."[37]
- "This Plan announces DOE's commitment to a 30-year goal to clean up and restore the environment at its nuclear sites, to revitalize its own internal culture, and to break with the dysfunctional aspects of its past activities and corporate posture."[38]

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[35] Carrol, Lewis, Alice's Adventures in Wonderland, 1865.

[36] DOE, Environmental Restoration and Waste Management Five-Year Plan, Fiscal Years 1991-1995, DOE/S-0070, August 1989.

[37] Ibid., p. 2.

[38] Ibid., p. 4.

June 1990[39]

- "This document reaffirms the U.S. Department of Energy's (DOE's) commitment to a 30-year goal of compliance with laws, regulations, and agreements aimed at protecting human health and the environment..."[40]

- "DOE has set the ambitious goal of having all of its facilities cleaned up and in compliance with all applicable environmental laws and regulations by the year 2019."[41]

August 1991[42]

- "Not only will the DOE facilities complex of 2019 look different from today's complex, but individual sites will also vary in their availability for use - from unrestricted to restricted."[43]

- "In the future, all DOE sites will be in compliance with applicable laws, regulations, and agreements related to health, safety, and the environment (section 1.2.3), and all of its new facilities will have been designed to minimize the generation of pollutants and waste."[44]

- "The fundamental goal of the program is to ensure that risks to human health and safety and the environment posed by the Department's past, present, and future operations are either eliminated or reduced to prescribed, safe levels through cleanup of the existing inventory of inactive sites and facilities by the year 2019. This 30-year goal not only provides the guidance for long-term planning, but also guides daily operations."[45]

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[39] DOE, Environmental Restoration and Waste Management Five-Year Plan, Fiscal Years 1992-1996, DOE/S-0078P, June 1990.

[40] Ibid., p. 2.

[41] Ibid., p. 28.

[42] DOE, Environmental Restoration and Waste Management Five-Year Plan, Fiscal Years 1993-1997, DOE/S-0089P, August 1991.

[43] Ibid., p. 48.

[44] Ibid., p. 48.

[45] Ibid., p. 52.

May 1992[46]

- "In 1989, DOE set a 30-year goal: To have been long operating all facilities in full compliance with applicable laws and regulations and to ensure that risks to the environment and human health and safety posed by the 1989 inventory of inactive and surplus facilities and sites are either eliminated or reduced to prescribed, safe levels."[47]

- "The initial focus of EM's long-range plans to achieve DOE's 30-year goal is on achieving compliance and reducing near-term risks to workers, the public, and the environment. EM's long-term objective to achieve permanent solutions to waste and remediation challenges has been modified (1) to accommodate an expanded facility decontamination and decommissioning mission and (2) to involve local communities in evaluating future site and land use options."[48]

- [By 2019:]
  "The 1989 inventory of DOE surplus facilities and inactive sites will pose and will be perceived to pose, no unacceptable risk to public health and safety and the environment.

  Remediation, decontamination and decommissioning, recycling, and conversion of sites and facilities added to the inventory after 1989 will either be completed or will be proceeding according to a well-defined and nationally accepted schedule."[49]

- "DOE has set a 30-year goal to clean up all of its sites and to bring all sites into compliance with current and future environmental regulations."[50]

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[46] DOE, Environmental Restoration and Waste Management Five-Year Plan, Fiscal Years 1994-1997, Predecisional Draft, May 1992.

[47] Ibid., p. I-7.

[48] Ibid., p. I-9.

[49] Ibid., p. I-37.

[50] Ibid., p. I-172.

ATTACHMENT B

REPROCESSING EXACERBATES EXISTING WASTE PROBLEMS

In a reprocessing plant, fuel rods are dissolved in hot acid, which is then subjected to a series of chemical extractions to isolate selected radioactive materials such as plutonium or uranium. Highly radioactive materials such as cesium-137 and strontium-90 remain in the waste acid, which is then generally stored in underground tanks as a liquid (Hanford, Savannah River) or a calcined solid (INEL). In this process, the volume of the waste increases several thousand-fold from the original fuel to the final liquid and hundreds of times to the final solid calcined waste.

More than 40 years of military reprocessing in the U.S. has produced 399,000 cubic meters (105 million gallons) containing more than one billion curies of high-level waste,[51] and a far larger quantity of low-level liquid radioactive waste.[52] In contrast to the DOE program, spent commercial nuclear fuel is not reprocessed prior to disposal, but instead is stored in pools or above ground in "dry casks" prior to permanent disposal. Massive environmental problems have been created by each DOE reprocessing facility. It is not clear whether it is possible, with existing technology, to resolve fully these waste problems. It is clear, however, that the U.S. should not be adding unnecessarily to these waste problems while we spend enormous sums of money to try to solve the existing problems. It is useful to review briefly each of the major

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[51] DOE/OCRWM, "Integrated Data Base for 1991: U.S. Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics", DOE/RW-0006, Rev. 7, October 1991.

[52] In addition, operation of a reprocessing facility for civilian spent fuel at a site near West Valley, New York from 1966-1972, produced 1,230 cubic meters (325,000 gallons), which comprises 0.3 percent of the HLW by volume, and 2.6 percent of the HLW by curie content.

reprocessing facilities in the U.S. to understand the magnitude of the current environmental and financial costs that would be exacerbated by continuing reprocessing.

The twin "Canyon" chemical separations plants at Savannah River -- F and H -- have generated approximately 132,000 cubic meters (35 million gallons) of high-level waste.[53] Operation of the F-and H-Canyon produces approximately 1.16 million and 1.5 million gallons, respectively, of high-level waste per year.[54] In addition, annual operations of F- and H-Canyons generate approximately 460,000 cubic meters (121 billion gallons) per year of liquid low-level radioactive wastes, including contaminated cooling water and storm water runoff.[55] To handle the high level waste stored in tanks, DOE has constructed a waste vitrification facility costing approximately $1 billion.[56] Discharges from the canyons into "Seepage Basins" have resulted in widespread groundwater contamination.[57]

The Idaho Chemical Processing Plant (ICPP) at DOE's Idaho National Engineering Laboratory has produced 12,000 cubic meters (3 million gallons) of high-level waste.[58] In addition, the ICPP

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[53] U.S. Department of Energy, Integrated Data Base for 1991: U.S. Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics, DOE/RW-0006, Rev. 7, October 1991, p. 44.

[54] DOE, "Environmental Survey Preliminary Report," DOE/EH/OEV-10-P, August 1987, pp. 4-24.

[55] U.S. DOE, "FEIS: Continued Operation of K-, L-, and P-Reactors, Savannah River Site," (December, 1990), DOE/EIS-0147, p. 4-39.

[56] Known as the "Defense Waste Processing Facility."

[57] DOE, "Environmental Survey Preliminary Report, Savannah River Plant", DOE/EH/OEV-10-P, August 1987, p.4-23.

[58] Integrated Data Base, (DOE/RW-0006, Rev. 7), p. 43. High level waste at the ICPP is reduced in volume by approximately 6 times by "calcining" before interim storage in bins.

pumped almost 7 billion gallons of radioactive waste into an onsite underground well averaging nearly a million gallons a day between 1953 and 1974.[59] The proposed expansion of the ICPP would have nearly doubled the plant's waste output to as much as two million gallons per day.[60]

The costs for handling ICPP waste are significant and increasing. Construction costs for "temporary" long-term storage bins for calcined waste at ICPP have increased substantially. In the early 1980s, DOE constructed the sixth set of storage bins for calcined wastes for approximately $14 million. By 1989, DOE estimated the cost for the eighth set of storage bins at $30 million.[61] DOE's FY 1993 Budget Request includes approximately $100 million for waste management operations at the ICPP.

Reprocessing at the Hanford Reservation, primarily at the PUREX plant, has produced approximately 253,600 cubic meters (67 million gallons) of high-level wastes.[62] PUREX generates 3 cubic meters (800 gallons) of high-level waste per metric ton of fuel processed.[63] Dozens of the high-level waste tanks have been found to be leaking. In addition, safety concerns have arisen about the potential for an explosion in at least one of the tanks. The construction cost for building a vitrification plant, similar to the SRS plant, to solidify the high level waste

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[59] Energy Research and Development Administration, "Waste Management Operations, Idaho National Engineering Laboratory", September 1977, ERDA-1536, September 1977, p. II-89.

[60] DOE, "Environmental Assessment: Fuel Processing Restoration at the Idaho National Engineering Laboratory", DOE/EA-0306, August 1987, p. 2-14.

[61] DOE/Idaho Operations Office, "Institutional Plan: FY 1986-FY 1991", November 1985, p. 15.

[62] Integrated Data Base, p. 53.

[63] U.S. Department of Energy, DEIS: Process Facility Modifications Project, DOE/EIS-011D, April 1986, 3.23.

stored in underground tanks is expected to cost more than one billion dollars. Discharges from PUREX to percolation "cribs" have caused widespread groundwater contamination in the 200-East Area extending to the Columbia River. The ground water cleanup cost has not been accurately estimated. Finally, cleaning up the relative small amount of reprocessing waste generated at West Valley Site is expected to cost nearly $900 million dollars.[64]

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[64] U.S. Department of Energy, Environment, Safety and Health Needs of the U.S. Department of Energy, DOE/EH-0079, December 1988, v. 2, p. 229.