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Groups Sue U.S. Department of Energy in Federal Court; Demand Shut-down of Controversial Nuclear Reactor

On January 23, a coalition of environmental groups and individuals, led by Jackson, Wyoming based Keep Yellowstone Nuclear Free, filed suit against the United States Department of Energy in the Federal District Court for the District of Idaho alleging that the DOE has failed to comply with the National Environmental Policy Act ("NEPA") in connection with its Advanced Test Reactor Life Extension Program (the "LEP"), and is seeking to shut the facility down until its safety can be assured. In addition to KYNF, plaintiffs in the case include Wilson, Wyoming resident Mary Woollen, Troy, Idaho based Environmental Defense Institute, former Idaho State Senator and Carey, Idaho sheep rancher John Peavey, and Aberdeen, Idaho resident Debra Stansell.

The LEP, according to DOE documents obtained by the plaintiffs, is a ten-year, $200 million program intended to extend the life of the ATR until the year 2040.

The ATR, which is already nearly 40 years old, became the subject of public scrutiny last year when the DOE proposed to use it to produce the deadly isotope Plutonium-238. As the scrutiny has intensified, and more has been learned about the precarious operating history of the ATR, the DOE has repeatedly insisted that the facility is safe. "Why does the American taxpayer have to spend $200 million on the ATR if it is safe?" asks Mary Woollen, KYNF Executive Director and a plaintiff in the suit. "It's completely backwards—they should shut it down, fix the problems they know pose imminent harm, and then put it back on-line with confidence", said Woollen.

According to a September, 2006 document outlining the LEP, the LEP is a "major project to extend the life of the ATR to the year 2040." That document states that the ATR's "routine maintenance, upgrades, and infrastructure" have suffered from years of "budget austerity." As a result, the ATR has a massive engineering work backlog of more than 115,000 man-hours.

Even at a price tag of $200 million, the LEP does not include any major physical upgrades of the facility. Incredibly, that sum is the amount necessary just to assess the safety basis of the facility and address the engineering backlog. In addition to addressing that backlog, it will pay for the design basis reconstitution program, a material condition assessment, a probabilistic risk assessment, and seismic qualification program, all of which are necessary to evaluate the present condition of the facility and the possibility of continued safe operation.

The lawsuit asks the Court to order the DOE to shut down the reactor until such time as the key safety-related components of the LEP are performed. "DOE has admitted the need for a systematic investigation into the ATR's many problem areas, and refurbishment where necessary. But, it is clear that, in addition to the serious problems that have been publicly discussed, there are a great many unknowns at the ATR. The plaintiffs believe that the reactor should be shut down until such time as the DOE can guarantee that it is safe to continue operating," said Mark Sullivan, the plaintiffs' attorney.

"It is ludicrous that that DOE has embarked on this program without weighing its many alternatives, and doing so in a public forum," added Sullivan. "The DOE must prepare an Environmental Impact Statement for the LEP, and that document must evaluate all of the DOE's alternatives, including building a new test reactor, either at INL or another facility."

NEPA requires that federal agencies prepare an environmental impact statement and conduct hearings to receive public input for all "major federal actions" that are likely to significantly affect the environment. The LEP, according to the suit, will generate massive amounts of highly radioactive waste for which there is today, no path for disposal, and will increase the likelihood of a major nuclear disaster at INL, impacts that the DOE must weigh before proceeding with the LEP.

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Advanced Test Reactor is a Unacceptable Risk

A 2006 Department of Energy (DOE) report released under the Freedom of Information Act lays out plans for extending the operating life of the Advanced Test Reactor (ATR) at the Idaho National Laboratory (INL). This report states: "The ATR was designed in the late 1950s and started full power operations in 1969 and is now being evaluated for extending its role in materials testing through the year 2040. This extended operation will result in a 71-year operating lifetime for the ATR. It is unlikely that, at the time of the original design, the design lifetime was evaluated for this length of service. However, as noted in the February 2004 special review, budgetary shortfalls over the previous ten years have resulted in the necessary maintenance, upgrades, and infrastructure being **threatened**." [1] In other words, as cited below and depending on which DOE report cited, **the ATR deferred maintenance and engineering backlog totaled almost 115,000 resource-hours, or 75 man-years of maintenance backlog.**

DOE's nuclear reactors are self-regulated, which means the Nuclear Regulatory Commission that regulates commercial nuclear power reactors has no functional enforcement jurisdiction over DOE's reactors. The Advanced Test Reactor (ATR) is an accident waiting to happen, and therefore, is an unacceptable risk to the hundreds of thousands of residents living downwind of this antiquated reactor.

The forty-year-old ATR poses an immediate threat to populations living in southeastern Idaho, western Wyoming and northeastern Utah because radiation released during a major accident would be nearly half that released from Chernobyl. This imminent (but preventable) threat warrants investigation by state and federal regulatory agencies. Failure of the ATR decrepit safety systems could result in a hydrogen or steam explosion which would spread 175 million curies of radiation to the environment. [2] This is an amount of radiation in the league of the Chernobyl release which contaminated thousands of square miles and spread a cloud of radiation around the earth.

This new ATR life extension plan would not pass any independent Nuclear Regulatory Commission permitting criteria because of the current materials knowledge base on the "aging effect" of radiation on reactor system components that limited the original ATR design-life to 20 years which should have ended in 1989. Even the Congressionally mandated Defense Nuclear Facility Safety Board has been blocked from inspections since 1994 presumably because DOE did not like the negative DNFSB reports on the ATR.

DOE reports gained through the Freedom of Information Act, for instance state: "The M-85 primary coolant system heat exchanger developed a leak in the shell side. The leak was repaired, but further investigation utilizing non-destructive examination indicated pitting corrosion occurring in all the PSC heat exchangers. **The ATR Primary and Secondary Coolant System heat exchangers are operating beyond 200% of their 20-year design life.**" [3] Leaks in the heat exchangers go to the cooling towers for evaporation directly to the atmosphere. The ATR cooling towers are not continuously monitored for radioactive emissions.

In 2003 INTEC (where ATR liquid waste is processed) atmospheric emissions were 6,020 curies and Reactor Technology Center (RTC), where ATR is located were 1,180 curies. [4] In 2000, the RTC/ATR main stack released 1,802.69 curies. Included are 0.39 curies of iodines; 2.3 curies of mixed fission products.[5] This represents a huge amount of radioactive emission to the atmosphere. Radionuclides are so biologically hazardous that EPA regulatory limits are listed in pico-curies or one trillionth of

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[1] Advanced Test Reactor Life Extension Program Plan, Battelle Energy Alliance (BEA), March 2006, USDOE, page 13 &1 , hereinafter referred to as LEPP.

[2] Final Programmatic Environmental Impact Statement for Accomplishing Extended Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility, December 2000, DOE/EIS-0310, Section I.1.1.1.2.

[3] Facility Certification Report No. 29, for Advanced Test Reactor, 4/7/05, Page 26, USDOE. FOIA Doc. # 50.

[4] DOE/Environmental Impact Statement, 6/05, EIS-0373D page 3-26

[5] DOE/Environmental Impact Statement, 9/02, EIS-0287 page 4-30

one curie. These high emissions from RTC/ATR suggest liquid waste (from leaking heat exchangers) is first sent to the ATR cooling towers w/o treatment and the precipitates are then pumped to INTEC unpermitted liquid waste evaporators and/or the waste percolation ponds. A 2005 DOE/ATR Technical Safety Requirements report gained via Freedom of Information Act states the following:

- The complete seismic qualification of structures, systems, and components as outlined in DOE PLN-588 is planned but has **not** yet been performed.
- ATR engineers indicate that an increased level of attention to piping restraints for small diameter piping connected the Primary Coolant System is **needed** to support small seismically-induced pipe break sizes analyzed for the accident analysis.
- Several deficiencies are identified that have nuclear safety significance have **not** been completed that include smoke detection to provide an increased level of protection in the ability to provide safe reactor shutdown.
- Failure to provide 2-hr-fire-rated protection for M6 diesel emergency power equipment.
- Failure to install ATR spent nuclear fuel Canal area sprinkler upgrades.
- Failure to upgrade emergency power system, significant to nuclear safety given experience between 1995 and 2005 that show during actual demands during power operation, 2 failures and during outages, 2 failures.
- The delay time associated with air-filled firewater injection lines was **not** modeled in the safety basis.
- Safety basis modeling of the firewater safety system did **not** account for other usage demands on the system created by potential failures outside of the safety-related boundary of the system or potential failure to start firewater pumps required for loss-of-coolant-accident mitigation.
- On-site raw water supplies are **not** sufficient to last until commercial power can be reasonably assumed to be restored. Therefore, uninterrupted Emergency Firewater Injection System delivery to the ATR reactor vessel was not ensured following a seismically induced loss of coolant accident. [6]
- Violation of technical safety requirements in missed surveillance on the Radiation Monitoring and Seal System. [7]

The ATR basic safety reports are not even maintained. DOE's report states: "**As noted a complete baseline of controlled design basis and supporting design information documentation does not specifically exist for the ATR." [8]** DOE further states: "Design codes and standards have evolved significantly during the life of the [ATR] plant. Efforts over the years to demonstrate facility safety by comparison to modern design codes and standards have resulted in a **partial application** of new codes and standards to applicable portion of the ATR facility, based on independent cost/value determinations made on a case-by-case basis. This **partial application updated codes and standards**, combined with the long operating history and obscure documentation for the basis of some of the rationale for applying updated standards, has resulted in confusing design documentation that is difficult to utilize or apply. In consequence, the established baseline of facility design documentation require special experience and perseverance to use." [9] [emphasis added]

"Partial application of codes and standards"??? This is a clear acknowledgement of violation of DOE's own internal regulations and Nuclear Regulatory Commission Guidance as well as other applicable statutes and regulations (Resource Conservation Recovery Act, Clean Air Act, and Clean Water Act).[10]

Backlogs in maintenance don't express the real squeeze on engineering support and money for maintaining the ATR. According to Dave Richardson ATR Operations Manager, "**ATR has about 75 man-years of maintenance backlog without design basis reconstitution [facility construction**

[6] The Emergency Firewater Injection System provides reactor core coolant in the event the Primary Core Coolant System fails.
[7] Interoffice Memorandum Idaho National Laboratory, April 7, 2005, to S.K. Penny, from J.C. Chapman.
[8] LEPP pg. 16
[9] LEPP pg. 15.
[10] DOE Order 5480.23 and 10 CFR 830 and US Nuclear Regulatory Commission Guidance 1.60 and 1.70.

upgrading]." As of 3/05 ATR contractor (BEA) was still negotiating with DOE for, "funding for the seismic **evaluation** at the ATR of $2M." [11] The backlog of ATR system upgrades, called Engineering Change Forms (ECF) increased dramatically in "2005 to 91 ECF that either directly or indirectly support the operation of the ATR." [12] The cost estimates on how much these existing ATR upgrades over the next ten years is $200 million. [13] Even a pedestrian cost-benefit analysis would conclude the ATR is not worth any additional investment and should be shutdown.

A more recent (3/06) DOE report states: "The total backlog of work is normally presented in man-hours of work. For July [2005] **the ATR deferred maintenance and engineering backlog totaled almost 115,000 resource-hours** at an average hourly rate of [redacted] for craft personnel and approximately [redacted] per hour burdened for engineering, this translates into approximately $5 million in work that must be completed ($2.5 million for deferred maintenance and $2.4 million for engineering) for the overall work backlog to be reduced to the level that engineering and maintenance organizations can routinely maintain." [14] [emphasis added]

This is an apparent violation of DOE Management Control Procedure that states; "When modifications are performed or the facility mission is extended or changed, additional detail to support the justification for the design adequacy will be required." [15] DOE has known about these violations of its own regulations for over a decade, yet no substantive physical ATR upgrades to safety systems has occurred.

One of the most revealing and crucial issues related to the ATR, is that DOE currently has no legal way to dispose of the past, current and future waste generated by the reactor. For instance, DOE has no foreseeable means of disposing of the beryllium blocks in the reactor core used to reflect neutrons back into the core. "The uranium impurity, when irradiated, resulted in classification of the beryllium blocks as transuranic (TRU) waste, when they are removed from the core. … Currently, there is no identified path for disposal for this TRU waste which is not allowed to be disposed in the [INL] Radioactive Waste Management Complex - Subsurface Disposal Area shallow dump. Contact-handled TRU waste that is 'defense related' is permitted to be disposed at the Waste Isolation Pilot Plant (WIPP). However, the WIPPP Land Withdrawal Act limits the total radioactive inventory for all isotopes to 5.1 million curies (MCi). The ATR reflector components would consume almost two-thirds [3.4 MCi] of the total TRU inventory allowable within WIPP, which is currently not acceptable.

DOE Violates Environmental Laws with New INL Mixed Hazardous and Radioactive Waste Operations

The Department of Energy (DOE) Idaho National Laboratory (INL) submitted a permit modification request to the Idaho Department of Environmental Quality (IDEQ) that includes a new high-level radioactive and hazardous waste processing plant. This is the deadliest material on the planet short of nerve-gas. This new operation is called the Integrated Waste Treatment Unit (IWTU).

IDEQ has allowed DOE for many years to "boot-strap" new deadly waste operations like the IWTU onto older permits and thereby avoid the otherwise full legal Resource Conservation Recovery Act (RCRA) permitting process. DOE's IWTU is required as a matter of law to obtain an RCRA permit as a new facility and not be engrafted as a modification onto the current application. This is a jurisdictional

[11] Meeting on Safety of Reactor and Nuclear Facility Operations, March 1-3 2005, National Institute of Standards and Technology, Summary Report, http://www.ornl.gov/nuclear operations/2005-03-01/.
[12] Facility Certification Report No. 29 for the ATR, 4/7/05, page 29. FOIA Doc. # 50.
[13] LEPP, March 2006
[14] Advanced Test Reactor Life Extension Program Plan, BEA, March 2006, USDOE
[15] DOE Standard, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23 Nuclear Safety Analysis Reports, DOE-STD-1027-92, page 11; also see DOE Management Control Procedure (MCP-3480) Environmental Instructions for Facilities, Procedures, Materials and Equipment (Appendix F) "Routine Maintenance Activities" as well as DOE-STD-1027-92 Facility's Stage in its Life-Cycle.

issue that requires resolution before the IWTU can receive any legitimacy as a RCRA facility. [16] Therefore, DOE's permit modification is bogus because there are no original permits for the IWTU, High-level Liquid Waste Evaporator and Liquid Effluent Treatment & Disposal. These operations needed to obtain individual RCRA permits as new facilities because they were not in existence before 1986. [17]

Environmental Defense Institute (EDI) has always supported the safe conversion of mixed hazardous and high-level radioactive tank waste inventory that poses a continued threat to the underlying Snake River Aquifer. EDI, however, protests DOE's attempt to circumvent applicable Resource Conservation Recovery Act (RCRA), Clean Air Act, and Clean Water Act regulations. EDI filed a complaint with EPA challenging the agency's intent to grant Idaho final Hazardous Waste Management Act and Resource Conservation Recovery Act permitting authority based on IDEQ's past and current inadequate enforcement of these crucial environmental laws. [18] It's simply unconscionable and illegal for DOE to dump these deadly toxins into the atmosphere when DOE refuses to pay for emission control systems otherwise required under law.

One of the crucial deficiencies of this new Permit Modification is that it only addresses hazardous materials and totally ignores radioactive materials released to the atmosphere. The Permit Modification must address compliance with all applicable regulations. [19] This is a crucial issue because during 2003, INTEC (where these waste process plants are located) released 6,002 curies of radioactive emissions to the atmosphere. [20] By any standards, this is an enormous amount of radiation to the environment! Since the new Integrated Waste Treatment Unit (IWTU) is part of the multi-process INTEC Liquid Waste Management System (ILWMS) that is treating the most hazardous radioactive waste on earth, this is an unacceptable exclusion. This Permit Modification Request includes the whole ILWMS component units that include:

- Integrated Waste Treatment Unit (IWTU)
- Evaporator Tank System (ETS) formerly called the High-level Liquid Waste Evaporator
- Process Equipment Waste Evaporator (PEWE)
- Liquid Effluent Treatment and Disposal (LET&D)

Changing the name of the High-level Liquid Waste Evaporator to Evaporator Tank System does not change the process, but it does make it sound more benign to the public. DOE's naming the Integrated Waste Treatment Unit and classifying it as a "steam reformer" also sounds deliberately innocuous. These name changes are not only used to hide what these operations do, but also to avoid more stringent applicable laws. At issue here is processing the most deadly material in the world that unquestionably deserves the most ardent regulatory scrutiny by IDEQ and EPA.

The Integrated Waste Treatment Unit (IWTU) "steam reformer" meets the regulatory definition of a "combustion unit" or controlled pyroforic high-temperature burn (1,150 degree C). These combus-

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[16] Code of Federal Regulations (CFR), 40 CFR 270.42

[17] Construction for the High-Level Liquid Waste Evaporator (HLLWE) at the Idaho National Laboratory was initiated in 1993 and operation of the HLLWE as a new facility began in 1996. The HLLWE has processed over 4 million gallons of high level radioactive liquid and mixed hazardous wastes without a RCRA permit. DOE is required but has failed to submit an application for a RCRA permit for the HLLWE. The HLLWE has operated at all times without a RCRA permit and without interim status. See Environmental Defense Institute, et al., Notice of Intent to Sue DOE, 7/9/02, available at; http://environmental-defense-institute.org

[18] When Petitioners [EDI et al.] ask, "Where are the permits?" EPA and IDEQ pretend that interim status is a substitute for a permit although RCRA requires permitted facilities during their operational lifetimes. Interim status operations have continued for longer periods than permitted operations could have continued. 42 U.S.C. §6925 reflects Congressional intent to limit interim status operations. One only has to read the Rebuttal submitted by Petitioners to realize the large number of legal and factual issues which the EPA has refused to acknowledge or address in its 7/1/02 letter or EPA's earlier Response. Environmental Defense Institute, Keep Yellowstone Nuclear Free and David McCoy Petition to Environmental Protection Agency Inspector General, 7/8/02. See EDI Website http://environmental-defense-institute.org

[19] 40 CFR 191.27 (notes 5 and 6) as well as 40 CFR 61 Subpart I.

[20] Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems, DOE/EIS-0373D, page 3-26.

tion temperatures are achieved by adding fuel in the form of combustible carbon (coal) and oxygen as a means of maintaining the high temperature for reducing the waste in a fluidized bed to a granular calcine like waste product. The IWTU replaces the New Waste Calciner incinerator that was not designed to process the remaining "sodium-bearing" high-level liquid waste at INTEC.

Regardless what DOE calls this new IWTU and other high-level waste operations, they must be independently defined by a characterization of the treatment process implemented and the required regulatory emission control standards applied.

"A temperature of 1,150 C is the same as the operating temperature in the turbine (hot end, in the direct blast of the burning fuel/air mixture) of a jet engine. This is bright red heat, enough to melt copper & incinerate almost anything, but the mere idea of burning previously classified high level waste & not monitoring or controlling the resulting emissions seems to me to be beyond stupid & without regard to public safety," notes a University of Idaho Engineering Materials Science professor.

DOE's Permit Modification claims the new IWTU will process "approximately 836,000 gallons of mixed liquid waste, containing both hazardous and radioactive components stored in three 300,000-gallon [high-level waste] tanks." [21] These are only current inventories and do not include DOE plans to restart spent nuclear fuel reprocessing that will generate significant volumes of "newly-generated" high-level liquid waste. This is an enormous amount of extremely deadly waste to treat and the potential for significant emissions that could affect the public and the environment must be recognized.

DOE states: "The units that comprise the [INTEC Liquid Waste Management System] ILWMS are capable of handling high-level, transuranic, and low-level radioactive wastes. Activities of typical wastes range from 20 nCi/g to 50,000 nCi/g. [22] The exposure rates associated with these process solutions routinely exceed 100 mrem/hr and can pose a potentially serious hazard to workers at the INL if appropriate protective measures such as time, distance and shielding are not applied." [23]

DOE's reported intent to restart reprocessing of spent nuclear fuel (SNF) at INL lends credence to public concerns that the ILWMS and the IWTU are not just dedicated to treating existing high-level waste tank inventories, but also facilitating managing "newly-generated-waste" from reprocessing of SNF. [24]

DOE Permit Modification Request Discussion of Process Vents

"Process Vent" is a broad regulatory category for a major source of hazardous air pollutants that must comply with more restrictive EPA emission regulations. DOE has been and continues to side-step compliance with these emission regulations with bogus assertions that their hazardous and radioactive waste treatment operations are not Process Vents. IDEQ is complicit in this charade by allowing DOE's obfuscation of the law.

DOE claims: "The IWTU does not involve distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. As such, the IWTU stack does not meet the definition of a process vent in IDAPA 58.01.05.008 (40 CFR § 264.1031) and the requirements specified in 40 CFR 264 Subpart AA do not apply." [25]

However, 40 CFR 264.1031 states: "Process vent means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or hot well) associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations." [26]

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[21] Permit Modification, Attachment 1, page 1-D-134. For the full text of this DOE Permit Modification hereinafter referred to "Permit Modification" referenced herein ; See http://www.deq.idaho.gov/waste/permits_forms/ permitting/haz_waste/ ilwms_permit/overview.cfm

[22] The definition of Transuranic Waste is "radioactive waste that is not classified as high-level radioactive waste and contains more than 100 nanocuries per gram of alpha-emitting transuranic isotopes with half-lives greater than 20 years."

[23] Permit Modification, Attachment 2, Section C, pg. 2-6. (nCi/g = nano Curies per gram) (mrem/hr = millirem per hour)

[24] Permit Modification, Attachment 2, Section C, pg. 12

[25] Permit Modification , Attachment 2, Section C, pg. 2-52

[26] "Distillation operation means an operation, either batch or continuous, separating one or more feed stream(s) into two or more exit streams, each exit stream having component concentrations different from those in the feed

Clearly, the IWTU meets two or more of the above definitions of a "process vent" under 40 CFR 264.1031. DOE cannot credibly claim exemption of this crucial emission control regulation. Moreover, IDEQ must ensure that DOE is not allowed to use this unfounded exemption. Also see detailed discussion on the IWTU Permit Modification below.

DOE's Permit Modification includes other liquid waste treatment units and claims: "... [Evaporator Tank System] ETS off-gas is processed through vessel off-gas systems in Buildings CPP-604 and CPP-659 respectively and then sent to the APS in Building 649, prior to discharge to the main stack. Therefore, the ETS vents do not meet the definition of a process vent and IDAPA 58.01.05.008 [40 CFR § 264.1031] does not apply." [27]

Again, the IWTU and ETS meets one or more of the above definitions of a "process vent" under 40 CFR 264.1031. DOE cannot credibly claim exemption of this crucial emission control regulation. IDEQ must ensure, in the interest of public health and safety, that DOE is not allowed to use this unfounded exemption.

The above DOE Permit does not implement new: "EPA (2005) recommendations that organics and metal emission limits be increased by factors of 2.8 and 1.45 respectively, to account for potential increases in emissions due to process upset conditions." [28] Also, there is no apparent cumulative hazardous/radioactive emissions data for all the INTEC operations using the same Main Stack, other co-located stacks, and the new IWTU stack as required in the regulations. This is a crucial issue because during 2003, INTEC released 6,002 curies of radioactive emissions to the atmosphere. [29] By any standards, this is an enormous amount of radiation to the environment!

What confidence can the public attribute to these grossly inappropriately applied standards?

It is now up to the Idaho Department of Environmental Quality to review this DOE Permit Modification Request and issue its findings. In the past, IDEQ chose to put the politically expedient ruling of Idaho's single largest employer ahead of public health and safety. Public comment is crucial to reversing this misguided priority.

What can you do? Send your comments to Kathleen Trever, Idaho State INL Oversight Program 1410 N. Hilton, Boise, ID 83706; 1-800-232-4635 or Email; robert.bullock@deq.idaho.gov. Also for additional information see EDI Website; http://environmental-defense-institute.org

Iraq War Will Cost More Than $ 2 Trillion

By Linda Bilmes and Joseph E. Stiglitz

Two scholars, one a Nobel Prize winner, revisit their estimate of the true cost of the Iraq war - and find that $2 trillion was too low. They consider not only the current and future budgetary costs, but the economic impact of lives lost, jobs interrupted and oil prices driven higher by political uncertainty in the Middle East.

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stream(s). The separation is achieved by the redistribution of the components between the liquid and vapor phase as they approach equilibrium within the distillation unit.

"Fractionation operation means a distillation operation or method used to separate a mixture of several volatile components of different boiling points in successive stages, each stage removing from the mixture some proportion of one of the components.

"Distillate receiver means a container or tank used to receive and collect liquid material (condensed) from the overhead condenser of a distillation unit and from which the condensed liquid is pumped to larger storage tanks or other process units."

[27] Permit Modification, Attachment 2, page 2-52

[28] Permit Modification, Attachment 1, page 1-D-138

[29] Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems, DOE/EIS-0373D, page 3-26.

In January, we estimated that the true cost of the Iraq war could reach $2 trillion, a figure that seemed shockingly high. But since that time, the cost of the war - in both blood and money - has risen even faster than our projections anticipated. More than 2,500 American troops have died and close to 20,000 have been wounded since Operation Iraqi Freedom began. And the $2 trillion number - the sum of the current and future budgetary costs along with the economic impact of lives lost, jobs interrupted and oil prices driven higher by political uncertainty in the Middle East - now seems low.

One source of difficulty in getting an accurate picture of the direct cost of prosecuting the war is the way the government does its accounting. With "cash accounting," income and expenses are recorded when payments are actually made - for example, what you pay off on your credit card today - not the amount outstanding. By contrast, with "accrual accounting," income and expenses are recorded when the commitment is made. But, as Representative Jim Cooper, Democrat of Tennessee, notes, "The budget of the United States uses cash accounting, and only the tiniest businesses in America are even allowed to use cash accounting. Why? Because it gives you a very distorted picture."

The distortion is particularly acute in the case of the Iraq war. The cash costs of feeding, housing, transporting and equipping U.S. troops, paying for reconstruction costs, repairs and replacement parts and training Iraqi forces are just the tip of an enormous iceberg. Costs incurred, but not yet paid, dwarf what is being spent now - even when future anticipated outlays are converted back into 2006 dollars.

Our Debt to Veterans

A major contributor to this long-term cost is the medical care and disability benefits provided to veterans. More than one million U.S. troops have now served in Iraq. And once they leave, each is entitled to a long list of benefits for the remainder of his or her life. Veterans can apply for compensation for any disabling injury or disease (physical or mental) that occurred on active duty or any existing condition that was made worse by military service. Benefits are based on the extent of the disability, ranging from 10 percent to 100 percent. And, because some medical problems do not become apparent right away, claims are likely to be filed for years after the war is over.

There are 2.6 million veterans currently receiving disability pay, including a sobering 40 percent of the soldiers who served during the four-week-long Gulf War in 1991. Accrued liabilities for U.S. federal employees' and veterans' benefits now total $4.5 trillion. Indeed, our debt for veterans' health and disability payments has risen by $228 billion in the past year alone.

These numbers are unlikely to fall. More than half of the troops in Iraq have served two or three tours of duty under grueling conditions. Moreover, depleted uranium, used in armor-piercing artillery shells because it is hard, heavy and cheap, was implicated in many of the medical claims by soldiers from the first Gulf War. And the same radioactive material was used in the toppling of Saddam Hussein.

Note, too, that improvements in body armor mean that an unusually high number of soldiers are surviving major injuries, but ending up disabled. About 20 percent of survivors have suffered major head or spinal injuries, 18 percent incurred serious wounds and an additional 6 percent are amputees. The estimated 7,000 veterans with severe brain, spinal, amputation and other serious injuries will require a lifetime of round-the-clock care.

Government medical facilities are currently overwhelmed by the needs of soldiers injured in Iraq. Some 144,000 of them sought care from the VA in the first quarter of 2006 - 23 percent more than the Bush administration had estimated for the entire year! Similarly, the government projected that 18,000 returning soldiers would seek treatment for posttraumatic stress disorder in 2006 - but the VA treated 20,638 Iraqi war veterans for PTSD in the first quarter alone. All told, in the past year, the VA has added 250,000 new beneficiaries and still has a backlog of more than 400,000 pending claims.

Budgetary Cost of the War

Congress has already appropriated approximately $430 billion for military operations, reconstruction and related programs in Iraq and Afghanistan. And these cash outlays have been rising as the war has progressed. In fiscal year 2003, the average monthly cost of operations was $4.4 billion, while today operations are running about $10 billion a month.

$2 Trillion and Counting

The total costs of the war, including the budgetary, social and macroeconomic costs, are likely to exceed $2 trillion. As large as these costs are, an equally large set of costs have been omitted. We have not included the costs borne by other countries, either directly (as a result of military expenditures) or indirectly (as a result of the increase in the price of oil.) Then there are the intangible costs - the cost of

our reduced capability to respond to national security threats elsewhere in the world, and the cost of rising anti-American sentiment in Europe and the Middle East. Americans have long taken pride in fighting for human rights. But our credentials have been badly tarnished by the Iraq war, leading to a sharp decline in America's "soft power." On issues from trade negotiations to global warming to the international criminal justice system, this decline will have a continuing impact on the United States' ability to have its point of view prevail.

Last Thoughts

In responding to cost-based criticisms of the invasion and occupation of Iraq, the Bush Administration argues that one does not go to war on the basis of calculations by bean counters. After all, Franklin Roosevelt did not wait to respond to Pearl Harbor until his budget analysts could assay the costs and benefits. But, with Iraq, America had a choice of whether and when to attack. If there ever was a "project" that should have been subject to careful scrutiny from all perspectives - including the economics - this was it.

Just as going to war was a matter of choice, staying in Iraq is also a matter of choice. There may be costs associated with leaving. But there will be costs associated with staying. Every day we stay in Iraq we accrue costs that will be reflected in budget outlays, lost productivity and individual pain and suffering for decades to come. We need to ask: are they outweighed by the benefits?

The above excerpts were reported 3 November 2006 in The Milken Institute Review. Linda Bilmes teaches public finance at the Kennedy School of Government at Harvard. Joseph Stiglitz, a former chairman of the Council of Economic Advisors and chief economist. See http://www.truthout.org/docs_2006/110506A.shtml

Bush 2007 Congressional Budget Request for Iraq and Afghanistan at $230 Billion

by Bruce Gagnon

The Bush administration is preparing to submit a request to Congress for up to $160 billion to fund the occupation of Iraq and Afghanistan for fiscal year 2007. This will be on top of $70 billion that Congress has already approved for 2007.

Since 2001, Congress has approved $502 billion for the war on "terror," roughly two-thirds for Iraq. The cost of the entire Vietnam War, in today's dollars, was $536 billion.

The UK's Guardian recently reported that Bush told senior advisers that the U.S. must make "a last big push" to win in Iraq and might increase U.S. military forces by as many as 20,000 soldiers.

In our recent national election, the people voted for a change in policy in Iraq. The message seems to have reached Washington and their answer to the public appears to be "OK, we will change our policy. We will dramatically increase the amount of money we are spending on the war and we will send even more troops."

Not quite what the 62 percent of Americans who oppose the war had in mind. The net result of this new policy will likely be more violence in Iraq, more hostility toward U.S. troops, more casualties on all sides and a deepening quagmire.

Another important result will be that the Democrats, who so far have been most willing to support all Bush's funding requests for the occupation of Iraq, get locked in to the "new policy."

Bush has long said that in his remaining time in office he will not bring the troops home. Thus the only way to end the costly and outrageous Iraq fiasco is to cut the funding for the occupation. This is ultimately how the Congress had to end the war in Vietnam.

Soldiers are now coming home from Iraq and not getting adequate treatment from the Veterans Administration because of lack of funding. Cutbacks in social programs are now becoming the norm in the U.S. as we spend 50 percent of every tax dollar on the Pentagon budget.

Our nation's No. 1 industrial export product today is weapons. In 2006 the U.S. exported more than $21 billion in weapons — up from $10.6 billion the previous year.

Studies have long shown that military spending is capital intensive. In other words, each million

dollars spent on military production creates far fewer jobs than if the money were invested in any other kind of job creation effort, including building trains, solar panels or windmills.

America is now hemorrhaging jobs and our debt is more than $8.6 trillion and growing by $2 billion a day. We'd better wake up quick and tell the Democrats that they must stop funding this war. It's killing our country.

Bruce K. Gagnon is coordinator of the Global Network Against Weapons and Nuclear Power in Space.

Mark Cooper reports in *The Nation* 1/8-15/07 "About Face" that over 1,000 uniformed members of the U.S military signed the following Appeal for Redress to Congress: "As a patriotic American proud to serve the nation in uniform, I respectfully urge my political leaders in Congress to support the prompt withdrawal of all American military forces and bases from Iraq. Staying in Iraq will not work and is not worth the price. It is time for the U.S. troops to come home."

Cooper continues, "Twenty Florida National Guard members petitioned their commanders to bring the troops home. In Kansas, Army reserve family members collected 8,000 signatures on a website protesting extending tours. GI Rights Hotline estimate that as many as 1,000 or more troops and reservists go AWOL every month, not wanting to serve in Iraq. About 200 to 300 have fled to Canada, according to military rights lawyers."

Matheson: Divine Strake Test Unwelcome

Purpose, Health Risks Troublesome

Utah Democratic Congressman Jim Matheson said (11/16/06) "A decision by a federal defense agency to detonate a 700-ton conventional blast at the Nevada Test Site, not in New Mexico, still leaves many questions unanswered and remains a non-starter for him.

Matheson joined the other members of the Utah Congressional Delegation at a meeting with the Defense Threat Reduction Agency to receive an update on the so-called "Divine Strake" test plans. The non-nuclear, open air explosion is expected to hurl dirt and debris thousands of feet into the atmosphere. Objections raised by Matheson and others resulted in several postponements. DTRA also agreed to look at alternate test locations, including the White Sands Missile Range in southern New Mexico. But the agency now says the Nevada Test Site is its preferred location.

Both open air and underground nuclear tests were carried out in areas surrounding the location selected for the upcoming blast. Nevada environmental officials have refused to issue air quality Permit Modifications required before its detonation, saying it has received incomplete environmental data. A lawsuit pending in federal court in Nevada has also challenged DTRA's plans.

Utah residents living downwind of the test site are frightened by the prospect of more contaminated materials being released into the atmosphere. "Just last month we received additional scientific evidence- from Dr. Joseph Lyon's study - of the link between radioactive fallout and illness. The more we look, the more damage we uncover from this era, even as the federal government was telling us it was safe then. I remain skeptical when they tell us it is safe today," said Matheson.

Details for the informational meeting in Idaho on the proposed Divine Strake test were finalized: Sunday, January 28, 2007; Grove Hotel, downtown Boise; Noon - 2:30 p.m.

The meeting is being conducted by the U.S. Defense Threat Reduction Agency and the National Nuclear Security Administration/Nevada Site Office. Idahoans will have the opportunity to hear firsthand about the Divine Strake experiment proposed for later this year at the Nevada Test Site.