ALLIANCE FOR NUCLEAR ACCOUNTABILITY

NUCLEAR REALITY CHECK$

The U.S. Department of Energy's Most Dangerous Budget-Busting Projects

April 2011

Alliance for Nuclear Accountability

A national network of organizations working to address issues of nuclear weapons production and waste cleanup

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Nuclear Reality Check$

The U.S. Department of Energy's Most Dangerous Budget-Busting Projects

The U.S. Department of Energy (DOE) is responsible for managing federal nuclear programs ranging from loan guarantees for new reactors to construction of plants for manufacturing new warhead components to cleaning up the legacy of nuclear weapons production and promoting alternative energy technologies. DOE's budget request for Fiscal Year 2012 totals $29.5 billion.

A review of nine major Department of Energy projects by the Alliance for Nuclear Accountability (ANA), a national network of groups from communities downwind and downstream from U.S. nuclear sites, is disturbing. DOE continues to sponsor many programs that are characterized by both runaway costs and unacceptably high risks in terms of public health, safety, the environment and nuclear proliferation.

As repeatedly noted by the U.S. Government Accountability Office (GAO), many DOE projects are financially out of control. Projected spending has soared to as much as ten times the original agency projection. Several projects are years past their original completion deadlines with actual operational dates still unknown.

Current program costs for the high-risk DOE projects profiled in this report total more than $100 billion. That figure includes more than $40 billion in estimated construction spending for nuclear weapons research and production facilities, $9 billion for nuclear bomb and warhead Life Extension Programs, and nuclear reactor loan guarantees of $54.5 billion.

In addition to runaway costs, these projects have huge environmental, safety and proliferation dangers.

- Taxpayer-funded loan guarantees to subsidize new nuclear reactor construction were viewed as too risky by U.S. private sector investors even before the disasters at Japan's Fukushima Daiichi facility.

- Production of highly toxic mixed-oxide (MOX) plutonium reactor fuel from warhead plutonium is an enormous environmental danger as demonstrated by contamination from the Daiichi 3 reactor.

- Construction of weapons research and production facilities, such as the Uranium Processing Facility at Oak Ridge, the Chemistry and Metallurgy Research Replacement Project at Los Alamos National Laboratory, the National Ignition Facility at Lawrence Livermore National Laboratory, and the new Kansas City Plant, threaten to undermine global progress toward curbing nuclear proliferation.

- Design and manufacture of new versions of the W78 warhead and B61-12 bomb under the guise of Life Extension Programs, at a time when nuclear weapons systems are being retired due to the New START treaty, sends the wrong message to the rest of the world

- Poor oversight at the Hanford Waste Treatment Plant diverts huge sums of money from an underfunded cleanup budget.

At the same time it is pursuing these dangerous, budget-busting nuclear projects, DOE is failing to provide adequate funding for its other high priority missions: cleaning up the radioactive and toxic legacy from decades of U.S. nuclear weapons research, testing, and development; funding much needed nonproliferation programs to secure fissile materials around the world; and promoting safe, clean energy alternatives.

Despite some progress, DOE estimates its remaining clean-up obligation at between $275 and $308 billion. Environmental remediation schedules stretch out to at least 2038 and as far as 2062 at some sites. Yet the agency's FY2012 budget does not request enough funding to comply with current, legally enforceable clean-up agreements and legacy management requirements. Congress and the Administration are also seeking to cut the nuclear nonproliferation budget. Similarly, DOE has underfunded research into carbon-free, nuclear-free technologies, which can meet the nation's future energy requirements.

Based on its analysis, the Alliance for Nuclear Accountability concludes that DOE's high-risk, high-cost projects should be reevaluated, scaled down or terminated. Among specific recommendations:

- Congress should not authorize any additional loan guarantees for new commercial reactors and should rescind authority for the remaining $10.2 billion.

- Congress should halt all funding for the mixed oxide (MOX) plutonium fuel fabrication plant, and direct DOE to reinstate the immobilization track for plutonium disposition.

- Congress should halt taxpayer funding for new nuclear weapons projects and require a review by the JASONs team of independent scientists to determine if the purpose of these facilities and programs has shifted, potentially making them unnecessary.

- Congress should limit all nuclear weapons Life Extension Programs to refurbishment of components necessary to maintain existing safety and reliability.

- GAO and the Office of Management and Budget should regularly audit DOE projects and hold project managers accountable for significant cost overruns.

PROJECT SUMMARIES

Chemistry and Metallurgy Research Replacement (CMRR) Project is proposed to replace an existing building at Los Alamos National Laboratory in New Mexico in order to expand the capacity to produce plutonium "pits" or "cores" for nuclear warheads.

- Original cost in 2004 was estimated to be between $350-$500 million, and the completion date was 2011.
- Current cost in FY2012 is estimated to be $5.86 billion, and the completion date is 2022.
- Risk – In addition to escalating costs and huge schedule overruns, the massive new building will duplicate existing manufacturing capabilities and generate even more nuclear waste. Moreover, it is being constructed in an earthquake-prone zone.

Uranium Processing Facility (UPF) is proposed to manufacture "secondaries" or components for nuclear warheads and to maintain NNSA's basic weapons capabilities at Oak Ridge in Tennessee.

- Original cost in 2005 was estimated to be between $600 million and 1.5 billion, and the completion date was 2018.
- Current cost in FY2012 is estimated to be between $6 billion and $6.5 billion, and the completion date is 2022.
- Risk – The project is unnecessary. Existing operations at Oak Ridge can continue without building the UPF, with its ever-spiraling budget and long-postponed completion.

Kansas City Plant manufactures or procures 85% of all nuclear weapons components for warheads. Through a questionable financial deal, this new weapons manufacturing plant will be owned by the local municipality in Missouri.

- Original cost in 2008 was estimated to be $500 million, and the completion date was 2014.
- Current cost in lease payments for twenty to forty years is estimated to run between $1.2 billion and $3.6 billion. The completion date remains 2014. Funding is outside DOE's budget.
- Risk – A city government will own a major nuclear weapons production plant and lease it to a private company (which in turn re-leases it to the federal government), leaving the city with no ability to hold the Energy Department accountable for environmental contamination and cleanup.

National Ignition Facility (NIF) at Lawrence Livermore National Laboratory in California was intended to work on nuclear weapon designs, provide for weapon effects tests and develop inertial fusion energy. Despite nearly a decade of operations, "ignition" has not been attained.

- Original cost in 1994 was estimated at $677 million, and the completion date was 2003.
- Current cost is estimated to be at least $7 billion, and the completion date for construction was declared in 2009, though construction is ongoing.
- Risk – NIF will continue to waste money on a dangerous, unattainable mission, rather than use the funds for research in earth sciences and astrophysics.

B61-12 Nuclear Warhead Life Extension Program (LEP) would modify the B61 nuclear bomb currently deployed in NATO countries, which would be delivered on a new aircraft now seriously over budget and behind schedule.

- Original cost in 2009 for a study was $32.5 million, and the completion date was 2012.
- Current cost is estimated to be more than $4 billion, and the completion date is 2022-2023.
- Risk – An expensive, substantially modified B61-12 warhead might not have a mission or a delivery vehicle by the time the program is complete.

W78 Nuclear Warhead Life Extension Program (LEP) would potentially design a new warhead that could substitute for the refurbished W87 warhead.

- Original cost in 2010 for a feasibility study was $26 million, and the completion date was 2021.
- Current cost is estimated to be at least $5 billion, and the completion date remains 2021.
- Risk – Billions will be wasted since a more modern warhead with more safety features has recently already been added to many Minuteman missiles.

Mixed Oxide (MOX) Plutonium Fuel Fabrication Facility under construction at the Savannah River Site in South Carolina would produce MOX fuel for commercial nuclear reactors though there are no U.S. reactors contracted to use the fuel.

- Original cost in 2004 was to be $1.6 billion, and the completion date was 2007.
- Current cost is estimated to be $4.9 billion and the completion date is now 2016.
- Risk – The MOX plant will produce expensive, extremely hazardous plutonium fuel that cannot be used without major modifications to operating commercial reactors.

Nuclear Reactor Loan Guarantees were provided to the nuclear industry by Congress when it became clear that private investors would not risk their money developing and building new nuclear reactors.

- Original cost of the loans was authorized at $18.5 billion in 2005.
- Current cost is a proposed increase to $54.5 billion in 2012.
- Risk – Default probability is very high on these loans; taxpayers would pay for the loss.

Waste Treatment Plant (WTP) is the world's largest radioactive waste treatment plant slated to process and stabilize a portion of the 53 million gallons of radioactive and chemical waste at the Hanford site in Washington.

- Original cost was estimated to be $4.3 billion and the completion date was 2011.
- Current cost is now estimated to be $12.2 billion and the completion date is now 2022.
- Risk – Huge sums of money have been diverted from other important clean-up projects to fund construction. DOE has accepted the risk of "small explosions" during WTP operations, risking billions more taxpayer dollars for a plant that may very well fail.

Chemistry & Metallurgy Research Replacement Project

More than a decade late and ten times more expensive than originally forecast, the new Chemistry and Metallurgy Research Replacement (CMRR) mega-building at the Los Alamos National Laboratory continues to drain valuable resources. The project has three stages. Phase A, construction of light labs and offices, is nearly done. Phase B, the procurement of "special equipment" is underway. Phase C, design and construction of the CMRR Nuclear Facility (CMRR-NF), is still controversial.

Original Proposal

Purpose/Justification: The CMRR was designed to replace the existing Chemistry and Metallurgy Research (CMR) Building, a fifty-year-old nuclear facility that is "vital to fulfill several critical LANL missions, including but not limited to, pit rebuild, pit surveillance and pit certification." Plutonium pits are the fissile "triggers" capable of nuclear criticality that initiate the destruction of modern thermonuclear weapons. In January 1999, DOE approved a strategy to upgrade and temporarily continue to operate the CMR facility through approximately 2010 with operational limitations. This approval also committed DOE and LANL to develop long-term facility and site plans to ensure continuous mission support beyond 2010. At that time, it was acknowledged that mission support beyond 2010 might require new facilities.

Original Cost: FY2004 Preliminary Full Total Estimated Cost Projection was $350 - $500 million, plus $55 million for design.

Original Completion Date: 2010. The FY2004 projections called for operations in the new CMRR Nuclear Facility to start in the first quarter of FY2011, because operations in the old CMR would be impossible past 2010.

Current Status

Purpose/justification: Largely unchanged

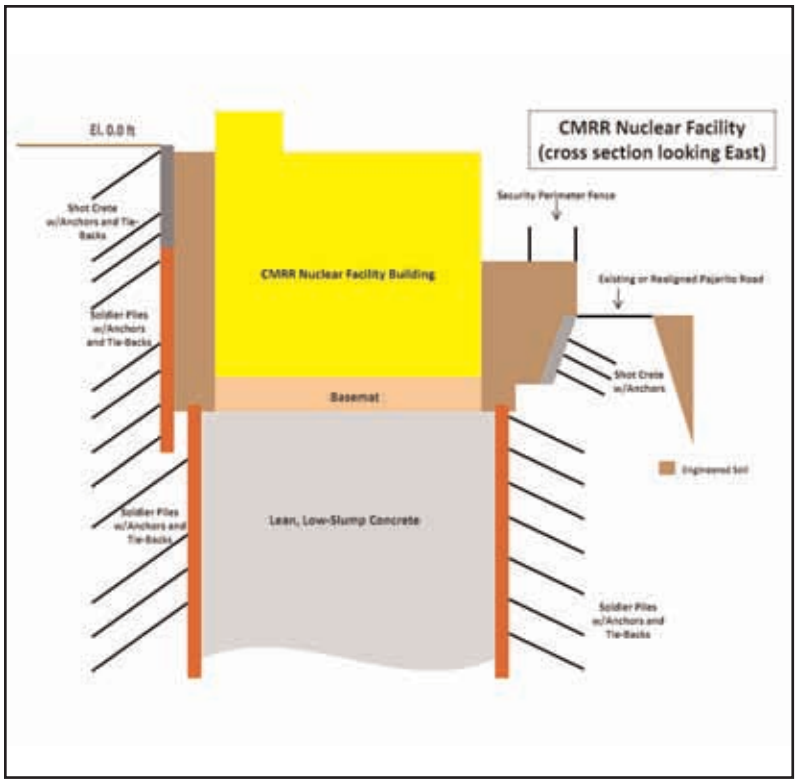
Current Cost: The "Details of Project Cost Estimate" table in the FY2012 budget puts CMRR's current projected cost at $5.86 billion, including design and contingencies--*more than ten times* the original forecast.

Current Completion Date: The new nuclear facility is expected to begin operations by FY2023.

What is the Problem?

The CMRR-NF represents much more than a replacement for the existing CMR. Beside ever-upward spiraling costs, the new CMRR-NF is much larger than needed--and will enable plutonium trigger production to expand to 80 pits per year. At over 600,000 square feet, the new CMRR facilities will be more than 32,000 square feet larger than the CMR. Currently, nearly half of the CMR is not in use because three wings have been radiologically contaminated. CMRR-NF will provide the increased capabilities needed to directly support expanded pit production. But while various high-level documents have blessed construction and operation of the new facility, none have allowed increased plutonium pit production.

Expanded capabilities for more nuclear weapons production are not needed at this point. Increased plutonium pit production would likely have a negative impact on the global nonproliferation regime, encouraging other nations to expand or develop their nuclear weapons capabilities. More nuclear weapons production inevitably means additional nuclear waste production.



Nuclear facilities are supposed to be designed to provide multiple layers of protection to prevent or mitigate the unintended release of radioactive materials to the environment. The first step in this defense-in-depth should include careful siting. Yet, LANL is located in a seismic fault zone between a rift valley and a dormant volcano. An updated seismic hazards analysis from May 2007 showed a potential huge increase in seismic ground motion and activity. In all likelihood, most of the more than $3 billion added to cost estimates since 2008 result from efforts to address the heightened seismic hazards. The costs of adding this enormous new facility to LANL's weapons manufacturing complex in a geologically unstable area are just too great.

Is There an Alternative?

Continuing use of the existing CMR for some operations – and not building the CMRR-NF – is a far superior alternative. Some programs currently performed in the existing Plutonium Facility (PF-4) are scheduled to last for only a few more years. Given that plutonium pit production has not been expanded, there should be a rigorous review of whether the CMRR-NF is truly needed. Due to the current timeline to complete a new CMRR-NF in 2023, safety and hazard upgrades will have to be made to keep the CMR operating. Phase One of the CMRR project, the Radiological Laboratory/Utility/Office Building, will begin operating by 2013 and will provide new laboratory and office space. In addition, most of the Life Extension Programs will have been completed, further complicating the stated "need" for a new facility.

RECOMMENDATIONS:

- The CMRR-NF should be cancelled.
- A study of LANL's plutonium infrastructure should be required – including existing and future capability needs. Current capacity to produce 20 plutonium pits/year is adequate.
- No resources, including funding for site construction, should be committed until a credible estimate for total Nuclear Facility costs is submitted to Congress.
- Realistic costs for maintaining and upgrading safety features at the existing CMR must be determined. DOE is planning to spend hundreds of millions at the existing facilities while they wait for the controversial CMRR-NF.

Uranium Processing Facility

The Department of Energy (DOE) National Nuclear Security Administration (NNSA) plans to expand Highly Enriched Uranium (HEU) operations in Oak Ridge, Tennessee by building a new production facility – the Uranium Processing Facility (UPF) – to manufacture components for nuclear warheads. As of late-March, 2011, no final decision on the size or capacity of the facility has been announced. According to press reports, however, equipment is being ordered and procurement contracts are being let. Since the project was first announced in 2005, the need and urgency of the facility have diminished significantly. At the same time, however, the size and projected cost of the facility have ballooned.

Original Proposal

Purpose/Justification: The original justification for the UPF was straightforward. NNSA said the facility was "essential to its ability to meet national security requirements regarding the nation's nuclear deterrent," and "needed for NNSA to maintain its basic nuclear weapons capabilities."

Original Cost: In 2005, DOE provided a cost estimate range for the UPF of $600 million to $1.5 billion.

Original Completion Date: The original projected completion date for the UPF was 2018, with construction driven by the urgent need to replace existing facilities.

Current Status

Purpose/Justification: By May 2010, DOE's Stockpile Stewardship Plan was walking back the statement of need, saying the UPF is needed to avoid "the risks of intermittent shutdown associated with current facilities."

Current Cost: The current projected pricetag for the UPF is now $6 to 6.5 billion; the increase from original low-end to current high-end is 1000%.

Current Completion Date: The current estimate for the UPF to come on-line is 2022, with further slippage likely. In the interim, more than $100 million will be spent to bring existing facilities, which continue to meet mission requirements, up to current environmental and safety standards. New equipment once slated for the UPF is being procured and installed in existing buildings.

What is the Problem?

The United States cannot afford the UPF financially or politically. With a price tag of $6.5 billion, the UPF if built, will be the most expensive bomb plant in history. With no new nuclear warheads on the drawing board and the demands for life extension programs diminishing, the UPF is fast becoming a project without a need. The cost savings, security footprint reductions, and manufacturing efficiencies advertised as benefits of the UPF can all be realized in existing facilities if they are consolidated, down-sized and upgraded—at a fraction of the cost of a new facility.

Politically, the construction of new weapons production facilities undermines U.S. efforts to discourage the nuclear ambitions of other nations. The "we-can-do-it-but-you-can't" double standard is doomed to fail. In briefings in December 2009, U.S. Ambassador Robert Grey declared such a position untenable and said the United States would have "zero credibility" in nonproliferation discussions if it went forward with modernization plans.

Is There an Alternative?

The alternative to the grossly overblown proposal to build an expensive new facility is to consolidate and downsize operations required for stockpile stewardship in existing facilities, upgrading where necessary to meet environmental and safety requirements. The latter task is already being done at the Oak Ridge Y12 facility.

In addition, the infrastructure requirements for a growing mission at Y12 -- the dismantlement of nuclear warheads -- should be analyzed. A new, dedicated dismantlement facility, which incorporates new technologies, should be considered. It could address the 15-year backlog of thermonuclear secondaries awaiting dismantlement at Y12.

RECOMMENDATIONS:

- Congress and the Obama Administration should step back from funding for the UPF and examine the need for the facility. Any purported benefit should be weighed against the nonproliferation cost of a new weapons production facility.
- Congress and/or the Obama Administration should commission an independent evaluation of the need for Life Extension projects for Highly Enriched Uranium secondaries similar to the JASON study on the long-term reliability of plutonium pits. Any future production plans should at least be demonstrably necessary.
- Expenditures for production activities at Y12 should be sized to meet the actual mission needs. Current operations can be downsized and consolidated in existing facilities. This modernization policy would be most appropriate to the conditions and mission requirements for Y12.
- Plans for the future of uranium operations at Y12 should reflect a realistic vision of the future, which includes a declining need for production capacity and an increasing demand for dismantlement.
- DOE should undertake a study of the capacity and projected need for existing facilities at Oak Ridge's Y12 complex to determine whether a dedicated dismantlement facility is advisable.

New Kansas City Plant

The Department of Energy (DOE) National Nuclear Security Administration (NNSA) has pursued a controversial contracting path for replacing its aging, contaminated Kansas City Plant (KCP), which manufactures non-nuclear components for weapons, with a new facility. After a series of questionable deals with developers, the new KCP will be owned by the local municipality and operated by a private firm under a long-term lease. As a result, U.S. taxpayers have taken on an unclear long-term financial obligation for a facility whose costs are, in part, "off the books."

Original Proposal

Purpose/Justification: The new Kansas City Plant (KCP) in Missouri will manufacture and procure thousands of nonnuclear components that transform nuclear explosives into deliverable nuclear weapons. KCP produces or procures 85% of all nuclear weapons components both by type and by quantity. It specializes in nonnuclear components, such as radars, guidance systems, arming, firing and fusing sets, and reservoirs for tritium, a radioactive gas used to boost the destructive power of nuclear weapons.

Original Cost: In 2008, the estimated cost to build the complex on a 185-acre site was $500 million. In 2010, 14 unnamed, major institutional investors agreed to back the project with $815 million in bonds.

Original Completion Date: Groundbreaking occurred in September 2010, and the complex is scheduled to begin operations in late 2012, transitioning from the old to the new plant over a 20-month period, to become fully operational in 2014.

Current Status

Purpose/Justification: The rationale for the project has not changed.

Current Cost: The new KCP is being built and operated by a private developer CenterPoint Zimmer (CPZ). This limited liability corporation is composed of Zimmer Real Estate Services and Chicago-based CenterPoint Property Trust. Zimmer "happened" to own the 165 acres that the federal government chose as the site for the new Plant. The Kansas City Planned Industrial Expansion Authority (PIEA) declared that the site was "blighted farmland" which typically sells for $2,000 to $4,000 as acre. However, CPZ sold the land to the City for an estimated $26,000 an acre. The PIEA then declared the site "blighted" so that construction of this new federal nuclear weapons production plant could be subsidized by municipal bonds. The local municipal government will own the new KCP after construction.

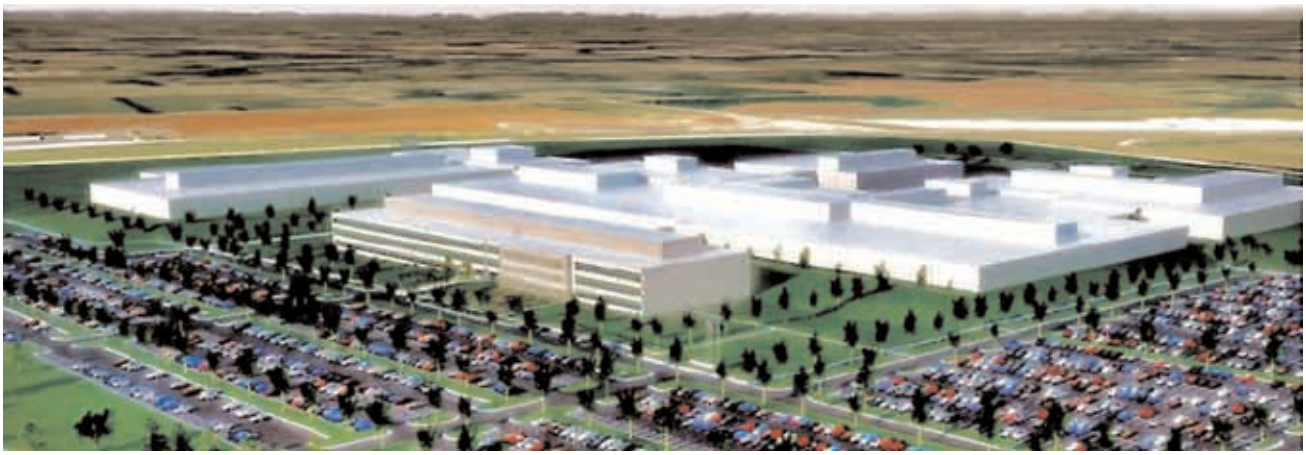
Because of its unusual ownership structure, KCP costs are not included in the NNSA annual budget. It is, therefore, outside of typical Congressional review and authorization. CenterPoint Zimmer, which first sold the land to the PIEA, and thenhad its construction costs subsidized by the sale of municipal bonds, will receive $1.2 billion in lease payments from U.S. taxpayers over the next 20 years.

Current Completion Date: The project appears to be on schedule.

What is the Problem?

The U.S. Government Accountability Office (GAO) found that the break-even point comparing construction costs to lease costs for the new KCP is 22 years. The U.S. Government Services Administration (GSA) estimates the value of the 20-year lease at $1.23 billion. However, since Life Extension Programs for existing nuclear weapons (for which the Kansas City Plant is the main supplier of components) are scheduled to last until at least 2042, the new Plant is likely to be operational for 40-60 years. Therefore, the federal government could pay another $1.2 to $2.4 billion in lease costs to the private developers.

In its recent Stockpile Stewardship and Management Plan, NNSA claimed that "because the new facility will be leased, there will be no capital investment, and NNSA will not be burdened by costs for legacy disposition should the mission ever be discontinued." NNSA plans to be fully operating in the new KCP in a couple of years while, in effect, abandoning the old plant.



The "environmental legacy" of the old plant is one of serious contamination with cancer-causing volatile organic compounds (mostly industrial solvents) and PCBs. NNSA has not yet formulated a comprehensive cleanup plan. According to recent findings by the GSA Inspector General, federal employees responsible for environmental monitoring at the old KCP site were lax in their duties and misled the public about conditions. At least 1,993 former KCP workers or their survivors have filed health claims seeking compensation. The Kansas City municipal government is counting on reusing the old plant for economic development, which probably cannot take place without comprehensive cleanup costing more than $250 million.

RECOMMENDATIONS:

- All financial operations of the new Kansas City Plant must be made transparent and subject to Congressional oversight.
- NNSA must commit to a comprehensive cleanup of the old KCP before spending additional money on a new facility.

National Ignition Facility

Nearly a decade after its originally scheduled completion and with a cost overrun of more than 400%, the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL) in California is still not fully functional. At the same time, NIF has not achieved several of its highly promoted goals, particularly attaining thermonuclear ignition and producing more energy output than was put in.

Original Proposal

Purpose/Justification: The LLNL Institutional Plan for fiscal years 1994-1999 claimed that NIF's mission was three-fold. It was intended to: (1) push the envelope on nuclear weapons design; (2) provide additional capability for nuclear weapon effects tests; and (3) develop inertial fusion energy. The plan states that these applications require achieving ignition and propagating thermonuclear fusion burn, or gain.

Original Cost: According to the Institutional Plan, NIF would cost $677 million. After the conceptual design was completed, the Department of Energy (DOE) cost estimate rose to $900 million. NIF went to Congress with a price tag of $1 billion. By 1996, the budget was $1.2 billion. In 1998, it was pegged at $1.7 billion. In 1999, a General Accounting Office (GAO) investigation estimated NIF's construction and construction related research and development costs at $4 billion. In 2000, NIF was "rebaselined" by DOE.

Original Completion Date: A 1996 Environmental Impact Statement gave 2002/2003 as the completion date for NIF. After the "rebaseline" in 2000, the date shifted to 2008. In 2009, NIF construction was declared "complete." In 2010, target blast shielding along with other construction-related equipment was installed. NIF was to have achieved thermonuclear "ignition" one to two years after completion of construction. Following the "rebaseline" Congress was promised ignition would occur in fiscal year 2010.

Current Status

Purpose/Justification: NIF has been sold as all things to all people. To Governor Arnold Schwarzenegger in 2010, NIF was promoted as a green energy machine. To Congress, it is sold as a necessary stockpile stewardship tool, although the former head of DOE's stockpile surveillance and evaluation program, Robert Peurifoy, called it "worthless" for that task.

Current Cost: NIF construction costs are conservatively estimated at $7 billion to date. According to the National Nuclear Security Administration (NNSA) FY2011 Stockpile Stewardship and Management Plan, NIF's out-year costs will continue at nearly $500 million annually. Additionally, millions of dollars each year are hidden by charging NIF overhead costs to other projects. A recent review found that LLNL management shifted $80 million in NIF overhead to other programs in FY2010.

Current Completion Date: Construction is not truly complete. Some equipment remains uninstalled, and some is yet to be developed for use in the NIF project. Diagnostic equipment, ignition targets and other key items have unresolved technical problems. There is currently no date certain for ignition. NNSA Administrator D'Agostino testified before Congress that the agency would run a "credible ignition experiment" before the last fiscal year ended on Sept. 30, 2010. Only a week later, an NNSA press release disclosed that the energy of the experiment delivered 1 megajoule, not the 1.8 megajoules that NIF was designed to deliver. The "target" capsule was plastic, and therefore not likely to be capable of ignition. It was filled with a mix of tritium, hydrogen, and deuterium, not the appropriate fuel for ignition.

What is the Problem?

As a "new nuclear weapons" design tool, NIF takes the nation in a dangerous direction. NIF is neither particularly well-suited nor needed to maintain the safety and reliability of the nuclear weapons stockpile, according to many nuclear weapons experts. Instead of attracting talent to LLNL, top-notch employees have fled NIF due in part to its overselling. As a scientific achievement, NIF's likelihood of achieving "ignition" and "gain" (more energy out than was put in) is becoming vanishingly small. At an estimated $500 million each year into the future, NIF continues to pose a budget-busting risk. Its non-proliferation dangers will exist as long as NIF continues as a NNSA nuclear weapons activity, with 80% of its experiments classified. NNSA's recent decision to use plutonium in experiments in NIF along with fusion fuel increases its nuclear proliferation risks dramatically. NIF also presents a health and environmental threat to workers and local community members. According to the latest LLNL Site-wide Environmental Impact Statement, the primary impacts of plutonium and other fissile materials use at NIF will be to increase its output of nuclear waste by 50% and worker exposure to radiation about three-fold.

Is There an Alternative?

Since NIF is not necessary for any of its alleged uses, a number of options exist. Probably the best alternative is to take NIF out of NNSA, place it in the DOE Office of Science or another agency, forego classified experiments and provide a modest operating budget. Then any utility NIF might have for earth sciences, astrophysics or other disciplines could be accomplished, without spending hundreds of millions unnecessarily each year and adding to environmental, health and proliferation dangers. Since no amount of money or change in management is guaranteed to achieve ignition at NIF, another option would be simply to pull the plug. Congress should consider this option in light of current financial constraints.

RECOMMENDATIONS:

- Congress should insist that LLNL management cease the illegal practice of shifting NIF's overhead costs onto other programs.
- Congress should request from NNSA an accounting of the costs of using plutonium and other fissile materials in NIF, and then de-fund those activities.
- The Administration and Congress need to reevaluate the NIF project to reduce or eliminate its excessive risks and costs
- NIF oversight should be transferred to DOE's Office of Science.

W78 Warhead Life Extension Program

The service lives of U.S. nuclear weapons are being extended for up to three decades or more through Life Extension Programs (LEPs). The Department of Energy (DOE) is planning a LEP for the W78 warhead, some 250 of which are currently deployed on 200 Minuteman III missiles. However, the U.S. has already replaced approximately 200 Minuteman III warheads with the W87, which has recently been through a LEP and has more modern safety features than the W78. There are approximately 550 W87s in the stockpile – more than enough for the entire Minuteman fleet of 420 as planned under the recently ratified New Strategic Arms Reduction Treaty. The W78 LEP would be needlessly replacing a recently refurbished W87 warhead.

Original Proposal

Purpose/Justification: The U.S. Nuclear Posture Review released in April 2010 recommended "initiating a LEP for the W78. The plan included the possibility of using the resulting warhead on Sea-Launched Ballistic Missiles to reduce the number of warhead types." A feasibility study is starting this year for a LEP for the Minuteman III W78 warhead. Hands-on work is currently scheduled to begin in 2014. The National Nuclear Security Administration (NNSA) is considering using that LEP to create a new warhead that could substitute for both the W78 and the submarine-launched ballistic missile W88 warhead.

Original Cost: NNSA's FY2011 budget includes $26 million to begin the W78 feasibility study. NNSA's FY2011 Stockpile Stewardship and Management Plan projects the cost of the W78 Life Extension Program to be nearly $5 billion through 2025. Also under consideration is a single design combining the W78 and W88 warheads.

Original Completion Date: The initial feasibility study is scheduled for completion in September 2011. The W78 LEP has no fixed completion date, but would likely take more than a dozen years. This LEP's first warhead refurbishing is scheduled for completion in 2021.

Current Status

Purpose/Justification: According to NNSA's FY2011 Congressional Budget Request "The [feasibility] study will address the nuclear explosives package as well as aging, enhanced surety improvements, increase reliability alignment, extending service life, and alignment with major DoD component (fuze) acquisition."

Current Cost: This new program is just starting. Long-term budget costs are not yet known.

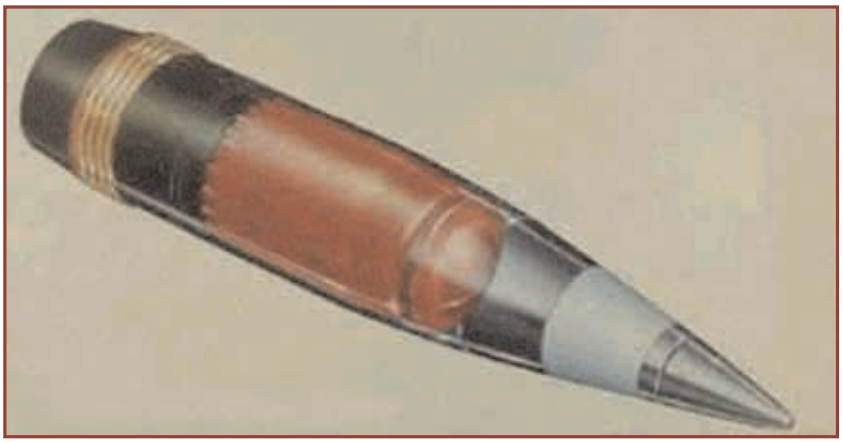
Current Completion Date: This program is in its very early stages.

What is the Problem?

The risks related to the W78 LEP are many. Instead of merely extending a tested weapon's lifespan, it potentially combines two warheads into a third, essentially new, design. This joint warhead option raises important questions over how far the U.S. can stray from originally tested designs before confidence in the safety and reliability of the nuclear weapons stockpile erodes.

Cost estimates approach $5 billion for a W78 LEP alone but surely will mushroom with a combined W78/W88 LEP. Another concern is the inevitable environmental contamination from continuing nuclear weapons production. Moreover, refurbishment of existing nuclear weapons through Life

Extension Programs bottlenecks dismantlement of weapons already slated for retirement. That robs American taxpayers of enhanced security and cost savings because the same facilities are needed for both assembly and disassembly. Finally, as a national security matter, radically changing existing nuclear weapons may erode confidence in their reliability, increasing pressures to return to full-scale testing, which would have seriously adverse international consequences.



Is There an Alternative?

A true alternative would be to redirect NNSA's Stockpile Stewardship Program toward an engineering-based surveillance and maintenance program that diligently seeks to preserve the reliable tested pedigree of U.S. nuclear weapons. "Curatorship" would maintain existing warheads into the future. Repeated studies by independent experts have concluded that U.S. nuclear weapons are far more reliable than previously thought. In contrast, the Stockpile Stewardship Program proposed in the Nuclear Posture Review will result in warheads that progressively diverge from their test-certified pedigree and cost taxpayer far more.

Instead, the focus should be on tried-and-true, nuts-and-bolts surveillance and maintenance programs, which seek to avoid changes to previously tested nuclear weapons. The quest for greater "surety" to make nuclear warheads impervious to unauthorized use should not be allowed to become the excuse for rebuilding the nuclear weapons complex in order to fabricate essentially new nuclear weapons. Resulting savings should be redirected toward genuine stockpile maintenance and developing necessary verification technology.

RECOMMENDATIONS:

- Congress should require that all proposed LEPs be subject to independent expert review to determine if any proposed changes are needed, and what potential implications they may have. Proposed changes increasingly stray from an extensively tested, reliable stockpile. This is an even greater risk for a combined W78/W88 warhead.
- Retire the W78 altogether, in favor of the more modern W87 that is already available for Minuteman III missiles.
- Congress should support stockpile safety and reliability through tried-and-true methods of careful surveillance and replacement of limited life components as needed. "Curatorship" is the prudent technical, fiscal and policy approach to reducing nuclear dangers.

B61-12 Warhead Life Extension Program

Modifications to the B61 nuclear bomb are planned under a Department of Energy (DOE) Life Extension Program (LEP). Yet the mission for which the bombs are designed, deployment in NATO countries, may no longer exist by the time production is complete. The new aircraft on which the B61-12 bombs are supposed to be carried is seriously over budget and behind schedule. In addition, the B61-12 design appears similar to that of the second bomb planned under the Reliable Replacement Warhead program, whose funding Congress terminated.

Original Proposal

Purpose/Justification: The stated purposes of the B61-12 LEP are: extend the life of this bomb type another 30 years or more; develop new design and reuse components inside the bomb; and change the components and technology mating the bomb to its delivery vehicles.

Original Cost: Congress appropriated $32.5 million in 2009 for a Phase2/2A study for the B61 LEP. Another $32.5 million was "reprogrammed" into the B61-12 LEP in 2010. According to the National Nuclear Security Administration (NNSA) FY2011 Stockpile Stewardship and Management Plan Summary, the new B61 LEP design and production costs may reach about $4 billion, exclusive of underlying DOE infrastructure costs that enable LEP programs.

Original Completion Date: The first new B61-12 is scheduled to roll off the production line in 2017. However, this deadline is misleading because determinations of B61-12 design parameters will continue through 2012.

Current Status

Purpose/Justification: The mission for the B61-12 LEP includes: developing new design components and technologies; redesigning the bomb's "primary" (i.e., core) to demonstrate the feasibility of plutonium pit reuse from different versions of the bomb; remanufacturing or re-using the bomb's "secondary" (i.e., canned subassembly/thermonuclear component); and designing and inserting enhanced safety and security technology into the bomb's explosive package. The new tactical warheads are slated to be deployed in Europe to protect NATO allies.

Current Cost: The NNSA FY2012 budget requests $224 million to get the full LEP study underway. The projected costs curve upward from there nearly doubling to $426 million in FY2016. According to the NNSA FY2011 Stockpile Stewardship and Management Plan Summary, the B61 LEP costs will continue to rise to more than $500 million per year for Fiscal Years 2016 to 2019, then curve downward over several years beyond 2019. The ultimate cost of the B61-12 LEP is hard to predict with accuracy and may exceed current estimates.

Current Completion Date: Production under the B61-12 Life Extension Program is slated to end in 2022 – 2023.

What is the Problem?

There are two fundamental problems. First, U.S. taxpayers and Congress are being asked to spend billions to create a new B61-12 when its principal mission is deployment in NATO countries, some of which have already called for its removal. In fact, NATO is in the process of reevaluating its policy

regarding nuclear weapon deployment. The outcome of that debate is uncertain. Moreover, the B61-12 is being redesigned to fit on the new F-35 "Joint Strike Fighter" and will no longer fit on the planes NATO countries presently use to carry current B61s.

Second, the scope of the B61-12 LEP far exceeds refurbishment of components necessary to maintain the bomb's safety and reliability. The B61-12 LEP strays into a gray area between extending the life of the weapon (the original purpose of LEPs) and actually designing a new nuclear weapon. After Congress rejected funding for the so-called Reliable Replacement Warhead (RRW) Program NNSA proposed an "expanded" LEP for the B61. The result, the now named B61-12, appears similar to what would have been the RRW design. The B61-12 LEP is a potential budget buster. It is already nearly four times as expensive per weapon as any previous Life Extension Program. According to NNSA, the high cost is due to the expanded scope of the LEP, creating extensive changes in the bomb's explosive package including pit reuse, "mix and match" parts from up to four different bomb versions, and the design of novel components. Because it strays from prior LEPs in the direction of new design, and because the full extent of that design effort has not yet been determined, there is a serious danger that $4 billion will not be the final price tag.

There is an additional risk that the B61-12 is being designed in large part for a mission that may be substantially reduced (or not exist) by the time the new bomb is ready for deployment. Further, the F-35 "Joint Strike Fighter" is experiencing its own cost and schedule challenges. The extensive changes being sought for the B61-12 may actually reduce its reliability because multiple, interacting modifications are planned (increasing uncertainty regarding its reliability) in an environment where a full-scale "proof test" in Nevada is neither possible nor desirable.

Is There an Alternative?

A better alternative would be to redirect NNSA's Stockpile Stewardship Program toward "curatorship," an engineering-based surveillance and maintenance program that seeks to preserve the tested reliability of U.S. nuclear weapons. Multiple studies by independent experts have concluded that U.S. nuclear weapons are far more reliable than previously thought. In contrast, the Stockpile Stewardship Program proposed in the recent Nuclear Posture Review will result in warheads that progressively diverge from their test-certified pedigree and cost taxpayer far more dollars for uncertain benefits.

RECOMMENDATIONS:

- Congress should "pause" the B61 Life Extension Program until NATO completes its deliberations on the future of U.S. nuclear weapons deployed in its member countries.
- Congress should limit all Life Extension Programs to refurbishment of components necessary to maintain existing safety and reliability. Sticking as closely as possible to fully-tested designs and remanufacturing parts will ensure the arsenal remains safe, secure and reliable until it is dismantled.

Mixed Oxide Plutonium Fuel Fabrication Facility

The United States has a large and growing stockpile of weapons grade plutonium left over from the dismantlement of is nuclear weapons. Plutonium poses very serious environmental and nonproliferation risks, unless it is converted into a form that can be shielded from the public and no longer used in nuclear weapons. In concert with Russia, which has similar concerns resulting from the end of its Cold War arms buildup, the U.S. agreed more than a decade ago to eliminate much of surplus plutonium through two parallel strategies. One track would use mixed oxide (MOX) plutonium fuel in light-water reactors. The other was supposed to immobilize contaminated plutonium in existing high-level waste.

Original Proposal

Purpose/Justification: The Mixed Oxide Fuel Fabrication Facility (MFFF), now under construction at the Savannah River Site (SRS), was part of the "dual track" to manage surplus weapons plutonium. A key to the MOX program was the ability of the Department of Energy (DOE) to identify utility companies to allow use of reactors for MOX. Duke Energy provided one of its reactors for testing of MOX "lead test assemblies," and testing began in 2006. No other reactors have been identified to use MOX fuel. The current focus is on several owned by the Tennessee Valley Authority, including the Browns Ferry boiling water reactor. That facility is of the same GE Mark 1 design which recently melted down in Japan. Fukushima Unit 3 used MOX made from reactor grade plutonium in its core.

Original Cost: In FY2004, the cost estimate for the MOX plant was $1.6 billion.

Original Completion Date: In FY2003, DOE estimated that construction would be finished in the fourth quarter of FY2007. Under the terms of the Plutonium Management and Disposition Agreement signed with Russian in 2000, both countries were to "begin hot startup of industrial-scale disposition facilities no later than the third quarter of FY2007."

Current Status

Purpose/Justification: In 2002, fabrication of MOX fuel from plutonium being accumulated at SRS, was chosen over the cheaper, quicker and safer option of managing the plutonium as waste and immobilizing it in existing high-level waste. The start of construction of the MOX plant slipped and did not begin until August 1, 2007. It is now less than one-third complete. Duke's testing of the MOX fuel failed, and the company subsequently pulled out of the MOX program. That left DOE to focus on reactors owned by the Tennessee Valley Authority, which are now under review in an Environmental Impact Statement process.

Current Cost: For several years, DOE has stuck with a total construction estimate of $4.9 billion. The construction funding request for FY2011 was $505 million and $385 million in FY2012.

Current Completion Date: In mid-January 2011, DOE stated that construction will be completed in 2012. DOE now claims that the MOX plant will start operation in 2016, but no reactors have yet been identified to use MOX fuel. Since several years of testing will be required by the Nuclear Regulatory Commission before any MOX-fueled reactor is allowed to start up, the MOX plant is at risk of sitting idle with no place to ship its output.

What is the Problem?

The MOX program is funded at a high level, but it faces vulnerabilities on several fronts. The operating license continues to be challenged by public interest groups, the initial plutonium to feed the plant has not been clearly identified, and no reactors have been contracted to use MOX.

Use of MOX fuel poses special problems for reactor operation, as demonstrated in the Japanese nuclear crisis. It is unclear whether TVA or another utility will continue to be interested in using it. Immobilization of plutonium as nuclear waste remains cheaper, quicker and safer.

Introduction of weapons-grade plutonium into commerce as MOX sends a wrong signal to a world concerned about nuclear non-proliferation. MOX use by the U.S. will encourage other countries to pursue reprocessing to obtain plutonium, greatly increasing the risk they will develop nuclear weapons capabilities.

The entire program could be entering a precarious period given lack of any reactors to use MOX fuel. If no reactors are identified or can be licensed to use MOX, a large sum of money would have been wasted while the immobilization option was unnecessarily delayed.

Is There an Alternative?

DOE must rapidly initiate a comprehensive program to immobilize all surplus weapons plutonium as nuclear waste. The program to make ceramic pucks of the plutonium, then place the pucks in large canisters filled with vitrified waste at SRS, remains the best alternative to the costly and dangerous MOX program. The U.S. and Russian plutonium disposition programs have essentially been decoupled. There is nothing restraining the U.S from reviving immobilization at SRS. Since a small amount of contaminated plutonium is being considered to be mixed directly into the glass-waste mixture and poured into high-level waste canisters at SRS, the technical basis for a revived program to immobilize all plutonium still exists.

RECOMMENDATIONS:

- Congress should halt all funding for the MOX project.
- DOE should be directed to reinstate the immobilization track for plutonium disposition immediately.

Nuclear Reactor Loan Guarantees

Wall Street has made it clear that it has no interest in investing in new nuclear reactors because they are expensive and highly risky projects. In an effort to kick-start construction, Congress enacted massive subsidies for the construction of new reactors in the Energy Policy Act of 2005, the most important of which are loan guarantees. In the event that the developer defaults on these loans, taxpayers are on the hook to pay them back. These are actually more than just loan guarantees: nuclear developers intend to borrow construction money from the Federal Financing Bank, a taxpayer-funded bank. The Department of Energy's (DOE) Office of Loan Guarantees runs the program.

Original Proposal

Purpose/Justification: The Title XVII Loan Guarantee program was authorized in the 2005 Energy Policy Act to provide loan guarantees for "innovative" energy technologies that reduce carbon emissions, including nuclear reactors. Thus far, Congress has authorized a total of $51 billion in loan guarantees, $18.5 billion of which has been allocated to new reactors. Of that amount, $8.33 billion has been allocated to Southern Company and its partners for two reactors in Georgia.

Original Cost: $18.5 billion for new reactors has been authorized thus far.

Original Completion Date: Title XVII has no sunset; $18.5 billion has been authorized indefinitely (until committed to a project).

Current Status

Purpose/Justification: The $18.5 billion authorized for nuclear loan guarantees was intended to cover four reactor projects, but the estimated cost for new reactors has increased so dramatically since 2008 that this amount will now only guarantee two projects. In its FY2011 budget, the Obama administration requested another $36 billion in authority for nuclear loan guarantees. Congress is still working on a Continuing Resolution to cover spending through the end of the fiscal year. In its FY2012 budget, the Administration has once again requested $ 36 billion in nuclear loan guarantees.

Current Cost: Proposed increase to $54.5 billion for new reactors

Current Completion Date: Title XVII has no sunset; $10.2 billion remaining has been authorized indefinitely until committed to a project.

What is the Problem?

All proposed reactor projects in the U.S. face unfavorable market conditions, particularly after the Japanese nuclear disasters: escalating projected construction costs, decreased electricity demand growth, and low natural gas prices. The estimated cost for new reactors in the U.S. has quadrupled since 2001. Electricity from new reactors is estimated to cost 12 to 20 cents per kilowatt-hour. That compares to 3 cents for efficiency, 5 cents for natural gas, and 5 to 10 cents for a range of renewable technologies. According to a 2003 estimate by the Congressional Budget Office (CBO), the default rate on loans for new reactor projects is "very high – well above 50 percent." CBO has not issued a more recent estimate but has pointed to high construction costs, technical risks, and licensing delays as factors that will influence the risk – all of which are even more of a problem today than in 2003. Moody's, the global financial advisory firm, has called new reactors a "bet the farm" investment.

In order to get a loan guarantee, the nuclear developer must pay a fee that is supposed to cover the default risk, but calculating an accurate fee is extremely difficult. According to both the Government Accountability Office and the Congressional Budget Office, the DOE is more likely to underestimate the fee than to overestimate it, leaving taxpayers to pay the difference when there is a default. Even though taxpayer dollars are at risk, DOE has refused to make public the fees it is charging. Constellation announced that its fee would have been 11.7% when it rejected DOE's $7.5 billion loan guarantee offer to build a reactor at Calvert Cliffs in Maryland and subsequently sold its shares of the project to Electricite de France (EDF), its French government-owned partner. Although Constellation claimed that the fee was "onerous," it is clear that the project cannot sell electricity at a competitive price into its power market. EDF is now trying to persuade the Maryland Public Service Commission to force electric utilities to buy the more expensive power from the proposed reactor.

Is There an Alternative?

Nuclear power is a mature industry that has not been economically viable in any nation without massive government subsidies. Moreover, none of the other problems of nuclear power has been solved, including reactor safety, radioactive waste disposal, and the risk of proliferation. The U.S. is endowed with large supplies of renewable resources and a huge potential for efficiency potential, which have barely been tapped. Taxpayer money would be better focused on less costly and less risky renewable and efficiency projects.

RECOMMENDATIONS:

- Congress should not authorize any additional loan guarantees for new reactors and should rescind authority for the remaining $10.2 billion, given the cost and risk of new reactors combined with the availability of lower-cost alternative energy sources.
- The Department of Energy should make public the methodology for calculating the subsidy cost fee, as well as the fees charged for projects already granted loan guarantees.

Waste Treatment Plant

In southeastern Washington state, the Department of Energy (DOE) is building the world's largest radioactive waste treatment plant to process and stabilize a portion of the 53 million gallons of radioactive and chemical waste currently stored at the Hanford Site. Although DOE stopped producing nuclear material at Hanford in 1989, millions of gallons of high-level waste from reprocessing remain in aging, underground waste tanks, most of which are beyond their design life; many have leaked waste into the soil. The project is poorly designed, far over-budget and more than a decade behind schedule.

Original Proposal

Purpose/Justification: The Waste Treatment Plant (WTP) is intended to separate Hanford's waste into high-level and low-activity fractions, then immobilize in a glass form all of the high-level fraction and about half of the low-activity fraction for permanent disposal.

Original Cost: $4.3 Billion

Original Completion Date: 2009, with operations to begin in 2011

Current Status

Purpose/Justification: Unchanged from original

Current Cost: $12.2 Billion

Current Completion Date: 2019, with operations not beginning until 2022

What is the Problem?

For over a decade, the WTP has faced serious concerns about the chemical engineering and safety designs (e.g., the potential for buildup of explosive gasses), with repeated reviews urging large-scale testing before proceeding with construction. Senior engineers assigned to the project have raised concerns about the safety and technical design issues. One of them, the Research and Technology Manager, was removed from his position after identifying some 50 such issues in July 2010. As a result, the WTP is under intense scrutiny by the Defense Nuclear Facilities Safety Board, an oversight agency appointed by the President to oversee DOE nuclear projects.

There are two main risks associated with this facility: safety and effectiveness/efficiency. On the safety side, the WTP will handle very large inventories of chemicals mixed with extremely radioactive materials in a process involving high heat and pressure. Risks include a possibile hydrogen gas fire or explosion, a nuclear criticality, and a steam explosion in the melter. The Nuclear Regulatory Commission (NRC) calculated that in the case of a steam explosion in the melter, the levels of radioactivity at the site boundary could approach 24,000 rad – a prompt fatal dose. The NRC also warned that such an explosion was credible. Rather than redesign or conduct large-scale engineering tests to ensure that designs will work as hoped, DOE has adopted a strategy of accepting the risk of "small explosions."

Even if there were no large release, a malfunction in the facility could affect how much waste, if any, would be treated. In such a scenario, taxpayers would lose the billions of dollars invested in the project and the ability to treat the high-level nuclear waste in the tanks. These tanks, referred to by Washington's governor as "underground Chernobyls," are beyond their design lives. About a third have already leaked and contaminated groundwater. Eventually, all these tanks will leak. Taxpayers cannot afford a delay caused by inefficient or ineffective WTP operation.

Is There an Alternative?

There currently is no viable alternative to vitrification of high-level nuclear waste. However, the goal must be to remove the waste from the highest risk Single Shell Tanks (SSTs) before more leaks occur, and to enable cleanup of the massive contamination under tank farms. Therefore, one realistic alternative is to build a set of Double Shell Tanks, which could also be used to mix and stage waste entering the vitrification plant. High-level waste could then be removed from the oldest, leaking, riskiest tanks instead of waiting for the WTP to become operational. This would allow for time to finish the design and test safety features before proceeding with construction. The new tanks would likely cost $250 million, which could be funded from program contingency funds.

Congress could require safety and large-scale chemical engineering tests as well as external design review prior to allowing final installation. This would parallel a prior Congressional mandate that design move ahead of construction. Other alternatives include replacing the managers and contractors in charge of this project. In 2006, the U.S. General Accountability Office (GAO) stated, "There are three main causes for the increases in the project's cost and completion date: (1) the contractor's performance shortcomings in developing project estimates and implementing nuclear safety requirements, (2) DOE management problems, including inadequate oversight of the contractor's performance, and (3) technical challenges that have been more difficult than expected to address."

Independent oversight for the balance of the WTP's design and construction is sorely needed. The contractor, Bechtel, currently serves as both the design agent and the design authority which approves the company's own work.

RECOMMENDATIONS:

- Congress or the Administration should replace the Department of Energy as the regulator for the Waste Treatment Plant since it has a demonstrated history of failure to conduct adequate oversight of the project, with a built-in conflict of interest. Another federal agency should be empowered to take on the role of certifying the WTP for operation. This could be the Nuclear Regulatory Commission, an expanded Defense Nuclear Facilities Safety Board, or another entity. The contractor should not hold the role of both design authority and design agent.
- Require DOE to build new tanks to allow waste to be removed from the older, leaky Single Shell Tanks and enable cleanup of the contamination under tanks to begin without waiting for the WTP to be operational. Use vitrification plant program contingency funds for construction.
- Require DOE to perform large-scale engineering and safety testing before proceeding with construction, and disallow DOE from accepting the risks of "small explosions."
- Congress should strengthen laws regarding whistleblower protection and mandate the establishment of a Safety Conscious Work Environment.

Alliance for Nuclear Accountability

A national network of organizations working to address issues of nuclear weapons production and waste cleanup

Back in the 1980s, activists and local community members began to investigate the environmental impacts of facilities where nuclear weapons work was happening. The U.S. Department of Energy (DOE) was in the midst of a 'shell game,' shifting risks by moving nuclear materials and wastes from one site to another while pitting communities against each other. It became important to build a complex-wide perspective. It made sense to remove the source of the problem – new weapons production and testing – instead of just paying attention to cleaning up the messes left behind in the past.

The Alliance for Nuclear Accountability (ANA) was founded in 1987 to support the activities of grassroots groups around the country. During the past 24 years its members have worked together as a network to influence national policies related to nuclear weapons production, testing, research, cleanup of contaminated sites, public safety, and worker health. During this time, ANA's list of member organizations has expanded to include groups working on the costs and consequences of nuclear power facilities as well. Our 35 member organizations are listed on our website, ***ananuclear.org***.

ANA has helped to change the way that nuclear issues are framed. Rather than allowing DOE and others to define problems as purely local, ANA has exposed them as part of larger, widespread issues. Groups are now able to link themselves to national campaigns against a corrupt system. This means that local agendas are no longer defined as "NIMBY" (Not In My Backyard). Instead, ANA members look for solutions that do not shift the burden of risks onto others.

The reasons for ANA's successes are manifold. Paramount is its continued commitment to grassroots organizing, taking on a system rather than piecemeal problems, and enhancing collaboration. ANA sponsors meetings around the country and facilitates frequent conference calls and email interaction to ensure that knowledge is shared and ideas are discussed – so that broad consensus on strategies can emerge.

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