General
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JUL 30 1996
DOE OVERSIGHT BUREAU

July 26, 1996

To: Citizens Advisory Board for DOE/LANL

From: Hank Daneman and Manny Trujillo

Re: Response to "Minority Report" of 7-19-96 on CAB Recommendation #4 of 7-9-96 to:

"Defer Further Expenditures on Transfer of Plutonium Manufacture From Rocky Flats"

The presentation of a so-called "minority report" directly to the DOE by three of our members is regrettable for the following reasons:

1. It implies that the CAB does not follow correct procedures in making recommendations,

2. It alleges that supporting evidence is actually "unsubstantiated opinion", and,

3. It fails to conform to our CAB Code of Conduct.

LANL/WM/MISC

Specifically:

A. Our concern relates to the transfer of Plutonium ~~manufacturing facilities~~ from **Rocky Flats** because this transfer is dependent on approval of LANL as a manufacturing site. ~~and~~ DOE headquarters has not yet agreed with this proposal. Notwithstanding, LANL management has already initiated this transfer.

A.1 The Draft Institutional Plan - 1997 - FY 2002, page 33 states, "The Laboratory completed the transfer of necessary Rocky Flats hardware and gauging equipment, . . ." even though this page refers to the preparation for limited scale production of pits as "contingent upon the SSM-PEIS Record of Decision".

A.2 Dr. Hecker's congressional testimony (3-12-96) states pit production facilities are on a a "fast track".

A.3 The FY 1997 budget logs expenses of $14.3 Million for transfer from Rocky Flats starting in 2Q96 until 3Q97.

B. It is not untimely for the CAB or its individual members to express their concern to the DOE at any time we become aware of problems which may have a serious affect on the people of the communities of Northern New Mexico. In fact, it is our duty to do so, especially since it is part of the CAB mission.

B.1 In addition, it should be noted that Congress is still debating the DOE/LANL budget.

B.2 Safety concerns are still under investigation. Note that the Office of Oversight will shortly conduct an independent "Safety Management Evaluation" at LANL, just as we recommended, to "determine how line management responsibilities for safety are effected and if they are adequate; if current staffing, including skills and numbers, are appropriate to conduct work safely; and if requirements are defined and implemented such that all operations are conducted safely and within approved limits including limiting risk".

B.3 The CAB has a continuing responsibility, irrespective of DOE public hearing dates and deadlines, to provide recommendations toward protecting safety and health of Northern New Mexico communities surrounding LANL (see our Mission Statement).

C. Our recollection disputes the allegation there was a voice vote. As a ma\ter of fact, some numbers of votes mentioned in the same allegation contradicts this suggestion.

The time to object to the rules and procedures is when the vote and decision of the CAB is being referred to the Secretary. At that time, a recount is in order. Further, our Code of Conduct does suggest that backtracking is to be discouraged.

D. Cost Effectiveness at the Sacrifice of Safety Concerns:

D.1 The PEIS provides numerous tables and discussion on the cost effectiveness of producing pits at LANL (see pages 8-1 to 8-19 of the Draft PEIS). Page 8-17 attached is typical.

D.2 Risk analysis is a series of unsubstantiated guesstimates. The one on page 31 concerning the risk of fire did not contemplate a fire such as that of June 1996. Pages 58 and 59 of the Topical Report describing accident scenarios lists 1988 technology for risk analysis - not the nationally accepted ASTM standard methods.

D.3 The aspects of human safety are mentioned on page 39 of the PEIS Table 4-4 which uses such non-quantitative terms as "not likely" referring to accident possibilities.

We are now well aware of the dismal record of LANL management in preventing serious accidents or radiological releases. This attitude of "trust me" does not conform to ASTM or other national standards for Risk Analysis.

D.4 It is further claimed (para. 3.1, page 25) that our environment will not be affected

due to Plutonium production at the transferred facility at LANL.

The NMED comment of May 6, 1996 states that radiological hazards are only covered for the old building - not for the transferred facility.

This is why we state that the PEIS fails to properly address safety concerns although cost effectiveness is amply covered. Clearly, the LANL argument presented to Congress is one stressing cost benefits and not improved safety over the failed Rocky Flats operation. It is indeed worrisome that the Rocky Flats experience of prematurely starting unapproved production processes is now underway at LANL using most of the same apparatus and even some of the same personnel.

CONCLUSION:

The reason we find the abrupt action of the three dissenting Board members to be regrettable and damaging to the CAB credibility is that it could easily have been avoided if first addressed in a constructive manner to our Chairs, the undersigned who sponsored the recommendation, or, better yet, in front of the entire Board at the time allocated for this very discussion. It is with this desire to preserve our crdibility that our Code of Conduct requests we "Be supportive of team decisions, even though a member may not totally agree."

At this point, we see no alternative but to refer this matter to the Board as a whole for appropriate action. The CAB deserves a complete and honest statement as to the motivation of the three members of the minority for bypassing our guidelines and addressing a flawed set of allegations directly to the DOE.

Hank Daneman

Manny Trujillo (s)

Manny Trujillo

Attachments: Institutional Plan FY 1997 FY 2002, Page 33.
Dr. Hecker Testimony 3-12-96, page 12.
LANL Project 93-D-123 TEC Budget page 364.
SSM PEIS page 18-7.
Environmental Assessment for the Proposed CMR Upgrades, pgs 31 and 58

Distribution: CAB Members and Ex-officio Members

that needs to be developed to beneficially influence the nuclear future.

Manufacturing and Surveillance

To support the Defense Programs mission of DOE/AL, the Laboratory continues its efforts in stockpile evaluation and pit rebuild; operations in nuclear weapons dismantlement and disassembly; operation of the special recovery line; transition to manufacturing assignments for several nonnuclear technologies; and preparations for the limited-scale manufacture of pits (contingent upon the SSM-PEIS Record of Decision).

Stockpile Evaluation

Stockpile evaluation is the basis for continued confidence in the reliability and safety of the nuclear weapons stockpile. Activities in this area will increase in importance and are expected to expand at Los Alamos as the nation moves toward a smaller and more compact weapons production complex. Stockpile evaluation is currently focused on surveillance of milliwatt radioisotope thermoelectric generators, selected gas system components, plutonium pits, and Los Alamos detonators. NWT as design agency and NMSM as production agency work closely together on surveillance, with the former defining the testing requirements and assessing the surveillance results and the latter conducting the evaluations and reporting the results. Together, they work to improve surveillance procedures and to develop enhanced surveillance tools that will allow the prediction of component lifetimes.

Nonnuclear Consolidation

With the downsizing and consolidation of the nuclear weapons production complex, certain activities that were conducted at the Pinellas, Rocky Flats, and Mound facilities have been relocated to Los Alamos. Los Alamos has assisted the activity transfer groups in planning, scheduling, and defining the development and process prove-in activities needed to ensure a smooth transfer. Los Alamos is also a receiver site for several nonnuclear technologies, including high-energy detonators, beryllium and pit support, calorimeters, and neutron-generator-tube targets. In these areas, Los Alamos is conducting research and development related to design and production, providing test components, and supporting delivery requirements as they develop. The transfer of the activity for loading neutron-tube targets will be complete in FY96, about two years ahead of schedule. In addition, the transfer of calorimeter and high-energy detonator technology is to be completed by the end of FY97, and the transfer of beryllium and pit support will be completed by the end of FY98.

Pit Surveillance and Rebuild

In pit surveillance, new scientific evaluation methods were introduced in anticipation of longer-range predictive capability interests, and the annual goal of evaluating 19 surveillance pits was met one month ahead of schedule. Additionally, surveillance and inspection records were converted to electronic storage, and a CD-ROM reporting format was established to allow active comparison of original build data on a unit against data from similar units, effectively linking surveillance and archiving for the first time.

Establishment of the pit-rebuild capability, which is the capability to build war reserve (WR) pits to replace those removed from the stockpile for surveillance purposes, is another area in which the Laboratory has made good progress. The Laboratory completed the transfer of necessary Rocky Flats hardware and gauging equipment, developed a smaller and more accurate inspection gauge, and eliminated a hazardous fluid previously used in density measurements. By switching to dry machining, the Laboratory eliminated the need for chlorinated hydrocarbons and fluorocarbon cleaning fluids; the component cleaning process was then changed so that recyclable, supercritical carbon dioxide could be used. A modern and simpler quality control program for production was also introduced.

Associated with pit rebuild, specific technology areas that must be developed or enhanced at Los Alamos include certification of the beryllium machining capability, certification of the tubulation capability, development of the capability to interface pit materials, and development and certification of joining processes. By building a WR pit for the W88 warhead in FY98, we expect to be able to demonstrate that all the necessary technologies are in place to support the task of producing WR pits for the enduring stockpile.

Detonator Manufacturing and Surveillance

With the shutdown of operations at the Mound Plant in Ohio, DOE assigned Los Alamos the responsibility for evaluating and manufacturing detonators. Late in 1995, Los Alamos demonstrated the capability for performing the evaluations. The assignment for manufacturing detonators for the future stockpile includes the design and fabrication of detonator simulators used in flight-test units for stockpile evaluation. The simulators have WR-quality standards, and Los Alamos has now demonstrated the ability to

their knowledge of tritium hardware and processes and transferred the production capability to the Laboratory with significant improvements. The result is a system that is providing deuterated targets and will provide tritiated targets to Sandia National Laboratories for incorporation into neutron generators on schedule within months instead of years. The improved process also reduced radioactive waste generated by 90 percent.

Plutonium Pit Manufacturing

The preferred SSM-PEIS alternative for pit manufacturing calls for a limited-scale production of pits at the Los Alamos TA-55 plutonium facility, the only facility in the nation currently able to tackle such an assignment. We are aggressively supporting this decision because we believe that pit manufacturing at the level of approximately 50 pits per year would greatly complement our current R&D and surveillance missions, while concurrently saving the taxpayers a lot of money.

We are developing a plan that would put in place the capacity to build 50 complete pits per year on a single-shift basis. The interior equipment and utilities in one wing of the plutonium facility will be rearranged so that we have an integrated production and R&D area. To meet the projected build requirements of the military, we are placing the plutonium facility project on a fast-track internal validation and review for submission as a new construction start in the FY 1998 budget.

We will be in very limited pit production for the W88 warhead for the Trident II pit rebuild program (rebuilding units destroyed in surveillance) during FY-1998. Getting started as soon as possible is important to meet the Navy's requirements and to capture the pit production knowledge base before it is lost. No war reserve pits have been manufactured in the United States since Rocky Flats shut down its plutonium operations in June, 1989. By employing the integrated R&D, surveillance end remanufacturing paradigm, we expect to improve the existing fabrication processes, minimize waste generation, and reduce worker radiation exposure. In addition, the hands-on manufacturing operations will help to maintain rigorous nuclear weapons safety practices among our scientists, engineers and technicians.

We are also teaming with colleagues at Lawrence Livermore, Savannah River, and Pantex to develop contingencies for larger-scale pit-production requirements. We expect to learn much from the W88 pit rebuild program and the 50-pit manufacturing module at TA-55 that would allow the team to design a modular, large-scale production capability that could be deployed rapidly should requirements change. I should add that such teaming is also occurring with Savannah River, Pantex, Allied-Signal Kansas City, and the Y-12 plant to address other nuclear weapons component production capabilities. In all cases, we will use the integrated R&D, surveillance, and remanufacturing paradigm.

Testimony of Siegfried S. Hecker,

Director

Los Alamos National Laboratory

Hearing

of the

Subcommittee

on

Military Procurement

Committee on National Security

United States House of Representatives

March 12, 1996

8. Project Description, Justification, and Scope (continued)

Existing space at TA-16 will be utilized to receive the transfer of the technology from Mound.

Subproject 23: ICF Target Loading: TEC - $1,200,000

TEC	Previous	FY 1995	FY 1996	FY 1997	Outyear	Construction Start - Completion Dates
$ 1,200	$ 0	$ 300	$ 500	$ 400	$ 0	3rd Qtr. FY 1995 - 4th Qtr. FY 1997

LOS ALAMOS NATIONAL LABORATORY - PRODUCTS TRANSFERRED FROM PINELLAS PLANT: TEC - $12,799,000

Subproject 24: Neutron Tube Target Loading: TEC - $12,799,000

TEC	Previous	FY 1995	FY 1996	FY 1997	Outyear	Construction Start - Completion Dates
$ 12,799	$ 2,713	$ 5,239	$ 2,847	$ 2,000	$ 0	2nd Qtr. FY 1994 - 1st Qtr. FY 1997

TEC increased from $4,115,000 to $12,799,000. Initial plans called for relocation and reestablishment of this activity at TA-21. Since that time, DOE has directed that all tritium related work be phased out of TA-21 due to operational and safety concerns. Subsequently, an interim plan, proposed consolidation of the NTTL activities in the Weapon Engineering Tritium Facility (WETF) at TA-16, which also supports tritium operations. This plan has now been fully documented and will require additional ES&H upgrades to existing TA-16 facilities. The TEC increase incorporates the change in location and required upgrades to assure appropriate ES&H safeguards.

Building 209 at TA-21 will be used as the location of the interim facility for the Neutron Tube Target Loading technology program at the LANL. Existing space at TA-16 will be utilized as the permanent location for the NTTL technology. The interim facility is required to move the technology prior to the cessation of donor site activities. The consolidation activities include Tritium Target Loading and Target Loading Verification. The loading of neutron tube targets will be accomplished by installing a glovebox line in Building 209. A small portion of an existing concrete frame structure will be modified to accept this glovebox line. The glovebox line will house a target loader, vacuum pump for the loader, and will have ancillary equipment consisting of a mass spectrometer, calorimeter, film dissolution station, thermal desorption with fume hood, and related piping, power, instrumentation, controls, etc.

FY 1997 funds will be used to complete construction and installation.

LOS ALAMOS NATIONAL LABORATORY - PRODUCTS TRANSFERRED FROM ROCKY FLATS PLANT: TEC - $14,270,000

Subproject 25: Pit Support Function: TEC - $2,145,000

TEC	Previous	FY 1995	FY 1996	FY 1997	Outyear	Construction Start - Completion Dates
$ 2,145	$ 995	$ 1,150	$ 0	$ 0	$ 0	2nd Qtr. FY 1996 - 3rd Qtr. FY 1997

TEC decreased from $4,233,000 to $2,145,000. TEC decrease due to a reassessment of donor and receiver site capital equipment transfer costs and requirements.

Building 66 at the TA-3/SIGMA site will be upgraded to accommodate the consolidation of the Pit Support technology maintenance program to be transferred from RF to LANL. Relocation of some equipment and pertinent records to continue to support the Pit Support mission is required.

A.3

Capability of Production Infrastructure to Support Scheduled Work - also represents a measurement of technical risk for the site alternative, as reflected in maturity of the production support infrastructure. Infrastructure elements that currently support production activities, such as numerical control machining, product engineering, precision tooling and gaging, NDT/NDE, precision assembly and joining score high.

Minimize Cost - measures the overall cost of an alternative to provide the specified product. Low investment and steady-state operating cost score high. The cost ranking algorithm to develop the ranking is:

Rank value = (Lowest Site NPV Cost / Site NPV Cost) x 100.

Ranking of Pit Manufacturing/Plutonium Reuse Alternatives

Ranking Criteria	Score	
	LANL	SRS
Basic Production Capability	90	70
Capability of Production Infrastructure	92	50
Minimize Cost	100	86

Ranking of Intact Pit Reuse, Recertification, and Requalification Alternatives

Ranking Criteria	Score	
	Pantex	NTS
Basic Production Capability	85	50
Capability of Production Infrastructure	100	50
Minimize Cost	100	51

10. Analysis of Ranking

10.1 Pit Manufacturing/Plutonium Reuse

Basic Production Capability to Support Scheduled Work: This criterion addresses technical risk with respect to the present situation at the site. The LANL currently has technology elements applicable to plutonium fabrication in operation or in use in development programs, and was scored high on this criterion. The SRS has never manufactured pits and although the site assumed a process flow sheet which employs proven technology, lack of experience in the exercise of that technology poses a technical risk with respect to timely startup if SRS were selected. The SRS was assigned a lower score on this basis.

Capability of Production Infrastructure to Support Scheduled Work: This criterion addresses risk associated with past and present demonstration of competency in production management. Both sites have demonstrated production management skill. In the case of SRS, scheduling of fuel fabrication, reactor charging and discharging,

review of the LLNL data report (LLNL 1995), Accident Scenario Notes (Notes 1992), Department of Energy Defense Program Survey Report (DOE, 1993) and the Y-12 Environmental Assessment (DOE, 1994) this scenario is evaluated. The postulated criticality is based on the characteristics of a solution criticality which is an initial burst of 10^{18} fissions and a total yield of 10^{19} fissions during 8 hour period as liquid is boiled from a solution. This is an extremely unlikely accident event, which has an estimated probability in the range of $1x10^{-6}$ to $1x10^{-4}$ per year. This accident, with the same probability range of $1x10^{-6}$ to $1x10^{-4}$ per year (average probability of $1x10^{-5}$ per year), was evaluated at ORR, LANL, and LLNL. The source terms are based on 10^{19} fissions and are presented in appendix F (Facility Accidents), of Stockpile Stewardship and Management PEIS.

2.3.1.2 Scenario 2: Fire-induced Dispersion of Highly Enriched Uranium From a Building Collapse and Resultant Fire

The postulated accident assumes that a beyond design basis earthquake causes collapse of the uranium process, component fabrication, and storage facilities. Fires result in the process and component fabrication facilities due to ruptured gas lines and/or hydraulic lines.

ORR. The probability of this accident is beyond evaluation basis ($1x10^{-7}$ to $1x10^{-6}$ per year). The total HEU source term released in oxide form is estimated to be 17 kg. The source term breakdown by building is as follows. For Building 9204-4, the immediate and resuspension source term is approximately 0.8 kg of HEU. For Building 9206, the total immediate and resuspension release from the facility is 8.6 kg of HEU. For Building 9212, the total immediate and resuspension source term is 7.2 kg of HEU. For Building 9215 the total immediate and resuspension source term is 0.4 kg of HEU and 1.5 kg of depleted uranium.

LANL. The accident at ORR is assumed to be applicable at LANL.* The probability is assumed to be in the range of $1x10^{-7}$ to $1x10^{-6}$ per year. The total release is 17 kg of HEU and 1.5 kg of depleted uranium. The location of the release is the CMR Building.

LLNL. The accident at ORR is assumed to be applicable at LLNL. The probability is assumed to be in the range of $1x10^{-7}$ to $1x10^{-6}$ per year The total release is 17 kg of HEU and 1.5 kg of depleted uranium.

The collapse of five key uranium buildings (Building 9204-4, 9206, 9212, 9215 and 9720-5) at ORR was analyzed (DOE, 1994) using data from the *Defense Program Safety Survey* (DOE, 1993). This accident is considered so unlikely that it is not reasonably foreseeable, and therefore has a probability of less than $1x10^{-6}$ per year. The postulated accident based on this information assumes that a beyond evaluation basis earthquake causes the buildings to collapse simultaneously releasing 17 kg of HEU and 1.5 kg of depleted uranium. The probability is assumed to be in range of $1x10^{-7}$ to $1x10^{-6}$ per year. This accident event at ORR is assumed to be applicable for evaluation at both LLNL and LANL.

* (prepared before the forest fire of June 1996).

1. INTRODUCTION

This report documents the input data from and results of the analysis of impacts from accidents considered in the *Draft Programmatic Environmental Impact Statement* (PEIS) *for Stockpile Stewardship and Management* (DOE, 1996a). The Stockpile Stewardship and Management PEIS analyzed the consequences to the environment that would be expected to occur if changes to the Nuclear Weapons Complex were implemented to support the Department of Energy's (DOE's) Stockpile Stewardship and Management Program. The Stockpile Stewardship and Management PEIS considered eight separate missions. The eight missions considered were:

- Weapons assembly/disassembly (A/D)
- High explosives (HE) fabrication
- Pit fabrication
- Intrusive and nonintrusive modification pit reuse
- Storage of plutonium strategic reserves
- Storage of highly enriched uranium (HEU) strategic reserves
- Secondary and case manufacturing
- Nonnuclear fabrication

Eight separate sites were also considered as part of the Stockpile Stewardship and Management PEIS:

- Pantex Plant, Amarillo, TX
- Y-12 Plant at Oak Ridge Reservation, Oak Ridge, TN
- Savannah River Site, Aiken, SC
- Los Alamos National Laboratory, Los Alamos, NM
- Lawrence Livermore National Laboratory, Livermore, NM
- Sandia National Laboratories, Albuquerque, NM
- Nevada Test Site, NV
- Kansas City Plant, Kansas City, MO

Table 1-1 presents the combinations of sites and missions for which accident impacts were analyzed.

Section 2 presents the development of the accident scenarios for the missions alternatives. Section 3 presents the site related data used in the accident analyses. This data include population distributions, distances from accident locations to the maximally exposed individual, and meteorological data. Section 4 describes the application of the accident scenarios. Section 5 lists the references used in this report.

alternatives do no necessarily have approved safety analysis reports for the proposed stockpile stewardship and management mission at this time and therefore the terms EBA and BEBA are used instead.

4.3 Complimentary Cumulative Distribution Functions

A graphical presentation of accident consequences (technically referred to as Complimentary Cumulative Distribution Functions (CCDFs), measured in terms of the number of cancer fatalities in the population residing out to a distance of 80 km (50 mi) from the point of the accident, is given for each alternative in chapter 4 of the Stockpile Stewardship and Management PEIS. Whereas the accident impacts listed in chapter 4 of the Stockpile Stewardship and Management PEIS are single point values, in reality any value over a specified range has a probability of occurring. (This is technically referred to as the distribution of probable values on either side of the single point value.) In the CCDF, the range of probable values, or the range of probable consequences is shown on the horizontal axis. For most alternatives, the range of consequences is from essentially zero cancer fatalities to as many as a hundred or a thousand or even more depending on the alternative, the size of the offsite population, meteorology, and other factors. As the number of cancer fatalities increases, the probability of occurrence decreases as measured on the vertical axis. One way of reading the information in the CCDF is for the reader to choose a value for the number of cancer fatalities on the horizontal axis; follow a vertical direction to the curve; and follow a horizontal direction to a value on the vertical axis. The value on the vertical axis represents the probability that the number of cancer fatalities would exceed the value chosen on the horizontal accident. That probability value reflects both the probability of the accident and the variability of potential outcomes of an accident implicit in certain modeling parameters such as meteorology.

5. REFERENCES

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Scientech 2 Everlne (Scientech) to Joyce (HNUS), Subject: Aircraft Crash Risk at Pantex, January 26, 1996

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