"The real purpose in making the bomb was to subdue the Soviets. Now it's happening again. Why?"

Discussion with Peter Kuznick and Greg Mello, Los Alamos, July 22, 2023

Only he who knows the empire of might and knows how not to respect it is capable of love and justice...Thus it is that those to whom destiny lends might, perish for having relied too much upon it.

Simone Weil

It is not "can any of us imagine better?" but, "can we all do better?" The dogmas of the quiet past, are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise -- with the occasion. As our case is new, so we must think anew, and act anew. We must disenthrall ourselves, and then we shall save our country.

Abraham Lincoln

A new generation will have to be taught a new way of harmony, mutual respect, common interest, and love for each other and the planet.

Herman Agoyo, Ohkay Owingeh

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Welcome to New Mexico
America's Nuclear Weapons Colony
www.lasg.org
Our Simple Agenda

1. Welcome, logistics

2. Peter Kuznick, 30 minutes, primarily historical

3. Questions, answers, discussion, 30 minutes

4. Greg Mello, 30 minutes, primarily current

5. Questions, answers, discussion, 30 minutes

6. Informal discussions and networking, cleanup as needed
Briefest overview of U.S. warhead plans, focusing in on plutonium pit production
<table>
<thead>
<tr>
<th>Platform</th>
<th>Vehicle</th>
<th>Delivery System</th>
<th>Nuclear Weapon (Bomb or Warhead)</th>
<th>Delivery System</th>
<th>Nuclear Weapon (Bomb or Warhead)</th>
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<tr>
<td>SEA</td>
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<td>Ohio-class SSBN</td>
<td>Trident II D5 LE1 SLBM</td>
<td>CURRENT</td>
<td>W76, W76-1, W76-2, W88</td>
<td>NEAR FUTURE</td>
<td>W76-1, W76-2, W88</td>
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<td>Columbia-class SSBN</td>
<td>Trident II D5 LE2 SLBM</td>
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<td>MIII ICBM</td>
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<td>W78, W87-0</td>
<td>GBSD</td>
<td>W87-0, W87-1</td>
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<td>AIR</td>
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<td>B83, B61-7/11</td>
<td>B-21 Bomber LRSO</td>
<td>B61-12, W80-4</td>
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<td>B-2A Bomber</td>
<td>AGM-86 ALCM</td>
<td>W80-1</td>
<td>B-52H Bomber LRSO</td>
<td>W80-4</td>
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<td></td>
<td></td>
<td>DUAL-CAPABLE AIRCRAFT</td>
<td>F-15E DCA</td>
<td>F-35A DCA</td>
<td>B61-12</td>
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US Nuclear Weapons,
from DoD, Nuclear Matters 2020 Handbook, updated as shown
The best overviews of U.S. nuclear weapons we can offer are:

- New: Congressional Budget Office, “Projected Costs of U.S. Nuclear Forces, 2023 to 2032”

- Hans Kristensen and “United States Nuclear Weapons, 2023,” Jan. 15, 2023

- US nuclear weapons since 2020: continuity & change, Dec 7, 2021

- Update on US Nuclear Weapons Modernization for the International Disarmament Community, May 13, 2020
Why necessary, or if so before ~2050?

Current FPU 2032 deduced from FY21 CBR, other sources. Reportedly, FPU 2036 per NWC 12/10/19 (unclassified)

Why necessary? It isn’t.

No new pits are needed for this unnecessary, provocative warhead even if pursued.

From NNSA FY2020 SSMP, July 2019. Red bars are production schedule as of May 2020, from LASG sources and GAO-20-573R (p. 16). FPU dates in the 2030s are now classified and/or uncertain.
Figure 2–2. DOE/NNSA Warhead Activities

Fiscal Year 2023 Stockpile Stewardship and Management Plan – Biennial Plan Summary | Page 2-7
Ground Based Strategic Deterrent (GBSD) “Sentinel” system. Deployment 2030-2037. A $85-140+ billion program plus warheads, according to DoD’s Cost Analysis and Program Evaluation (CAPE). 400 deployed, MIRV-capable (3 per missile for some fraction of 400, perhaps 200 as at present). To be armed with new W87-1 warheads (W87-0s initially). Some 250-1,500 new-pit W87-1s are desired, starting in 2030.

This is the sole planned use for LANL pits during the 2020 and pre-SRPPF 2030s.
Mark 21/W87 on single RV MM III bus, the present deployment configuration.

This RV is too wide and heavy for MIRVing MM III.

MM III in operation.

Result.
New silo-based missiles are to be the destination for new plutonium pits.

W87-0 in Mark 21 reentry vehicles (RVs), shown here in (retired) MX missile configuration. Circular error probable (CEP) is classified but say ~100 m, with “smart” fuzing. Yield is 300 kilotons (kt), with a 475 kt variant optional. It is pits of this type which LANL is tasked to make.

The US possesses ~ 540 (490?) W87s, in addition to ~780 W78s in Mark 12A RVs (CEP ~720 ft) for the same 450 Minuteman III missiles (400 deployed). At present, ~200 MM IIIs could be returned to multiple independent RV (MIRV) status with 3 W78 warheads each.
Skinnier, lighter, less accurate RV for the W78. Both the RV and the warhead are to be retired.
Minuteman III
Mk-12 MIRV
Warheads (W78s)
Modern U.S. ballistic missile warhead, late 1980s

W88 Warhead for Trident D-5 Ballistic Missile

1. The "Primary"
   Two-point, hollow-pit, fusion-boosted high explosive implosion

2. The "Secondary"
   Spherical, all-fissile, fusion-boosted radiation implosion

3. Radiation Case
   Peanut-shaped, channels x-rays from primary to secondary

4. Channel Filler
   Plastic foam plasma generator

5. Booster Gas Cannister
   Periodic replacement as tritium gas decays

High Explosive Lens
   Two lenses drive primary implosion

Plutonium-239 Pit
   Beryllium-reflected hollow pit

Tritium & Deuterium
   Booster gas, fusion makes neutrons

Lithium-6 Deuteride
   Lithium becomes tritium, fusion makes neutrons

Uranium-235 "Sparkplug"
   Starts tritium generation and fusion in the secondary

Uranium-235 "Pusher"
   Heat shield, tamper, and fission fuel (fission by all neutrons)

Uranium-238 Case
   Fission by fusion neutrons only

Sources for illustrations: Wikipedia
Early plutonium pit and bomb production at LANL and elsewhere

<table>
<thead>
<tr>
<th>Year</th>
<th>Stockpile</th>
<th>Notes</th>
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<tbody>
<tr>
<td>1945</td>
<td>2</td>
<td>DP facilities first operation Oct. or Nov. 1945; design began in Jan or Feb 1945; first bombing plan against Soviet cities delivered to Groves by end of August 1945</td>
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<tr>
<td>1946</td>
<td>9</td>
<td>7 of these usable; 2 lacked initiators. “Pincher” war plan against Soviets June 1946, LANL managers petition MED to get rid of all production work</td>
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<td>1947</td>
<td>13</td>
<td>“One operable bomb in Jan. 1947,” D. Lilienthal, AEC, Truman was stunned</td>
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<td>1948</td>
<td>50</td>
<td>Sandstone X-ray 4/14/48; Mk III (Fat Man) production immediately halted, switched to Mk IV; Sandia bomb assembly facility opened 9/1/1948, continued as primary assembly site through 1952</td>
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<td>1949</td>
<td>250</td>
<td>Hanford took over pit production July 1949; no significant hitches</td>
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<tr>
<td>1950</td>
<td>450</td>
<td></td>
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<tr>
<td>1951</td>
<td>650</td>
<td></td>
</tr>
<tr>
<td>1952</td>
<td>1,000</td>
<td>Rocky Flats opened, Hanford continues pit production also</td>
</tr>
<tr>
<td>1953</td>
<td>1,350</td>
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</tbody>
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Sandia Bldg 904, Weapons Assembly (sans pits)
DP Site ("D Prime"), TA-21, which replaced D Building. The Rocky Flats before Rocky Flats.
DP Site (TA-21); plutonium manufacturing in foreground
LANL TA-21, DP Site; Uranium & Plutonium Processing & Manufacturing, (1999 photo)
LANL’s (~2001) map of contamination at TA-21, DP Site, LANL’s former pit production and plutonium (etc.) processing site.
A glance back at LANL’s first proposal for a post-Rocky Flats pit facility
Some things don’t change: nuclear “needs,” greed, and the helpful efforts of NGOs to concentrate nuclear weapons & waste in NM

Los Alamos Can Supply All N-Bombs
Lab’s Annual Plutonium Capacity May Be Enough for 300 Weapons

By John Fleck, 12/8/93. Archived at http://lasg.org/Pit_Prod.htm
Random scenes from the LANL pit production world
Pit Manufacturing (machining)
Key issue: transportation (I)

Please see: The troubled logistics of LANL pit production: how will LANL staff and contractors get to work?
Key issue: energy and resource consumption. Not even considering contamination and nuclear waste, LANL is a dirty lab.

- LANL is expected to double its energy use over the coming decade.
- LANL will fail to meet DOE goals for energy efficiency.
- LANL will fail to meet DOE goals for water use efficiency.
- LANL is unlikely to conduct any climate change vulnerability assessment, despite DOE guidelines.
- LANL may build an on-site 10 MW solar field but if so this would provide only 4% of its needs by 2031.
- More than half of LANL’s electricity currently derives from coal-fired generation. There are no clear commitments to renewable energy in future, only to power purchase agreements meeting vague criteria.
- NNSA is proposing a $300 million "Electrical Power Capacity Upgrade" project at LANL (p. 365), including a new 115 kV transmission line across the Caja del Rio. LANL consumes 80% of the energy supplied to the Los Alamos Power Pool (LAPP).
- Back-of-envelope calculations suggest LANL commuting entails very roughly 175 million road miles per year. With deliveries, etc. ~200,000,000 vehicle-miles/year might be a good guess.
- We can be sure LANL is the largest single cause of greenhouse gas emissions in a wide region.
- For references and more see: LANL releases 2021 "Site Sustainability Plan" for "rapidly changing and growing mission", 2/24/21 and “Third power line proposed for Los Alamos,” 4/19/21.
Key issue: housing, briefly:

- There isn’t enough. Pit production is only one expanding mission.

- Housing off The Hill creates difficult transportation problems. LANL’s so-called “Campus Master Plan” offers no solutions to these problems.

- Senior federal manager to me, this fall: “If NNSA is serious about pit production it will build barracks at LANL. I see no other way.”

- My opinion: there are enough LANL staff living or proposing to live in Santa Fe to have a significant effect on housing prices in some parts of the market. How much of an effect I do not know.

- Current housing proposals for Los Alamos County will help but are not nearly enough – especially if Los Alamos and White Rock seek to have a well-rounded set of business services.

- Pit production will fundamentally change Los Alamos, one way or another.

- LANL’s construction workers will need to live somewhere. “Man camps” in the pueblos are not a good solution, in my opinion.

- Large-scale commuting from Albuquerque and Rio Rancho is not, and will never be, sustainable.

- The lure of a new bridge and highways to Santa Fe and I-15 at Waldo will remain.

- Success at “technology spinoffs” will exacerbate the housing problem.