



Defense Nuclear Facilities Safety Board Hearings on Hanford

What? Public Hearing on Hanford's Waste Treatment Plant
When? Thursday, October 7, 9:00am – 2pm and 5pm – 9pm
Friday, October 8, 8:00am – Noon
Where? Three Rivers Convention Center, 7016 W. Grandridge Blvd, Kennewick, WA
Why? To Examine Safety and Design Issues Related to the Waste Treatment Plant

Public Comment Opportunities: Oct 7th- 1:30-2pm and 8:30pm-9pm
Oct 8th- 11:30am-12pm

*To schedule public comment call 1-800-788-4016 and ask for Alice Wagoner.
Call Tuesday October 5th before 1pm PST.*

Comments may also be submitted in writing at the hearings or via mail:

Brian Grosner, General Manager
Defense Nuclear Facilities Safety Board
625 Indiana Ave NW, Suite 700
Washington, DC 20004-2901

A [hearing](#) involving nuclear safety and design issues related to the Hanford **Waste Treatment Plant**, also known as the “vitrification plant,” will be held on October 7 and 8, 2010 at the Three Rivers Convention Center in Kennewick, Washington. The hearings are being held by the Defense Nuclear Facilities Safety Board (DNFSB), which is an independent oversight board established by Congress to oversee nuclear safety issues at Department of Energy nuclear facilities.

The upcoming hearing will involve safety-related aspects of the design and construction of the Waste Treatment Plant which is currently being designed and constructed by Bechtel National, Inc., and is over ten years behind schedule and over-budget by 240%. The plant is supposed to treat Hanford's high-level nuclear waste left-over from Cold War production of plutonium for nuclear weapons. Hanford has two-thirds of the U.S. inventory of high-level nuclear waste, 53 million gallons, stored in 177 underground nuclear waste tanks. One-third of these tanks have failed and leaked, and all of the tanks are well beyond their design life.

The high-level nuclear waste represents a dire environmental and human health and safety threat for current and future generations for the foreseeable future.

The DNFSB has said it will examine the following technical issues:

- 1) Changes in safety-related design criteria resulting from modification of the material at risk;
- 2) Changes in design strategy to address hydrogen in pipes and ancillary vessels;
- 3) Criticality safety concerns and other safety-related risks for the pulse jet mixing system;
- 4) Reclassification of safety-related systems, structures, and components; and
- 5) Safety-related design aspects of facilities or modifications of existing facilities needed to deliver high-level waste feed.

The DNFSB is inviting speakers to attend the hearings and answer questions, including:

Dr. Ines Triay, Assistant Secretary, DOE-Environmental Management (EM)
Mr. Frank Russo, Bechtel National, Inc. (BNI)
Mr. Dale Knutson, DOE-Office of River Protection (ORP)
Mr. Greg Ashley, BNI
Mr. Leo Sain, URS
Dr. Loni M. Peurrung, PNNL (Pacific Northwest National Laboratories)
Mr. Gordon Beeman, PNNL
Ms. Donna Busche, URS
Mr. David Brockman, DOE-ORP
Ms. Stacy Charboneau, DOE-ORP
Mr. Paul Rutland, WRPS (Washington River Protection Solutions)
Dr. David S. Kosson, CRESPI
Dr. David Dickey, Mixtech -Consultant
Dr. Joseph Shepherd, CIT- Consultant
Dr. Roger Mattson, Consultant

The DNFSB has specified in its invite letters (and, in at least one case, a subpoena), that witnesses will be examined, and should be ready to answer their questions. This is a very serious and important meeting.

Hanford Challenge and others are raising questions related to the safety and quality of the Waste Treatment Plant. We intend to raise the following concerns in our comments:

- Why is a design that cannot prevent flammable gas explosions considered acceptable?
There is a design solution that prevents these explosions, but it is considered too expensive. Instead of designing a solution managers are using testing data on pipes up to 4-inches to prove that much larger pipes can handle explosions. How does that extrapolation work? What happens if an explosion occurs twice in the same pipe? Are explosions in a hazardous nuclear facility ever OK?
- Why is the possibility of a nuclear criticality considered acceptable at the WTP? Internal documentation indicates that a nuclear criticality could occur if the waste tanks are not adequately mixed, and plutonium settles to the bottom of a tank.
- Has Bechtel proposed redefining firewalls in the facility as non-safety items to save on costs? If so, what justification can there be, besides money, to propose such a move?
- Is DOE considering the implications a broken safety culture has on the safety of the Waste Treatment Plant? How will concerns surface if employees who notice critical issues are afraid to raise their concerns?

Bechtel has a long history of reprisal against employees for raising concerns. In 2005, DOE issued a [report](#) finding that Bechtel had established and maintained a hostile working environment. The report stated that half of the more than 100 respondents stated that they were fearful for their jobs for cooperating with the investigators. 20%

responded that they would suffer employment discrimination and harassment if they filed a safety concern. In 2007, DOE issued a [decision](#) and a civil penalty against Bechtel in response to the wrongful termination of an engineer after he made safety disclosures. On June 2, 2010 the [WTP manager of Research and Technology was terminated](#) from his position and re-assigned to a basement office with no job title after raising 50 issues. This sends a clear message to other WTP employees to stay silent.

- Why did DOE and Ecology suddenly approve the closure of technical issues after their own work plans concluded that it will take 18 months or more to resolve these issues? Is this approval related to the fact that DOE had a legally-binding Tri-Party Agreement cleanup milestone to meet and that Bechtel had 6 million dollars at risk if they didn't close the key technical issue (M3) by June 30th?
- Is DOE considering the impact of assigning one contractor to design and build the WTP, and another contractor to operate the plant? Since Bechtel is not responsible for operating the plant, there is no contractual penalty if they build a plant that does not work.
- Why has DOE assigned the Design Agent role *and* the Design Authority role to Bechtel, when Bechtel clearly has a conflict of interest in authorizing its own work? Shouldn't these roles be separated, and the Design Authority operate independently of the contractor?
- Is Bechtel the right contractor to build this facility? Secondly, is DOE providing the necessary oversight and imposing the required rigor of operations to safeguard human health and safety and protect the public's massive investment of taxpayer dollars?

Implications

- After spending ten years and \$6 billion dollars (so far) designing and building the Waste Treatment Plant, it remains mired in controversy and uncertainty.
- The strategy of closing out unresolved safety concerns now and waiting until operation begins in 2019 to address them, instead of resolving the issues now, guarantees far greater cost increases and schedule delays in the long-run.
- When the atmosphere has been poisoned by a history of reprisals against employees who raise concerns, the quality, and safety, of the plant will always remain "indeterminate," because important issues affecting future operations may not have been raised and addressed.
- The Waste Treatment Plant design, especially the strategy of pre-treatment of the waste, is in jeopardy of failure. Meeting deadlines to build a plant have overridden safety considerations.

Background on the Waste Treatment Plant

- The Hanford Nuclear Site is located in Washington State, and was a key plutonium production facility as part of the Department of Energy's network for producing nuclear warheads.
- Hanford stores two-thirds of the nation's high-level nuclear waste in 177 aging underground tanks. 53 million gallons of this waste needs to be removed, treated and disposed in a deep, geological repository before all the tanks fail, and the waste leaks to the groundwater – which feeds the nearby Columbia River.
- The federal government has funded the Hanford Site to design and construct a very large, one-of-a-kind Waste Treatment Plant. The plant, when it goes into operation in 2019, will begin to mix the high-level nuclear waste with molten glass, in a process called “vitrification.” The molten glass will be poured into large, stainless steel canisters, which will cool, and then be transported to a permanent underground repository (yet to be determined).
- The costs associated with this project are staggering. The initial estimate of the construction cost by the contractor, Bechtel, was \$4.5 billion. Today, the estimate is \$12.3 billion. The costs to operate the facility for 40 years range from \$60 to \$120 billion. These figures, along with the scope and scale of the project, make the Waste Treatment Plant the most expensive and complicated environmental remediation effort in the world. The opening date of the plant has slipped from 2009 to 2019. More delays and cost overruns are expected.
- One of the reasons that the plant's costs have spiraled is that Bechtel and DOE decide on a “design/build” strategy, also known as “fast track.” In this model, as the plant's design is completed, construction begins without waiting for a full-design to be completed. However, as more is learned about the complexity of the waste forms in the tanks, design changes begin to compound and cause problems.
- Hanford intends to pre-treat the high-level nuclear waste and divide the waste into low and high-activity waste streams. It is the high-activity waste that will be sent to a deep, geological repository. The Pre-Treatment Facility is thus of critical importance to the design, and is also the bottleneck – if it doesn't work, the entire plant won't work. The Pre-Treatment facility has been plagued with numerous design challenges. Many people have expressed the opinion that it may never work as currently designed.