CHAPTER 2: COMMENT DOCUMENTS

This chapter is a compilation of all the documents that the Department of Energy r public corn ment period on the Draft Programmatic Environmental Impact Statement f and Recycling. The documents are keyed by number to table 1.3-3, Index of Commento documents are presented by type in the order in which they were received On each d number represents the comment number within this document and the second number re issue summary code assigned to this comment. This number can be used to locate the response relating to this comment.

PUBLIC HEARING, APRIL 5,1995-LAS VEGAS, NEVADA

FIRST MORNING SESSION-ENVIRONMENTAL EFFECTS

1/08.02 Downsizing in recent years has hurt the local economy. Work is needed manpower (26,000 union workers are in the area) and expertise are here and should begin immediately.

2/08.02 Workers and the local economy cannot wait until 2000 for the project t now. Downsizing has already hurt.

3/08.07 The economic multiplier for the Nevada Test Site (NTS) area should inc jobs, but also induced jobs (third level of job creation).

4/08.08 The Department of Energy (DOE) should not wait until 2000 to begin con the workforce in place right now and can begin immediately. There's a is, and there's a risk of losing more skilled workers if the project d

5/08.08 Work on the tritium supply and recycling facility should begin immedia offset the ongoing downsizing and provide jobs and money to the local Programmatic Environmental Impact Statement (PEIS) should consider cur downsizing in its socioeconomic analysis of the NTS area. The downsizi taken into account when making a decision as to the location of the tr facility.

6/02.10 There is no experience in this area with the construction of a new, nu facility should be built elsewhere, where there's more experience.

7/08.02 There is plenty of experience in this area with operating nuclear faci confidence in the experienced, knowledgeable, and sizable workforce in

8/02.02 The proposed solar facility for the generation of electricity could be supply and recycling facility with needed electricity. This would boos

9/04.02.01 DOE should consider the possibility of recharging the aquifer from whi for the tritium supply and recycling facility.

10/04.02.02 DOE should take every precaution to ensure that the tritium supply and not pollute the groundwater and surface water in the area.

11/10.02 Waste concerns need to be taken more seriously by DOE and the general more spent fuel, more low-level waste, more hazardous waste and more s a short-term, as well as long-term, problem. Short-term, as well as lo involved.

12/02.02 Electrical demands of the new tritium supply and recycling facility sh private company could take care of the electrical demands by running t (photovoltaic) facility.

13/18.01 It is ironic that DOE would worry about the nonproliferation consequen commercial reactor for defense purposes or about selling the electrici whose real mission is defense related. The government and DOE's plan t tritium facility has plenty of nonproliferation consequences itself.

14/12.01 DOE should analyze the consequences of its actions beyond 2050. The PE account the consequences of the proposed action after 2050.

15/12.02 It seems that the Accelerator Production of Tritium (APT) will generat more water, while the other technologies will consume less water and g How will these issues (waste and water) be weighted in the final decis include a comparative analysis study on the benefits and risks involve DOE should outline how they will be weighted.

16/10.01 NTS is more suited to handle wastes (in particular, low-level waste [L other sites. NTS has much experience handling, managing, and storing d The waste issue is not a problem for NTS.

17/13.06.01 The remoteness and size of NTS should be factors in the final decision and size, NTS has advantages over the other sites in the areas of faci disposition/management (room for expansion), and radiation exposure. T and included in the PEIS analysis.

18/06.02 The desert tortoise is a threatened, not endangered, species.

19/08.02 There are many areas (communities) around NTS for workers to live in a This is not a problem and should be seen as an advantage.

20/10.02 Currently, there is no way to dispose of spent fuel in the United Stat technologies generate spent fuel. This will mean more spent fuel for w method or final disposition. The PEIS should address this issue and in final PEIS.

21/13.09.07 The analysis in the PEIS is slanted in favor of the Savannah River Sit existence of the recycling facility. For example, page ES-28 of the ex that 0 acres of land would be needed for a recycling upgrade at SRS. D analyze the health and viability of the recycling facility in 2011? Wi functioning properly and safely in 2011? How old will the recycling fa the analysis is skewed.

2-2

22/13.00.15 The PEIS needs to make it more clear that the analysis for tritium nee stockpile levels, which is the most recent agreement for weapons reduc reserve that needs to maintain the stockpile.

SECOND MORNING SESSION - ENVIRONMENTAL EFFECTS

1/11.00.01 Radiation monitoring at NTS has been inconsistent over the past 30 yea baseline used in the PEIS is not accurate; therefore the radiation ana needs to ensure consistent monitoring in the future. The PEIS should t inconsistent monitoring.

2/16.01 The accountability and responsibility for data gathering should be dis accuracy and dependability of the data and the data gathering process more detail. Chains of responsibility and those responsible for the da need to be discussed.

3/16.03 The public comment period for the PEIS is not long enough. There is no public disclosure of the PEIS until a decision is made. More time is n review the scientific analysis and decision making process for a proje The government and DOE should use a scientific time frame, instead of National Environmental Policy Act (NEPA) process.

4/16.12 The public should have access to the cost analysis and the weight give associated with the project. Every subject and issue discussed in the in cost terms as well. The cost analysis should mirror the PEIS analys costs (cradle to grave) of all aspects of the facility should be inclu

5/15.03 DOE should focus on the national and public interest (Native American inherent in the proposed action, not just DOE interest or the tritium engage and involve the public on a much broader and deeper level. DOE decisions which have such far-reaching impacts without explaining to t much uncertainty involved in the technical analysis and overall PEIS a experience for the APT and the Modular High Temperature Gas-Cooled Rea lack of knowledge of the future need for tritium, whether electricity defense related reactor etc...).

6/15.03 Much more public understanding of the issues and involvement are neces spend more money to engage the public, individual citizens. Impact and should be provided to reach out to the public. Oversight funding for a statements (EIS) is needed. Oversight money is needed to analyze the i action on the citizens.

7/15.03 There needs to be a serious, public consensus development campaign to individual citizens. Give the public more time and opportunity to beco

8/15.03 Scientists and technical experts should be placed in direct contact wi The educational needs of the general public are being ignored. There s schools, churches, all aspects of the local community, to educate, eng citizen. The public is being shortchanged. DOE should try a roundtable meetings, instead of a hierarchical one.

9/15.03 Direct, DOE contact with the public should be expanded. The time frame involvement process should be extended.

10/02.01 The impacts to the electrical distribution system at NTS are not clear impacts or not?

11/08.07 Southern Nevada per capita income figures for 2010 may need to be adju these figures are too low.

12/08.07 The PEIS should take into account tourism effects from the new facilit down). DOE should analyze whether future development around NTS would the new facility (the new facility may interfere with future housing a the new facility may have unforeseen effects on, as yet, unbuilt housi

13/14.01 DOE should consider the cumulative impacts of its decision on the enti Complex. The proposed facility may affect not only the proposed site, sites in the region (Idaho National Engineering Laboratory [INEL], NTS Ridge Reservation [ORR] and SRS).

14/13.00.17 DOE should consider the molten salt reactor in its analysis.

15/01.04 The PEIS should include in its analysis the current and future value o

NTS (the new facility could have an effect on its value).

FIRST MORNING SESSION-PROJECT DESCRIPTION

1/13.00.05 Considers "triple play" alternative a political decision; feels inclus this process. (Alternative is like breeder reactor, in which case it w Nonproliferation policy). If "triple-play" is considered, then it shou addition, a lifecycle cost analysis should also be done (i.e. decontam waste management/storage, etc.).

2/14.01 Would like to see how the PEIS for Tritium Supply and Recycling relate relation to costs, viability, etc.

3/13.06.03 Would like to see, if chosen, NTS produce tritium for commercial purpo prime mission of producing tritium for the weapons program.

4/13.04.17 DOE should investigate alternative uses for, if chosen, the Accelerato research and the production of medical isotopes.

5/13.00.07 Believes the U.S. should have two sources of tritium production for a an accelerator at NTS and facility at SRS).

6/13.04.05 If the accelerator technology is chosen, should consider solar energy of the electrical power required to operate the accelerator.

7/13.00.11 DOE should consider siting the tritium supply and recycling facility o nuclear weapons complex sites.

2-4

8/15.03 Should expand public review time. The public's time to review and offe decision making process is too short, especially if considering power energy for the accelerator technology. DOE does not have enough time t possibility of solar energy as a power source to be included as part o technology for evaluation before the EIS is due.

SECOND MORNING SESSION-PROJECT DESCRIPTION

1/13.00.16 Should consider purchasing tritium from other sources such as commerci countries like Russia.

2/13.06.01 NTS should be awarded the tritium mission because it has been longtime and now wants to diversify operation's mission and Nevada's economy. S people and support to carry out this mission; has local university boa NTS. In addition, NTS has strong safety record, security system, in-pl interactions with unions, etc.

3/13.06.01 Should consider placing tritium production, recycling, stockpile stewa location. If this is considered, NTS should be the site to do so becau such activities.

4/13.06.03 If accelerator technology is chosen, would like to see NTS be the reci technology would be beneficial to the community (i.e. research, altern

5/13.00.07 Should select a technology that would produce the highest quality trit waste generation.

6/15.03 Consider having the PEIS in computer format to enable the public to ha access to this information, e.g. Internet, CD-ROM, database.

7/15.03 Should use as many different mediums as possible to communicate to the tell public entire "story" and spend more time clearly stating informa misperceptions. Should talk directly to the public, especially affecte topics such as risk assessments, dangers of operations.

8/13.06.01 Should select NTS as the site. Most Nevada Congressional Representativ selected site.

9/15.03 Surrounding Indian tribes would have liked to have been included in th Does not believe this EIS process truly takes into account the public'

10/04.02.02 Concerned that if NTS receives the project, the water will be affected Nevada area does not have enough of.

11/15.01 Considers the meeting format very useful and effective.

12/16.01 PEIS document should include section explaining differences between tr nuclear type materials such as plutonium.

13/15.03 These public meetings should have had more publicity; for example, pap pictures to "catch" the attention of readers.

14/15.01 In these meetings, presentations should have conceptual estimates of c

EVENING SESSION-OVERVIEW

1/16.01 All alternatives should be evaluated despite conflicts with policies b this be done.

2/14.02 NTS already has a mission as waste site; that it is now being consider is deplorable.

FIRST EVENING SESSION-ENVIRONMENTAL EFFECTS

1/16.02 DOE and the U.S. Government should go beyond Strategic Arms Reduction a new tritium facility is not needed. Further stockpile reductions wou tritium from the retired weapons, thereby eliminating the need for a b alternative has not been considered by DOE. Under the NEPA process the all reasonable alternatives. DOE should look at this alternative becau

2/10.02 NTS has been a dumping ground for other sites' wastes for way too long with wastes. Anew facility would just add more waste. NTS has enough p waste management. DOE should build elsewhere.

3/08.02 Overall, the tritium supply and recycling facility will benefit Nevada (especially minority communities), providing needed jobs and incomes.

4/04.02.02 Nevada is strapped for water as it is. The new facility would only con consider the effects the new facility would have on local water needs.

5/15.03 It is a fact that in the past DOE has not fully disclosed nuclear test practices (and their impacts on the public) at NTS. More public involv disclosure regarding this facility are needed.

6/13.00.17 A new facility to produce tritium does not seem necessary. DOE should the reactor that last produced the gas. DOE should fully consider this build a brand new facility.

7/13.06.01 Southern Nevada has plenty of water. Employment concerns are more impo existing workforce in the area are a perfect match for the tritium sup There is much expertise in the area for the construction and operation recycling facility. The existing infrastructure at NTS and safety reco also advantages. State senators Jack Regan, Ray Shaffer and Joe Neal, Price all support this project. DOE should take into account the inher and in the regional workforce.

8/04.02.03 Water should not be a concern. It seems that there is enough water in courses green. Jobs are more important. The local economy needs a boos

2-6

9/04.02.02 DOE should consider the effect that other future projects at NTS (not recycling) will have on water consumption. DOE should be sure that the adequate for all future projects. Has DOE analyzed in the PEIS the wat future projects and the consequences this may have for the region? Do numbers in the PEIS take into account all future water needs?

10/04.02.02 Full APT water usage will exceed local recharge rates. DOE should cons of this.

11/04.02.03 As far as water goes, NTS has its own basin and is self-sufficient. Wa for Las Vegas. The water issue is not a problem.

12/08.08 DOE should consider and tap into the local, experienced workforce (26, They have an excellent safety record and much expertise. DOE should be people get the jobs, instead of folks from outside of the region.

13/08.02 NTS has been good to minority workers, providing much needed training Overall, work at NTS contributes to a solid education for the workers other responsibilities and tasks.

14/08.03 The construction jobs will only be temporary. DOE should consider this

15/08.02 DOE and the Department of Defense (DOD) supported Las Vegas in the beg and money. They have been good to southern Nevada. Southern Nevada sho work.

16/05.01 DOE should analyze the seismic risks to the tritium supply and recycli nuclear testing in the area. In general, DOE should consider seismic r

17/11.00.04 Construction deaths (industrial accidents) will exceed cancer deaths f and recycling facility. The accident deaths in the PEIS result from ra accidents, not industrial accidents. The PEIS should account for indus

18/13.00.02 There is not enough operating experience for the APT and MHTGR technol to be more experience with these technologies so that a more accurate can be made.

19/08.03 The PEIS should include an analysis of the impacts to the local scient community, trade schools, colleges, and research and development. It a the scientists and skilled workers drawn to NTS because of the new fac

20/08.02 Many families in the past have depended on DOE and DOD for support. Pe children to college with the money they brought home from DOE and DOD southern Nevada need the work.

21/12.02 The new tritium supply and recycling facility will cost taxpayers bill fuel for which there is no repository, and use too much water. These i more consideration and weight.

22/10.01 NTS has a top of the line LLW facility which has been receiving wastes country. DOE should consider the fact that NTS has been a repository f NTS deserves the project.

23/18.01 It would be silly for DOE to construct a tritium supply and recycling to produce electricity, and then not use that potential (and sell that nonproliferation concerns. The worst case scenario would be a facility taxpayer, consumes electricity, and gives nothing back. Congress shoul nonproliferation policy.

24/16.12 The public should be fully informed about the cost analysis. The cost in the final decision should be fully disclosed and the public should the public should be fully informed about the cradle to grave costs (i costs, decontamination and decommissioning [D&D]) of the facility. Thi after all.

25/02.02 Solar generated electricity (from a proposed central receiving and pho be used for NTS.

SECOND EVENING SESSION - ENVIRONMENTAL EFFECTS

1/04.01.01 DOE should be concerned about surface water discharge from the APT onc system. The PEIS should include an analysis of this discharge.

2/10.17 One of the slides indicates the need for a new organic mixed waste fac primary constituents of this waste stream? Is it the same as mixed LLW this.

3/17.01 A neutral regulatory body, such as the Nuclear Regulatory Commission (assigned oversight responsibility at the new facility. An "in-house" r those who work at the facility or by those from DOE, would be unaccept resolve the regulatory issue and publicly disclose its decision.

4/09.05 DOE needs an emergency management plan/structure (for accidents on rai The responsibilities involved in such a plan should be clearly defined Federal responsibility?). DOE's planning in this area is not adequate

5/09.01 A separate EIS is needed to deal with issues of transportation. DOE ne in more detail.

6/13.04.01 DOE should choose the APT technology due to its low generation of wast other technologies).

7/11.00.35 Tritium occurs naturally and is far less toxic/deadly than plutonium. the public understands this to avoid irrational fears about the gas.

8/10.05 DOE should consider in its analysis the planned liquid LLW facility at

9/02.01 The additional miles of railroad required for the reactors (not the AP should not be a factor in either the technology decision or the site d

10/10.01 NTS has many waste management advantages over the other sites (especia NTS is isolated, has plenty of room for expansion, has diverse capabil for long periods of time. In addition, DOE has used NTS as a waste rep DOE should consider all of these things when making a decision.

11/16.09 DOE should look at cost studies detailing transportation of LLW by rai to be saved by using the railroad.

12/13.06.03 If selling electrical power (generated by the tritium supply and recyc NTS, this should be considered an advantage for NTS.

13/13.06.03 Nevada needs electrical power. If it's cost-effective and viable, Neva welcome the additional electricity and savings from such a facility.

14/18.01 DOE should consider and needs to identify all nonproliferation issues project.

15/13.06.01 The air strips at NTS are an advantage (tritium is transported by air)

16/02.01 DOE needs to clarify whether there will be major site infrastructure i (particularly with regard to electrical needs). In addition, how will electrical needs weigh in the final decision? DOE should disclose and

17/05.01 The NRC concerns itself with seismic and volcanic effects on new facil volcanism should be taken up in the PEIS.

18/17.01 DOE should be wary of allowing the state to set regulatory standards f recycling facility. State standards are often too stringent.

19/13.06.01 Many projects have not been brought to NTS. It's about time that NTS r existing infrastructure is ideal and southern Nevada is ready for more

20/10.01 NTS should be commended for its existing waste management facilities. brought here, no wastes would be transported offsite. The necessary fa

21/09.08 DOD should share shipping knowledge with other agencies.

22/14.01 DOE Yucca Mountain and DOT should be sharing information and integrati not be traveling down separate paths.

FIRST EVENING SESSION-PROJECT DESCRIPTION

1/13.03.01 Supports the Advanced Light Water Reactor (ALWR) technology and NTS as because this would provide extra energy and jobs and produce less wast

2/10.01 NTS is technically suited to take wastes.

3/13.04.17 Should consider utilizing accelerator for other uses, such as duel-use research. Especially would like to see it at NTS.

4/05.07 Should have seismic stability as one of the criteria for site selectio more stable alternative. Accelerator has no waste production, therefor earthquake, wastes would not be released. The other alternatives are m Compared to the other sites, NTS would be best suited site because of

5/13.04.05 If accelerator selected, would like to see solar energy as potential p NTS appropriate site if accelerator and solar energy system selected.

6/16.01 Should have lifecycle cost conducted on alternatives; this should be u alternatives.

7/13.06.01 Should consider NTS as selected site because: safety record, low waste location, arid climate, water sources, skilled work force, etc.

8/13.04.01 Believes accelerator is best technology for national security, because producing tritium quickly and continuously.

9/08.02 Would like NTS to be selected as the site for the mission because it w scientific, technical, and cultural community.

10/15.01 Likes format of these meetings.

11/09.02 Should consider transportation as one of the selection criteria; NTS w because there is no need to transport wastes off site. Disposal option on site.

SECOND EVENING SESSION-PROJECT DESCRIPTION

1/13.04.17 Would like accelerator to be used for other purposes such as research

2/13.00.10 Should consider combination of wet/dry cooling technology at any type NTS.

3/16.03 Would like to see this process of technology and site selection of the because the current work force will soon leave and take their experien loss of talent.

4/13.06.01 Would like NTS to be the selected site because it has resources to sup has the best historical record. In addition, it is capable of storing also has fewer problems with regard to environmental cleanup and a pro is in a suitable climate for project.

5/18.05 Supports National Defense Policy and general mission of DOE.

6/13.06.01 NTS would be the most logical site because there is no need to transpo location.

7/13.04.01 Accelerator is good alternative for seismic stability because in the e would be no waste releases to the environment and people would not be remote location.

2-10

8/15.01 Evening sessions should be held at a later time, approximately 7:00 p.

PUBLIC HEARING, APRIL 5, 1995-WASHINGTON, DC

MORNING SESSION-ENVIRONMENTAL EFFECTS

1/02.01 The document should include a more accurate analysis demonstrating the may (or may not) support the APT technology without constructing new p existing power pools need to be expanded to support the APT, the envir constructing and operating a coal/gas power plant should be addressed

2/02.02 DOE should consider the development of solar enterprises at NTS as a p electricity.

3/02.09 The document should include the fact that some of the technologies pro present a more evenhanded evaluation of the power pool analysis.

4/02.09 If a reactor technology is chosen, it would not require new electricit noted as a benefit in the document.

5/11.00. 18 If the APT technology is selected and found to require additional powe will be constructed in the future, then the document's evaluation is s

the associated electricity production.

6/02.04 The document should address how the APT may effect reserve electricity proposed power pools.

7/11.00.05 The document should include information relating how DOE intends to mo health within a 50-mile radius. The techniques should be described in

8/11.02.17 The values for radiation exposures and resulting fatalities for low/mo consequences of the ALWRs are grossly wrong. This is a result of impro accident probability. The value used was 103 when 106 would have been value. The document is biasing public perception with grossly conserva does not accurately reflect the safety of the ALWRs.

9/11.02.17 The DOE value for frequency of a high consequence accident is such an yields an unfair and exaggerated accident analysis. NRC would not even accident frequency value as reasonable and, therefore, the high conseq accident analysis appears biased against the reactor technologies.

MORNING SESSION-PROJECT DESCRIPTION

1/13.00.17 DOE should consider other options, such as a fusion facility, in the P

2/02.04 DOE needs to address the power load of the APT in the PEIS.

3/16.14 The cost analysis, schedule studies, and production assurance studies technologies should have been available with the Draft PEIS. Without t elements the public does not feel that they can give complete comments sections of the process together.

4/16.12 There exists concern that the cost analysis, schedule studies, and pro will not be available to the public early enough to review and comment of Decision (ROD) is issued. If these decision-making elements are not until the Final PEIS is published, then there needs to be more time av the minimum 30 days before the ROD.

5/13.00.14 The PEIS should include what else, if anything, the tritium facility w produce/dispose of when or if tritium is no longer needed.

6/15.07 Concerned that there will not be an opportunity to comment on the deci Secretary. There needs to be an opportunity for the public to comment

7/15.07 Concerned that public participation will not be included during the de DOE assure the public that the their input has been included in the de

8/13.00.14 The tritium facility should be sized to START II levels, which is the weapons reductions, and designed for flexible adaptation to further ch stockpile levels.

9/13.00.15 The PEIS should clearly explain that the tritium reserve stockpile inc reserve of active weapons only. Active weapons meaning the weapons at and not used for weapons that are currently inactive or dismantled.

10/19.01 Concerned that DOE is spending large amounts of money on a project tha

What is going to be done to ensure that it does not happen as in other

11/13.04.16 The PEIS should include any information gained from the New Production been helpful with the APT, and the relationship between the APT and th Reactor.

12/13.09.06 Concerned that the cooling tower at SRS is not going to be evaluated i If the technology chosen needs a cooling tower similar to the SRS towe part of the site decision process.

13/02.01 The PEIS should include a section on the environmental impacts associa electricity from power pools outside the area of each of the five prop

14/14.01 DOE should postpone the technology decision until after the Fissile Ma has been completed in order to know the recommended process of disposi

15/13.00.05 DOE should address the environmental impacts and cost/benefits for a t reactor and for a reactor that produces tritium and burns plutonium.

16/13.04.01 General Atomic is an advocate of a government-operated APT.

17/22.01 The cost to the government of a privately financed reactor proposal ne cost analysis.

18/02.01 The PEIS needs to include a discussion of the existing power pools and environment if the APT is chosen.

19/13.00.05 The benefits of electricity production from a reactor is not adequatel

20/13.00.05 Concerned about how DOE will inform the public on the cost/benefits of owned multipurpose reactor.

21/13.00.05 A multipurpose reactor makes the most sense.

AFTERNOON SESSION-ENVIRONMENTAL EFFECTS

1/16.07 The cost analysis and production assurance documents seem to be more i making factors than the PEIS document.

2/14.01 The PEIS for Tritium Supply and Recycling should be coordinated with t and Disposition of Weapons-Usable Fissile Material PEIS. If a reactor to produce tritium, then it should be evaluated for the potential to r as a reactor fuel. If this path is not taken and the two programs are issues, which were not raised during the two analyses, may arise.

AFTERNOON SESSION-PROJECT DESCRIPTION

1/13.04.01 The biggest advantage of the APT is its ability to be turned on/off.

PUBLIC HEARING, APRIL 12, 1995-POCATELLO, IDAHO

MORNING SESSION-ENVIRONMENTAL EFFECTS

1/02.04 The additional electricity used by the APT technology may require a ne would be environmental impacts associated with this new power facility discuss these additional impacts. The other technologies avoid these a because their electrical consumption is less. The PEIS should discuss

2/02.01 The PEIS should consider various energy sources (nuclear, coal, hydro power at INEL (if an additional power plant is necessary). The choice could be based on the composition of the regional power pool.

3/13.04.09 The effects of evaporative cooling on the environment (from the APT te analyzed in the PEIS.

4/08.01 DOE should be concerned about the quality of jobs and benefits that wi tritium facility (regarding the new jobs at the facility itself). The quality level. The commentor was comparing the types of jobs that Were

various cleanup activities at the INEL (generally less technically dem previously provided with more complex and higher technology projects. hopeful that the tritium facility would require the higher-level and h

5/11.02.17 DOE could do a better job of explaining the human health effects from The differences between actual deaths, probability, and risk should be apparent in the PEIS.

6/11.02.17 The PEIS should put the human health numbers in perspective by compari other activities which carry a cancer risk. This should be done, howev or minimizing the actual risk that comes with the new facility.

7/10.08 The large volume of spent fuel waste associated with the MHTGR technol the moderator: The MHTGR does not produce more fission products than t technologies. The Final PEIS should explain this.

8/10.08 It is not clear that additional storage space (over and above that req technologies) would be needed for the 80 yd3 of spent fuel generated b due to the thermal (criticality) requirements of storing spent fuel. T mention this.

9/10.16 The Final PEIS should express LLW in curies or mass units (in addition

10/19.01 The money to be spent on the new tritium facility is a poor allocation should not be spending billions on a facility that may not be needed i developments in arms control or the world situation may be such that w reductions in the nuclear weapons stockpile and obviate the need for a

11/18.01 The United States should be a leader in disarmament and peace. We are

message to the rest of the world, with serious nonproliferation conseq tritium facility.

13/13.00.20 The United States should go beyond the START II treaty so that a new t needed. The PEIS should include an analysis of a fewer weapons or no w and the consequences this alternative would have on tritium needs.

13/13.00.05 The tritium facility is not necessarily a revenue loser, with only a d the triple-play reactor could generate revenue by selling electricity providing great mission flexibility. These facts should be seen as adv reactor.

14/13.00.05 DOE could settle the nonproliferation issue raised by the sale of any DOE tritium facility to the commercial sector by selling the steam tha produces and letting an independent power producer run the steam and p

15/14.01 The decisions about the tritium facility and plutonium disposition sho time to allow for a solution that satisfies both missions. The tritium disposition EIS should not be separated.

MORNING SESSION-PROJECT DESCRIPTION

1/13.00.17 Would like to see phased approach to all alternative technologies.

2/13.00.23 Reconsider having current schematic drawings in the PEIS reflect New P designs.

3/18.01 Should look at no need for weapons; therefore no need for tritium. In term solution for storage of wastes. Considers money spent on this pro could be spent on waste management.

4/13.00.05 The technology type should be the primary criterion for this process. that could provide a side benefit such as production of electricity wo others.

5/16.01 Need to clearly explain operating scenarios in the PEIS (for the sites

EVENING SESSION-OVERVIEW

1/16.01 Would like to see cost analysis of waste disposal in the PEIS.

EVENING SESSION-ENVIRONMENTAL EFFECTS

1/10.02 Before the United States embarks on a new nuclear project, it should b past projects have been cleaned up adequately and that the wastes from disposed of economically and in an environmentally sound manner.

2/10.07 The PEIS should include an analysis of long-term waste management cost include managing the wastes throughout the life of the facility and ma facility is closed (after 2050).

3/10.37 The PEIS should use metric tons of heavy metal for the spent fuel numb comparisons to spent fuel numbers in other documents easier.

4/22.02 DOE should revisit its nonproliferation policy. Specifically, they sho commercial light water reactors to produce tritium (by installing lith commercial reactors).

5/22.02 It would be wasteful not to use the tritium facility to produce electr reconsider its nonproliferation policy.

6/22.02 The PEIS is an appropriate place to revisit and reconsider national po nonproliferation policies. DOE should revisit and clarify its nonproli (commercial uses of nuclear energy versus defense uses of nuclear ener

7/22.02 The policy of separating commercial (peaceful) and defense uses of nuc good one. DOE should preserve this policy.

8/15.03 DOE should have consulted with the Shoshonees before the draft process

9/04.02.04 DOE should further analyze the possibility of accidental discharges in below the INEL. The analysis should include the effect an earthquake w possibility. DOE should identify in the analysis all possible pathways discharges could reach the aquifer.

10/04.02.04 The projected groundwater usage for INEL in 2010 may need to be adjust to change this number based on future site projects and needs. The com projections for INEL water usages were too low.

11104.02.04 INEL's water allotment may change by 2010. DOE should investigate this allow for the change in its groundwater analysis.

12/18.01 There is no justification for this new tritium facility because the Un thousands of nuclear weapons to maintain a nuclear deterrent (tens of adequate). The United States should consider a policy of fewer weapons

13/13.00.20 Tritium is not necessary for the functioning of nuclear weapons. They into "designer" weapons. DOE should analyze a no-tritium weapons alter

14/19.01 The tritium facility is a terrible investment for the taxpayers. The U its money to clean up the existing waste situation, not to create new

15/18.01 The United States should be reducing its stockpile further and should disarmament and peace. Constructing a new, nuclear facility sends the rest of the world.

16/13.00.14 There are other uses for tritium (peaceful) which the PEIS should disc commercial market in the United States for tritium and DOE should cons facility for commercial (nondefense) purposes in addition to its prima

tritium for weapons enhancement.

17/13.00.20 DOE should study a no-weapons or fewer-weapons alternative in the PEIS

18/18.01 If it is true that in the past the United States has sold tritium prod commercial users (even if it's a small amount), then we must rethink o policy and develop and follow one that is consistent. Otherwise, we ar

19/20.09 The United States should be concentrating on existing cleanup issues a situation. We should not be embarking on new nuclear adventures that m just five years down the road. Let's wait until 2000 and see what the By rushing headlong into the project now, we are precluding some feasi tritium from additional retired weapons). This kind of action is preci race/buildup in the first place.

20/20.09 Another advantage of waiting on the project would come from the advanc

21/18.08 The United States should disclose what it considers a "safe and reliab

How many weapons are we talking about? What are the precise numbers (i

driving this entire project? DOE should provide a "declassified" nucle plan to each citizen so that he or she knows what is going on.

22/18.01 Constructing a new, nuclear facility sends the wrong nonproliferation encourages others to do as we do.

23/20.03 DOE should not even continue with its engineering studies that are sch years. This will just be an additional burden on the taxpayers. If the the studies, it will mean that the tritium facility will be built. Thi think the facility should not be built.

EVENING SESSION-PROJECT DESCRIPTION

1/18.01 Should not consider the technologies Heavy Water Reactor (HWR) and MHT alternatives would conflict with the nonproliferation policy.

2/18.01 The PEIS should acknowledge that the alternatives being considered are nonproliferation policies of the U.S. In particular, it is inappropria countries to forgo the use of highly enriched uranium and return spent past, yet propose two alternative technologies in the PEIS which would enriched uranium.

3 No comment identified.

4/13.00.17 Although the tritium program conflicts with nonproliferation policies, having technology alternatives which reuse spent fuel; spent fuel coul countries are currently doing so.

5/16.01 Supports cost analysis that is now underway.

6/13.00.36 The PEIS should include analysis of reasonable alternatives which may current Federal policies.

7/16.01 The PEIS should have indicated the number of weapons that will constit levels and also the number that constitute a genuine deterrent; the pu in order to make a decision. Not having this amount published violates unclassified version of the Nuclear Weapons Stockpile Memorandum and N Stockpile Plan should be included.

8/18.01 Believes the United States' current nuclear stockpiles and planning ar action of building a tritium supply and recycling source is setting a countries. Should reexamine the impact of a new tritium source on nonp

9/13.00.01 Supports "No Action Alternative."

10/20.01 Feels that this is a DOE mission similar to DOD mission in Vietnam and wrong. In addition, like the Vietnam War, the public is not receiving nuclear deterrent number) they need to influence governmental decision

PUBLIC HEARING, APRIL 12, 1995-OAK RIDGE, TENNESSEE

MORNING SESSION-ENVIRONMENTAL EFFECTS

1/11.02.17 The accident frequency rates for the HWR and ALWR are not accurate.

2108.03 DOE should be concerned that the projected employment figures may not jobs may be staffed by former employees of since shut down DOE facilit

3/13.04.02 DOE does not consider the use of fissile material in the APT design as the eventual bombardment of target material. If DOE does consider a fi the electricity requirements would be much less but this would also pr By avoiding an investigation of the tradeoff between the power needs a environmental impacts, DOE appears to have assumed a political positio uranium, fissionable neutron source. Nevertheless, DOE should have a m assessment including an APT design with a uranium neutron source weigh environmental impacts.

4/10.18 ORR is under scrutiny for LLW storage practices, especially in the sit present an obstacle for similar plans in the tritium supply and recycl

5/10.06 Disposal of spallation products in the APT design should comply with N Environmental Protection Agency (EPA) standards since minute but extre radioactive elements may be produced.

6/11.02.17 The ALWR low/moderate consequence accident assumptions are inconsisten standards. DOE must be careful to state what probabilities were used f as a probability value from a worst case scenario Safety Analysis Repo lead to misleading values of consequences.

7/11.02.17 No reactor would be licensed if it resulted in 1,500 fatalities.

8/11.01.01 There is a three order of magnitude difference for the release of trit and ALWR.

MORNING SESSION-PROJECT DESCRIPTION

1/13.00.02 The PEIS needs to include more safety information related to the four reports for each technology should be made available to the public.

2/13.04.17 The PEIS needs to include any advantages of using the APT and what is decommission the APT.

3/13.04.03 Accelerators use spallation to produce tritium. However, this technolo researched using low power. The proposed APT will need to use high pow concern that the target will not be feasible.

4/13.00.02 As research and development progresses for the APT, costs will change. uncertainties and this needs to be reflected in the cost estimates.

2-18

5/13.00.02 The APT has many uncertainties due to the lack of research and develop has been more thoroughly researched and developed compared to the APT, the least amount of uncertainties. ALWR seems to be the best choice.

6/18.01 DOE should consider having no weapons and no production of tritium.

7/13.04.03 The PEIS should include the research and development of safety for the

8/11.02.17 The comparison in appendix F between the probability of accidents for is not fair. The probability of accidents for the APT is 106 while the in the hundreds for the reactors.

9/13.00.02 There is concern how cost versus efficiency/reliability is going to be technologies.

10/13.00.02 The PEIS needs to include information on the reliability of the techno

11/02.08 DOE needs to get cost estimates from commercial electrical companies, power pools can support the APT electrical requirements.

12/14.08 The PEIS should include a section on whether DOE will be selling elect affect the commercial electrical companies in the area.

13/02.08 If the APT is supplied by a commercial electrical company(s), then DOE would happen if the electricity were cut off (i.e. how reliable are th companies).

14/02.04 The PEIS should include what size nuclear reactor would be needed to s APT.

15/02.04 The risk analysis needs to take into account the additional risk if a produce the needed electrical power for the APT.

16/13.00.19 DOE should take advantage of the commercial reactors by purchasing a r tritium rather than building another reactor.

17/14.01 There needs to be interaction between the PEIS for Tritium Supply and Fissile Material Disposition PEIS with respect to using a reactor (tri plutonium and produce tritium and electricity.

18/13.00.19 DOE will save money by purchasing a commercial reactor to produce trit plutonium.

19/22.01 There needs to be a cost estimate for a tritium production and plutoni together and a cost estimate for each facility separately. Finally, DO three cost estimates.

20/11.00.21 There is concern about the creation of gamma radiation from spallation

21/10.26 Concerned with what DOE is going to do with the waste from the product

22/18.01 DOE should stop making nuclear weapons because DOE does not know of an safe process to dispose of the waste products from this activity.

23/10.25 DOE needs to consider if new processes, management/handling criteria, required to dispose of the spent lead and tungsten targets from the AP

24/10.26 The PEIS should include a discussion of the different types of wastes technologies and how DOE is going to dispose of these wastes.

25/13.04.09 There is concern that activation products from spallation will contami tunnel. If the tunnel is contaminated then the PEIS should include an uncertainties with respect to the amount of contamination to the tunne contamination will interfere with maintenance of the tunnel, or whethe need to be decommissioned, and make it clear if the contaminated tunne waste sections of the PEIS.

26/13.00.17 DOE should upgrade the K-Reactor at SRS for tritium production rather reactor. It would be cheaper and quicker to put the K-Reactor back on-

27/13.09.01 DOE should consider using the existing infrastructure at SRs for the t which would save DOE money.

28/13.00.39 The cost of not using SRS for tritium production and recycling should analysis.

29/16.10 DOE should consider the advantages of using existing DOE sites infrast analysis for tritium production and recycling.

30/16.12 There is concern that the public will not get the cost analysis for th to give comments. The cost analysis should include decommissioning and with any of the technologies, and any cost overruns with the APT.

EVENING SESSION-OVERVIEW

1/12.09 On March 15, 1994, Dr. Harold Smith relayed to the House Appropriation Energy and Water Development that tritium requirements are based on ST not START II stockpiles as DOE claims today. Contact Dave Hedgepeth at

EVENING SESSION-ENVIRONMENTAL EFFECTS

1/03.01 The document should clearly state where the data for each technology o emissions analysis.

2110.11 The tritium supply and recycling project would add only an incremental compared to previous DOE projects which have contaminated ORR. This se ORR as a likely candidate by avoiding more prominent impacts at anothe

3/11.00.12 Risk assessments for the project may be insufficient considering the h significant.

2-20

4/11.00.13 There is new scientific evidence that there exists a threshold of radi able to be accounted for in the document.

5/10.18 There is much uncertainty about the location of an onsite LLW storage progress on the storage problems that already exist at ORR.

6/10.02 Today's problem pertaining to waste disposal was considered not a prob discussions in the early 70s. This public assurance was false and the resolved.

7/10.02 The reactor technologies present waste management problems since there handle the wastes of the reactor technologies.

8/13.04.05 If the APT is the selected technology, DOE should assess the option of night and other off-peak hours to reduce operating costs.

9/03.01 If a nuclear reactor facility is selected, DOE should aim to limit air standards than those currently established. The air exposures should n the existing standards to avoid future shutdowns in the event these st

10/18.01 As a resident of ORR, I disapprove of weapons of mass destruction and DOE mission.

11/04.02.07 In the western United States, the Pleistocene groundwater loss is a co studies have shown a decline in groundwater levels and this suggests t this region is a nonrenewable resource.

12/08.10 In the past, DOE often over exaggerated the number of potential jobs a proposed project to strengthen the selling point of the project. When Production Reactor project, the Tritium Supply and Recycling Program s employment period making the Tritium Supply and Recycling Program attr regions. In addition, the predicted projections may not be representat people in the region that benefit from the project. It seems grossly e would be created in the ORR region.

13/11.00.12 The document should include the projected construction worker fatality health section.

14/08.03 The document should detail the number of jobs lost in regions which ar tritium supply and recycling project at their site.

EVENING SESSION-PROJECT DESCRIPTION

1/13.00.16 DOE should tell Russia to sell all the tritium they can at this time o reactor that will produce tritium. If they sell, then the United State Russia for defense purposes. The tritium purchased from Russia probabl next 50 to 60 years, but by the time the U.S. would need more tritium, better technology available for tritium production or the existing sto further.

2/13.00.16 DOE should consider purchasing tritium from foreign countries because only benefit the United States but would give some of the poor countri for their country.

3/13.00.17 DOE should consider putting the K-Reactor at SRS back on-line because the tritium needs if started immediately, and this would give time for developed or for a decision to decrease the nuclear weapons stockpile

4/13.09.06 The cooling tower at SRS should be included in the analysis of the PEI Recycling.

5/22.02 The United States should not use commercial reactors for the productio United States has asked other countries not to use their commercial re security.

6/13.00.16 DOE should consider buying tritium from foreign countries at different needed tritium. This could be possible if DOE really wanted to conside

7/13.00.19 DOE has many reactors with a multitude of waste and environmental prob PEIS should consider more closely the use of an existing commercial re prevent further environmental problems.

8/22.02 DOE should consider using a commercial reactor for producing tritium b large amounts of money compared to building a new tritium production f

9/10.13 DOE should consider the possibility of reprocessing tritium from spent

10/13.04.03 The APT is unreliable and should not be used because there has never b has run on a continuous basis, ever produced the amount of tritium req stockpile, or ever used a high energy beam being considered.

11/13.04.03 DOE should be cautious about the APT and should not consider building and development has been done to show it is reliable.

12/13.00.02 DOE should build a small accelerator to test before they build a full not work which would be a waste of money.

13/14.08 If DOE is going to sell electricity then they will be competing with t companies.

14/13.00.02 Reliability is most important when choosing a technology.

15/13.00.14 The need for tritium may be reduced in the near future, therefore the uses (secondary) for the chosen technologies.

16/13.00.32 The MHTGR should not be considered due to the amount of spent fuel it too unreliable to be considered, and the HWR produces too much low-lev

17/13.00.17 DOE should consider using a commercial boiler reactor with lithium to tritium for the nuclear stockpile and reserve.

2-22

PUBLIC HEARING, APRIL 20, 1995-NORTH AUGUSTA, SOUTH CAROLINA

AFTERNOON SESSION-OVERVIEW

1/13.09.01 There is a national movement to get back to the Constitution. We still with animals and the environment while our number one concern should b to prevent the proliferation of fissile materials. We can burn the plu simultaneously produce tritium at SRS. SRS should be the chosen site b concern that the people with the most experience in operating reactors would be lost to early retirement.

2/15.04 Politicians from Georgia are not listed as officials to contact and th much influence politicians from Georgia will have on the final decisio

3/16.12 The PEIS affords the public an opportunity to respond to environmental should also have an opportunity to respond to other decision making fa analysis and the production assurance analysis.

4/18.01 The Nonnuclear Proliferation Treaty is to be renewed this year while t on continuing the tritium supply and recycling project. The United Sta on nonproliferation and is not moving fast enough to dismantle weapons and Recycling Program is untimely and contradicts the aims of the Nonn Treaty.

5/13.09 SRS has 40 years experience and environmental compliance with tritium. extensive infrastructure to integrate DOE tritium requirements in addi public and political support. The workers at SRS have the experience a accomplish DOE's mission. There exists a new modern recycling facility a tritium source. In the future, it would be easier and cheaper to sit conjunction with the Tritium Supply and Recycling Program at SRS.

6/15.05 Despite many recent changes in the world, DOE, for political reasons, reactor which was promised during the 80s. Chapter 2 of the PEIS for T Recycling needs to be expanded because the public has the right to kno needed at the taxpayer's expense.

7/18.07 The government continues to practice "pork barrel economics" by sugges a multipurpose reactor which can dispose of plutonium, produce tritium electricity. In addition, a multipurpose reactor would send a contradi international community. The United States would utilize a defense mis commercial electricity while encouraging other nations to support nonp

8/16.17 The decision making process is not truly a public involvement process. vote and, therefore, the public does not have an opportunity to decide

9/13.09.01 The United States must maintain the capability to dismantle terrorist- prevent attacks on the United States. Tritium is essential as a nuclea be produced soon. If SRS is not awarded the Tritium Supply and Recycli be a crime. There exists a talented work force at SRS and the communit

unparalleled. DOE should seriously consider the multipurpose reactor b site, irrespective of the preferred technology.

FIRST AFTERNOON SESSION-ENVIRONMENTAL EFFECTS

1/13.00.39 The cost of upgrading the recycling facility at SRS is insignificant a benefit.

2/13.00.39 DOE seems to have decided to build a recycling facility wherever the t Since a recycling facility already exists at SRS, the benefit is obvio

3/08.04 There exists a qualified work force at SRS with 40 years of experience as a benefit in the PEIS.

4/11.00.07 The comparison of health effects between the APT and the reactor techn comparison. The human health effects which result from the high electr APT is unknown. The American Nuclear Society would not accept the comp addition, the history of the five reactors at SRS has shown an excess `health section would not be accepted by professionals in epidemiology narrow analysis to the public by only displaying radiation exposure.

5/11.00.10 More fatalities will occur as a result of electrical accidents than fr

6/15.10 Public interaction meeting is an impressive idea by DOE. In the past D decisions stated in RODs. As a taxpayer, DOE should commit to their de ROD instead of changing the decision and wasting money.

7/11.00.09 The PEIS should display the current regulatory limits to be met, the h limits, and predict what these limits may be in the future.

8/22.02 Commentor wants DOE to assess whether the multipurpose option would br standing policy of separating commercial and defense facilities.

9/02.04 The large electrical consumption of the APT seems to be a major discri technologies.

10/13.09 NTS requires the greatest infrastructure upgrade while SRS requires th should be noted as a discriminator and a benefit for SRS.

11/16.05 DOE should hold each site to equitable standards in the analysis of en while cost factors should be weighted less as far as a decision making

SECOND AFTERNOON SESSION-ENVIRONMENTAL EFFECTS

1/13.00.37 The reactor technology is a proven technology while the APT is not.

2/10.14 The document does not adjust the environmental impacts for storage of of heat. Spent fuel storage is a function of heat and, therefore, the reactor requires the least amount of storage.

2-24

3/10.02 Disposal of nuclear wastes is the most pressing international issue. T problem of nuclear wastes.

4/10.15 DOE should present the percentage of spent fuel it must handle in the Recycling Program to the total amount of spent fuel it currently handl more accurate perspective of the differences between the reactor techn because these wastes may not present a significant increase in the amo handled.

5/02.03 Reactors should be credited in the PEIS for not creating impacts at a operation.

6/02.04 The PEIS should assume the APT will need a new facility to sustain the electricity. To present a fair analysis in an environmental document, impacts the environment the greatest in the power pool region should b the environmental impact of the new generator in the region, built spe APT, and present the results in the PEIS. It should be assumed the off a coal-fired plant, would then be taken off-line.

7/02.04 If the APT is the selected technology, the potential cost of construct should be accounted as an extra cost. A multipurpose reactor would bur produce waste but may also facilitate the shut down of the environment generator within the power pool.

8/13.00.05 The electricity requirement for the APT is large and the design is unp consider the multipurpose reactor.

9/02.04 The excess capacity for regional power pools is not extra electricity these power pools. DOE projections for future growth in power pool reg and this may cause utilities to build new facilities if an APT is chos

10/13.04.07 The document seems to unfairly bias the APT and this must be corrected among the technologies.

11/13.04.03 The uncertainties in the undeveloped design of the APT is an unknown f an exponential amount of problems in the future.

12/13.09.05 The Defense Waste Processor is not included under SRS in the table in

13/13.09.01 There is 150 percent unanimous support for the multipurpose reactor at is does in addition to tritium production.

14/14.01 By separating the Tritium Supply and Recycling and Fissile Material Di which DOE has stated may intersect if a reactor technology is chosen, another costly analysis may be required to analyze a multipurpose reac

15/14.01 The Tritium Supply and Recycling and Fissile Material Disposition Prog have greater environmental impacts than a multipurpose reactor which w missions. DOE should investigate the environmental impacts of a multip detail to create a fair comparison.

16/14.01 As a matter of national security, the disposition of plutonium should decide to produce tritium. The plutonium issue should be resolved firs need tritium if this issue is addressed. Also, the multipurpose reacto

the document.

17/15.07 The public does should have an opportunity to input on other decision

18/13.09.01 Irrespective of the chosen technology, SRs should be the site because experience, and most likely the lowest cost. The cost analysis should with an opportunity to comment.

19/15.07 The public should have an opportunity to review other decision making preferred alternative is issued.

20/13.09.03 The document should have an analysis of the relative environmental eff mission at SRs is terminated.

21/13.09.01 People have rights which should not take a backseat to the environment awarded as the site for the tritium mission since the site already dea wastes from all over the world.

22/13.09.01 The location of an existing tritium recycling facility should be consi in favor of SRS.

23/08.04 If the tritium recycling responsibilities were removed from SRS, more lose their jobs, engendering long-term impacts at SRS.

24/11.00.03 Recent epidemiological research suggests that a large influx of people higher rates of leukemia. This unknown phenomena may result from viral unstable population. The document should attempt to include this in th

FIRST AFTERNOON SESSION-PROJECT DESCRIPTION

1/13.00.18 The ALWR is not the most efficient technology for producing electricit MHTGR is more efficient.

2/13.04.03 The public does not have much confidence in the APT when DOE still nee research and development on it. DOE should not make a decision on the this technology is more reliable.

3/13.02.01 The PEIS should include a section describing the uncertainties related

4/13.00.17 DOE spent over $1 billion on the K-Reactor at SRS and should consider rather than spending another billion dollars or more on a new technolo

5/13.04.17 The PEIS should discuss any benefits of using an accelerator over a re than for producing tritium, burn plutonium, etc.)

6/14.01 The PEIS should describe if and/or how the Stockpile, Stewardship and impact the decision on technical and site decision on tritium recyclin

2-26

7/14.01 How can DOE make a decision on the PEIS for Tritium Supply and Recycli not made a decision on what sites to evaluate for the Stockpile Stewar PEIS.

8/13.09.01 Aiken Commerce Board supports a decision to place tritium supply and r

9/14.01 How will the decisions on the Stockpile Stewardship and Management and

Disposition PEISs affect the time structure for the PEIS for Tritium S decisions.

10/14.01 The PEIS should include a section combining the impacts associated wit producing tritium and electricity (triple-play reactor). The PEIS shou impacts to producing tritium and burning plutonium separately.

11/14.01 DOE should delay the decision on tritium supply and recycling until a on plutonium disposition.

12/14.01 The best decision could be the triple play reactor which is not being The PEIS should more thoroughly evaluate the triple-play reactor.

13/16.11 The representatives in Congress need to have more input into the Secre PEIS for Tritium Supply and Recycling.

14/13.04.03 There is concern that if (after 3 to 4 years of research and developme considered unreliable that this delay in constructing a new tritium su jeopardize our Nation's national security.

15/16.12 There is concern that the cost analysis, schedule studies, and product not be available in time for public comment.

16/16.12 DOE should consider having a formal process allowing the public to com analysis, schedule studies, and production assurance studies.

17/13.00.02 There is a very high risk associated with large projects that have nev DOE should not be considering marginal technologies.

18/02.01 The PEIS does not include impacts associated with the high power need

19/13.00.14 If the APT were constructed and a few years later tritium was no longe the function(s) of the APT. The PEIS should include a section discussi

20/13.00.14 The PEIS should address the relative functions of each technology if t needed.

21/13.00.05 DOE needs to develop a cost/benefit ratio for the multipurpose reactor

22/13.00.05 We need to consider getting rid of the plutonium problem in this count seriously consider the triple-play reactor for production of tritium, and production of electricity.

SECOND AFTERNOON SESSION-PROJECT DESCRIPTION

1/13.00.20 DOE should consider not making anymore tritium for nuclear weapons as

2113.00.20 The United States has not used tritium enhanced nuclear weapons for ma consider convening back to the old style nuclear weapons.

3/18.07 DOE should consider using a plutonium trigger for weapons less than 20 equivalent. This portion of the arsenal would not need to use tritium, for tritium production would be increased.

4/13.04.22 The PEIS needs to include a section explaining the source of helium-3 and any impacts with the use of this isotope.

5/04.02.10 The PEIS needs to clarify the term n/a for the closed loop cooling sys mean that the APT will not be located at a dry site?

6/16.01 DOE should consider the operating records of the individual sites as a

7/13.09.04 SRS is not the place to put the tritium supply facility.

8/16.01 The operation experience and expertise of each of the sites needs to b PEIS decision.

9/13.04.22 DOE should reconsider the selling of helium-3 because it may become a production.

10/13.04.22 DOE needs to estimate the amount of helium-3 available and the percent recycled in order to know if there will be enough helium-3 for tritium 2060. These estimates need to include a safety factor for lost helium- enough available helium-3 in the case of an national emergency.

11/18.04 DOE should consider making excess tritium and selling it to other coun

to the tax payers.

12/16.08 The design status of each of the technologies should be available to t

13/12.05 The PEIS should include a table listing the key discriminators for eac independent of the sites.

14/13.00.40 The unclassified graph of the Estimated START II Tritium Inventory and Requirements needs to be more clearly explained. Does the graph take i unavailability of tritium for the next 15 years, and is this a conserv

EVENING SESSION-ENVIRONMENTAL EFFECTS

1/02.04 The PEIS should evaluate the impacts of a power source which would mos constructed to support the electrical requirements of the APT. DOE sho

of a hydroelectric generator, probably the most environmentally safe, least environmentally safe, and then average the impacts to present in

2/13.04.05 If the APT is the chosen technology, DOE should consider a hydroelectr the capacity margins in the power pool.

3/10.06 If the APT is selected, wastes produced from a coal plant to support t requirements should be included in the waste analysis.

4/13.04.05 If the APT is selected, DOE should consider the construction of a powe support the APT's electricity requirements.

5/11.00.07 The document should include the health risks of the electromagnetic ra APT.

6/11.02.17 The values of the consequences presented in the human health section s past analyses, especially the unusually low values for the MHTGR.

7/11.02.17 The consequence values in the human health section are so varied becau used in the analysis is so large and unrealistic. The probability valu and frequency. The more unrealistic frequency value would yield even m analysis. The risk values in the human health section are the more imp values are extremely small, irrespective of the technologies.

8/11.02.17 In order to present perspective for the risk values, the risks of sm and other various commonplace figures should be included in the docume

9/11.00.11 The fatality figures presented in the document are misleading because disparity between the technologies.

10/11.02.17 The document should integrate the risks of all potential accidents ide individual events analyzed.

11/11.00.14 Risks depend on the choices people make. For instance, radiation may c may choose radiation to cure cancer.

12/12.10 The document should include an analysis on safety, focusing on past pe potential sites.

13/04.02.07 The document should adjust the values for water usage at the sites sin on the relative humidity at the sites.

14/13.00.05 Proliferation of fissile material is the greatest national security is responsible for preventing the spread of plutonium to terrorist groups National Laboratory has determined that plutonium cannot be deposited geologic repository. The United S[ates may prevent the spread of pluto multipurpose reactor while reaping the benefits of electricity and pro

EVENING SESSION-PROJECT DESCRIPTION

1/13.09.11 The tritium supply and recycling facility should be placed at SRS beca mass, site infrastructure onsite and offsite, cost record, safety reco support. The people at SRS are committed and really want the facility

2/13.09.01 The State of Georgia supports SRS and the placement of tritium supply at SRS. SRS has the infrastructure to support this facility. Georgia w to be finished at SRS and this is the right time and place to put the facility at SRS.

3/13.09.01 SRS has many trained laborers. The weather at SRS allows these laborer a year, as some places only allow 6 months of work a year due to incle

4/18.15 The public is concerned about the associated impacts to tritium supply is not ratified.

5/13.00.14 The PEIS needs to include a section addressing the benefits of each te

tritium is no longer needed.

6/13.04.17 DOE should consider the use of research accelerators to produce the ne

7/13.04.11 The PEIS needs to include a section describing Plan B in the event the research and development was completed.

8/13.04.03 There is concern that the APT will suffer like the super collider beca

9/13.00.37 The ALWR or HWR should be chosen for tritium production rather than sp

payers money for research and development on a technology that has so

10/13.00.37 The APT should be studied on the side, and a reactor should be used to it is a proven technology.

11/13.00.37 A reactor would be the best choice because the laborers are knowledgea there will not have to be as much training involved with a new reactor

12/18.04 The PEIS needs to include a discussion of the effects of producing and commercially.

13/13.00.05 The multi-purpose reactor is the best choice because it can produce tr plutonium.

14/13.04.06 The cost of disposing of plutonium needs to be included in the cost of is not capable of burning plutonium.

15/13.00.37 There is no reason to do more research and development with the APT wh that are proven to be reliable.

16/13.04.03 DOE should not be considering the APT because it has been proven not t commercial level. DOE needs to consider the technical risk of operatin fuel facility.

17/13.02.01 The MHTGR looks great on paper but does not work in reality.

18/22.03 The United States helped Canada design their CANDU reactors, and told take back the plutonium. Now Canada wants the United States to take th mixed-oxide fuel, and give it back to Canada to burn in their reactors stop subsidizing the CANDU Reactor in Canada.

19/16.01 DOE must assess a cost to the risk of each technology.

20/04.28 A cost/benefit ratio needs to be included with the APT.

21/16.01 Would like to have a lifecycle cost of each technology included in the

22/16.01 The cost of retraining the laborers who will be working in the facilit the cost of each technology.

23/13.09.01 It took 10 years to get a training program that worked well in SRS. It for another training program to be developed at another site. Therefor needs to be located at SRS.

24/13.09.01 SRS has the site infrastructure to support any of the four technologie for DOE to place the facility at any other site besides SRS.

25/13.09.01 SRS is capable of supporting the APT if DOE concludes that it would be for tritium production.

26/13.09.01 SRS is the most pro-nuclear community and this community really wants recycling to be placed at SRS.

27/13.09.01 The tritium supply and recycling facility should be placed at SRS beca track record with producing large quantities of tritium.

PUBLIC HEARING, APRIL 20,1995-AMARILLO, TEXAS

FIRST AFTERNOON SESSION-ENVIRONMENTAL EFFECTS

1/04.02.05 DOE should consider in the PEIS any temperature effects in the play as discharges.

2/02.04 DOE has used the wrong power pool in its analysis of the electrical ne Southwest is the correct provider. The percentages shown as "percent p margin" on the overhead may be incorrect.

3/04.02.01 DOE should consider other sources of water for the tritium facility. I wastewater from the city of Amarillo or Pantex itself is a viable alte

4/04.02.01 DOE should make as many technical and/or efficiency improvements in th possible in order to reduce water usage.

5/04.02.01 The Final PEIS should include in its water resources section all alter groundwater usage (using wastewater, improvements in the technologies, cooling for the target end of the APT). This should be done to inform fully and to portray the Pantex water resources analysis in a better l sites).

6/10.29 DOE should include in the Final PEIS an analysis of any effects a pipe from Amarillo to Pantex would have on the environment and surrounding analysis on this pipeline should be done as well.

7/04.02.02 DOE should consider the other parties at risk due to the new facility' consumption. These parties include farmers, the city of Amarillo, and area. There may be additional costs (financial, environmental, and oth aquifer drawdown and the PEIS should fully cover these costs.

8/04-02.02 If alternative sources of water are not available (wastewater, using c APT), there will be significant drawdown of the aquifer. DOE should an drawdown would have on the surrounding community and any private and p particular, DOE should ensure that nobody's water "runs dry."

9/04.02.01 DOE should take a look at the city of Phoenix's model of water usage.

10/04.02.01 DOE should include in the Final PEIS the number of gallons of wastewat

tritium facility.

11/04.02.01 DOE should answer the following question in the Final PEIS: would the zero or negligible if wastewater were used for the tritium facility?

12/02.01 In the Final PEIS, DOE should clearly indicate that additional water w increased electrical demand (including the amount of water a new power consume). In general, DOE should include directly in its environmental environmental effects from increased electrical consumption or a new p

13/04.02.10 DOE has overstated by 50 percent the water requirement for the natural

14/04.02.02 DOE should consider the increased water consumption resulting from the operation of the facility itself.

15/10.03 DOE should be alarmed by the massive increase in LLW generation (from 15,980 yd3 for HWR). How many additional shipments will this require a room for this amount?

16/18.09 The pertinent facts seem to be obscured from the public. How many weap tritium are actually needed? The public should be aware of the actual should be performed on actual tritium and weapons needs. In particular could be made, thus eliminating the need for a new facility.

2-32

17/13.00.15 Even if START II levels were cut by 50 percent, a need for tritium wou meet that need would still be necessary.

18/13.08.01 Public support (as shown in various polls) is over 80 percent for the Pantex.

19/18.01 In the Nuclear Nonproliferation Treaty the United States made a commit stockpile and eventually eliminate all of its nuclear weapons. If the this project, the wrong message will be sent to the other nations that Based on our inconsistent action, they may decide to renege on their c United States should pursue a nuclear weapons policy that is consisten Nonproliferation Treaty.

20/11.00.24 The risk assessments from exposure to hazardous chemicals at Pantex ar volume II, table E.3.428. The 0.01 number for total cancer risk is inc all the numbers in this table and make sure they performed the correct

21/02.05 A more detailed examination of the proposed transmission line for the necessary and should be included in the Final PEIS. For example, what into Pantex? Will it be underground or above ground? Will it disturb a will it cost?

22/13.06.04 In the chemical inventory section for the proposed sites, the PEIS lis NTS must use some chemicals during its operations. DOE should check in

23/13.00.15 Future tritium and weapons needs are based on the START II treaty. It treaty that we must begin the planning and implementation stages for t if we wish to meet those needs.

24/13.08.03 Certain people are using fear tactics in their campaign for the tritiu the Pantex area will suffer economic devastation if the tritium supply plutonium disposition projects do not come here. This fear mongering i is ridiculed across the country for welcoming these projects and yet i

them. The many negative effects from the tritium supply and recycling acknowledged by these people, especially the drawdown of the aquifer.

25/13.08.01 The business community in the Pantex area certainly does not feel ridi believe that the presence of the Pantex site is a disincentive for bus business community is in favor of more work at Pantex.

26/10.10 The additional solid waste from the new facility would not have a subs landfill in Amarillo. It is but a small fraction of current capacity. design life would be reduced should not be seen as a negative.

27/10.29 DOE should look at the effects and costs of a pipeline that would carr site treatment plant to the new tritium supply and recycling facility. wastewater a viable alternative, it must also consider the effects of alternative.

28/13.04.10 The APT worker numbers (for construction and operation) are the lowest technologies. It seems, however, that the costs related to these worke

SECOND AFTERNOON SESSION-ENVIRONMENTAL EFFECTS

1/07.02 A more evenhanded and consistent analysis of cultural and biotic resou summary and the PEIS is needed. There are subtle discrepancies in the sites, and Pantex is unfairly penalized due to the use of biased langu these sections for unnecessary bias and use consistent terminology and

2/06.02 The executive summary indicates the bald eagle could lose nesting habi and should be changed in the Final PEIS.

3/02.01 Although the increase in electrical demand may not have a substantial regional power pool capacity margin, it will have a substantial effect on the cost of each technology. These effects should not be de-emphasi are secondary effects from a power facility that will be used to suppo recycling facility. They should be seen as direct effects.

4/02.02 DOE should consider alternative energy sources (wind and solar) for th is required for the tritium supply and recycling technologies.

5/13.00.42 DOE should consider using the coolant (water) from the tritium supply in the steam generation plant at Pantex. This could potentially save f

6/04.02.01 DOE should consider using closed loop cooling for the target end of th conserve much water.

7/04.02.05 The playas are referred to as dry lakes in the PEIS and yet they may b aquifer. High explosives and nitrates have been found in the aquifer, indeed be the case. (Another person disagreed with this and said that areas.) DOE should investigate the connection between the playas and t

8/04.02.07 In the PEIS, aquifer water levels should be shown as depths, not only

9/04.02.01 The PEIS exhibits a bias against Pantex in the water resources section drawdowns would adversely affect the aquifer, but fails to mention tha could possibly recharge the aquifer. The PEIS should discuss this pote

10/04.02.05 Wastewater discharges into the playas are portrayed as degradations in actually sustain species and play a beneficial role. Some of the play weren't for the wastewater discharges.

11 No comment identified.

12/08.11 It appears that DOE has used the wrong economic multiplier on their ov should be checked for this mistake as well.

13/08.03 In its economic analysis, DOE should consider jobs that will be create support the planning and engineering studies necessary for the tritium facility (for example Los Alamos).

14/08.03 DOE should consider the transportation, electrical, water, and other e from out-of-region people who come to work at Pantex and live in the a

15/08.03 It is possible that workers may be brought in from other areas (not th surrounding Pantex). Too many out of region workers could actually def DOE should, for each site, compare the need for skilled workers create with the pool of skilled workers in the surrounding area.

16/08.03 The Tritium Supply and Recycling Program could spawn new production or facilities that would support the tritium supply and recycling facilit should include this in the PEIS.

17/11.00.12 In addition to the cancerous effects of the new facility, there are al These include genetic, chemical, and toxic health effects. The PEIS sh of these as well.

18/11.00.12 The proximity of current and future schools and housing projects to th fully analyzed in the PEIS. The commentor is specifically concerned ab to school and housing posed by the tritium supply and recycling facili

19/11.00.10 DOE should take into consideration the fact that, in general, construc workers are healthier than the general population. This fact may influ the human health section.

20/12.07 In the Final PEIS, DOE should include a description of the old tritium planned disposition, the wastes it generated, and a comparison between facilities. This may help DOE learn from past mistakes and educate the be expected from the new facility.

21/16.12 A D&D comparison (including financial costs) between technologies shou Final PEIS.

22/01.02 It is seems that Site C and the area proposed for the tritium facility was leased from Texas Technological University. DOE should consider an may present.

23/15.07 DOE should tailor the comment response document so that people can tra comments. This would allow people to see how and if their comments aff

24/04.02.07 DOE should ensure that an adequate number of drawing sites (for the gr on site.

25/06.17 A more evenhanded and consistent analysis of biotic resources in the e the PEIS is needed. There are subtle discrepancies in the analysis bet is unfairly penalized due to the use of biased language. DOE should ch unnecessary bias and use consistent terminology and language.

FIRST AFTERNOON SESSION-PROJECT DESCRIPTION

1/15.01 Would like to have "formal" comment sessions (traditional hearing form new meeting format.

2/15.07 Would like to see the PEIS be formatted to allow public commentors to responses to comments.

3/13.04.17 Supports current design to leave enough "space" (land) for expansion o needed). This would enable additional tritium production for defense o

4/13.00.05 Supports the reactor design because of its ability to be a power sourc greatly needed in this area (Amarillo community).

5/10.26 Would like to see the PEIS further break down waste numbers for each t

6/13.04.01 Supports the accelerator design.

7/14.01 Should delay this decision on a tritium production facility to allow o stage. At that point, decisions should be made reflecting an integrate

8/14.01 If a ROD is made for tritium, then subsequent EISs should also reflect

9/04.02.01 Believes that there are alternatives besides "dry cooling" for Pantex. of using treated city sewage water for cooling. The community is great groundwater, especially at the Pantex Plant; recycling of sewage waste source of water and would help preserve the aquifer.

10/10.03 Would like to see PEIS figures for wastes broken down by type, volumes and costs.

11/04.02.01 There are "one-pass" technologies that use one-seventh the amount of w PEIS.

12/18.01 DOE should postpone this decision for tritium and wait until policies reevaluation (e.g. nonproliferation) are decided. The results of negot reduce the tritium requirement, and thus eliminate a need for a produc like to see a good faith effort to bargain with other nuclear producin

SECOND AFTERNOON SESSION-PROJECT DESCRIPTION

1/04.02.01 Would like to see water recycled from sewage waste water be a part of This option may give Pantex an extra advantage over its current analys would adversely affect ground water.

2/04.02.02 If groundwater is considered for use in NTS, then it may be a concern.

3/04.02.07 Would like to have documentation for reasoning behind numbers in PEIS, groundwater numbers.

2-36

4/13.08.01 Local community is 80 percent in support of Pantex's programs and miss

5/13.08.01 Would like to have tritium supply facility at Pantex because weapons a assembled/disassembled there. Collocation would eliminate the need for nuclear materials or wastes across state lines.

6/14.01 Would like to see consistency among PEISs. All EISs should have same a Decisions should also be coordinated.

FIRST EVENING SESSION-ENVIRONMENTAL EFFECTS

1/05.01 DOE should ensure that no capable faults exist within the surrounding

2/13.00.05 DOE should sell or make good use of the electricity generated by some There is no good reason why DOE should waste this resource or reject i

3/13.04.05 DOE should consider using the APT at night or during off-peak hours. T and decrease peak usage.

4/04.02.01 The cooling mechanism for the APT could be closed loop. It is theoreti is no reason DOE could not employ this cooling technique on the APT. D this possibility out of hand. A great amount of water would be saved.

5/04.02.01 Dry years (years of light precipitation) are causing more drawdown tha should be more concerned about drawdown effects. DOE should study the the method of wastewater recharge that is being used there.

6/10.02 DOE should be concerned about polluting the playas with wastewater.

7/04.02.07 DOE should indicate where the drawdown is measured from. Is it one mil Closer? Farther? There may be areas of greater drawdown that DOE has n

8/04.02.02 Forty-three inches of aquifer drawdown is outrageous. The community wi Farmers need this water more than DOE does.

9/04.02.01 Wastewater discharge from the Hollywood plant could negate the drawdow

10/13.04.09 DOE should look at the evaporation generated by the APT's cooling syst environmental effects associated with this evaporation.

11/13.00.38 DOE should look at the environmental effects resulting from the reacto mechanism.

12/04.02.01 Using wastewater for cooling purposes should be seen as an alternative technique. It should be included as one of the options for cooling the recycling facility.

13/04.02.01 The water resources section in the executive summary (ES-31) unfairly It notes that "drawdowns would adversely affect aquifer water levels"

not include an explanation for why this is so. DOE should add that the Ogallala aquifer is smaller than the other sites' recharge rates.

14/04.02.01 The wastewater alternative and its potential should be shown simultane groundwater usage data and the corresponding drawdowns. Currently, the decision makers by showing them only one alternative (groundwater) for There are, in fact, two power plants in the area which use wastewater

15/04.02.01 The water resources section has not been presented fairly for Pantex. discussion of other, viable alternatives for the tritium supply and re discussion would include using wastewaster and closed loop cooling (fu

16/04.02.01 DOE should take a look at the red bed drilling and pumping that are in Pantex. This type of drilling allows for the occurrence of drawdowns e supply and recycling facility is not pumping. The red bed is the layer Ogallala aquifer.

17/04.02.02 The water consumption rate for the tritium supply and recycling facili rate of the aquifer. DOE should be concerned about the needs of farmer idea to use more groundwater.

18/03.01 DOE should be concerned about increased pollution levels and the effec visibility and air quality.

19/03.01 The pollution numbers should include pollutants from the additional po needed (or additional pollutants from an increased electrical load).

20/02.01 DOE should include the size (physical and electrical) of the additiona needed.

21/09.06 DOE uses inconsistent terminology in the intersite transport section o The wording of the "relative transportation risk of tritium" paragraph make this section consistent.

SECOND EVENING SESSION - ENVIRONMENTAL EFFECTS

1/04.02.01 DOE should consider injecting treated wastewater into the aquifer. Thi the aquifer level.

2/04.02.01 The Hollywood Wastewater Plant and the Treatment Plant at Pantex could water for the APT. No groundwater would be used. DOE should seriously

3/08.05 The business community in Amarillo welcomes this project and the jobs it. The jobs would be filled by people from the community. Public appr missions is over 80 percent.

4/10.03 DOE is using the wrong LLW figures in its "waste management" overhead.

5/16.12 DOE should include D&D environmental effects and financial costs in it section. These effects and costs should not be shown in a later sectio up front.

6/16.12 The public should receive the cost studies and analysis with plenty of decision is made.

7/22.02 DOE should revisit its nonproliferation policy regarding commercial an nuclear energy. DOE should be able to produce and sell electricity fro primary mission is defense related.

8/02.04 There are cost and energy advantages associated with running the APT d DOE should give this serious consideration.

First Evening Session-Project Description

1/16.07 Would like to see maintenance and operation costs of different technol would be helpful in the decision making process.

2/13.04.17 Would like to see the possibility of a modular accelerator design. Wou other purposes such as civilian research.

3/14.01 Would like to see all three EISs evaluated together, especially with r example, it makes sense to simultaneously evaluate the triple-play rea this EIS, and the Fissile Material Disposition EIS.

4/20.04 Supports DOE policy of not redesigning weapons to use less or no triti

5/16.03 Would like to have DOE work more closely with contractors in preparing see more continuous involvement. It would eliminate the problem of con providing data and then having to take time to explain the data when t is produced.

6/15.01 Supports new meeting format.

Second Evening Session-Project Description

1/10.09 DOE should not consider spent fuel as an asset.

2/10.02 Concerned about high level wastes from reprocessing and for storage.

3/13.04.17 PEIS should evaluate closed loop cooling as an option for accelerator done with engineering work.

4/12.04 When evaluating current designs, PEIS should consider terrorist attack trucks with weapons.

5/15.01	Supports this new meeting format.
6/13.04.17	In addition to main mission of tritium production, would like to see a implemented, be used for other purposes such as research or production isotopes.

COMMENT LETTERS

TSR-E-001
Figure (Page 2-40)

TSR-E-002
Figure (Page 2-40)

TSR-F-001
Figure (Page 2-41)

TSR-F-002
Figure (Page 2-41)

TSR-F-003
Figure (Page 2-42)

TSR-F-004
Figure (Page 2-42)

TSR-F-005
Figure (Page 2-43)

TSR-F-006
Figure (Page 2-43)

TSR-F-008
Figure (Page 2-44)

TSR-F-009
Figure (Page 2-44)

TSR-F-010
Figure (Page 2-45)

TSR-F-012
Figure (Page 2-45)

TSR-F-013
Figure (Page 2-46)

TSR-F-014
Figure (Page 2-46)
Figure (Page 2-47)

TSR-F-016
Figure (Page 2-47)
Figure (Page 2-48)
Figure (Page 2-48)

TSR-F-017
Figure (Page 2-49)
Figure (Page 2-49)
Figure (Page 2-50)
Figure (Page 2-50)

TSR-F-018
Figure (Page 2-51)

TSR-F-019
Figure (Page 2-51)

TSR-F-020
Figure (Page 2-52)

TSR-F-021
Figure (Page 2-52)
Figure (Page 2-53)

TSR-F-022
Figure (Page 2-53)
TSR-F-022
Figure (Page 2-54)

TSR-F-024
Figure (Page 2-54)

TSR-F-027
Figure (Page 2-55)

TSR-F-029
Figure (Page 2-55)
Figure (Page 2-56)
Figure (Page 2-56)

TSR-F-030
Figure (Page 2-57)
Figure (Page 2-57)

TSR-F-031

Figure (Page 2-58)

TSR-F-032
Figure (Page 2-58)
Figure (Page 2-59)
Figure (Page 2-59)
Figure (Page 2-60)
Figure (Page 2-60)
Figure (Page 2-61)
Figure (Page 2-61)
Figure (Page 2-62)
Figure (Page 2-62)
Figure (Page 2-63)
Figure (Page 2-63)
Figure (Page 2-64)
Figure (Page 2-64)
Figure (Page 2-65)
Figure (Page 2-65)
Figure (Page 2-66)

TSR-F-033
Figure (Page 2-66)
Figure (Page 2-67)
Figure (Page 2-67)

TSR-F-034
Figure (Page 2-68)

TSR-F-035
Figure (Page 2-68)

TSR-F-036
Figure (Page 2-69)
Figure (Page 2-69)
Figure (Page 2-70)
Figure (Page 2-70)
Figure (Page 2-71)
Figure (Page 2-71)
Figure (Page 2-72)
Figure (Page 2-72)
Figure (Page 2-73)
Figure (Page 2-73)
Figure (Page 2-74)
Figure (Page 2-74)
Figure (Page 2-75)
Figure (Page 2-75)
Figure (Page 2-76)
Figure (Page 2-76)
Figure (Page 2-77)
Figure (Page 2-77)
Figure (Page 2-78)
Figure (Page 2-78)
Figure (Page 2-79)
Figure (Page 2-79)
Figure (Page 2-80)
Figure (Page 2-80)
Figure (Page 2-81)
Figure (Page 2-81)
Figure (Page 2-82)

Figure (Page 2-102)
Figure (Page 2-103)
Figure (Page 2-103)

TSR-F-049
Figure (Page 2-104)
Figure (Page 2-104)
Figure (Page 2-105)
Figure (Page 2-105)
Figure (Page 2-106)
Figure (Page 2-106)
Figure (Page 2-107)
Figure (Page 2-107)
Figure (Page 2-108)

TSR-F-050
Figure (Page 2-108)

TSR-H-001
Figure (Page 2-109)

TSR-H-002
Figure (Page 2-109)

TSR-H-003
Figure (Page 2-110)

TSR-H-004
Figure (Page 2-110)

TSR-H-005
Figure (Page 2-111)

TSR-H-006
Figure (Page 2-111)
Figure (Page 2-112)

TSR-H-007
Figure (Page 2-112)

TSR-H-008
Figure (Page 2-113)
Figure (Page 2-113)

TSR-H-009
Figure (Page 2-114)

TSR-H-010
Figure (Page 2-114)

TSR-H-011

Figure (Page 2-115)
Figure (Page 2-115)

TSR-H-012
Figure (Page 2-116)

TSR-H-013
Figure (Page 2-116)

TSR-H-014
Figure (Page 2-117)

TSR-H-015
Figure (Page 2-117)

TSR-H-016
Figure (Page 2-118)

TSR-H-017
Figure (Page 2-118)

TSR-H-018
Figure (Page 2-119)

TSR-H-019
Figure (Page 2-119)
Figure (Page 2-120)

TSR-H-020
Figure (Page 2-120)
Figure (Page 2-121)

TSR-H-021
Figure (Page 2-121)

TSR-H-022
Figure (Page 2-122)

TSR-H-023
Figure (Page 2-122)

TSR-H-024
Figure (Page 2-123)
Figure (Page 2-123)

TSR-H-025
Figure (Page 2-124)

TSR-H-026

TSR-H-043
Figure (Page 2-135)

TSR-M-001
Figure (Page 2-136)

TSR-M-002
Figure (Page 2-136)

TSR-M-004
Figure (Page 2-137)

TSR-M-005
Figure (Page 2-137)

TSR-M-006
Figure (Page 2-138)

TSR-M-008
Figure (Page 2-138)

TSR-M-009
Figure (Page 2-139)

TSR-M-010
Figure (Page 2-139)
Figure (Page 2-140)
Figure (Page 2-140)

TSR-M-011
Figure (Page 2-141)

TSR-M-012
Figure (Page 2-141)

TSR-M-013
Figure (Page 2-142)

TSR-M-014
Figure (Page 2-142)

TSR-M-015
Figure (Page 2-143)
Figure (Page 2-143)
Figure (Page 2-144)

TSR-M-016
Figure (Page 2-144)

Figure (Page 2-145)

TSR-M-017
Figure (Page 2-145)

TSR-M-019
Figure (Page 2-146)

TSR-M-020
Figure (Page 2-146)

TSR-M-021
Figure (Page 2-147)

TSR-M-022
Figure (Page 2-147)

TSR-M-023
Figure (Page 2-148)
Figure (Page 2-148)
Figure (Page 2-149)
Figure (Page 2-149)

TSR-M-024
Figure (Page 2-150)

TSR-M-025
Figure (Page 2-150)
Figure (Page 2-151)
Figure (Page 2-151)
Figure (Page 2-152)
Figure (Page 2-152)

TSR-M-026
Figure (Page 2-153)

TSR-M-027
Figure (Page 2-153)

TSR-M-028
Figure (Page 2-154)

TSR-M-029
Figure (Page 2-154)

TSR-M-030
Figure (Page 2-155)

TSR-M-031
Figure (Page 2-155)
Figure (Page 2-156)

TSR-M-032
Figure (Page 2-156)

TSR-M-033
Figure (Page 2-157)

TSR-M-034
Figure (Page 2-157)

TSR-M-035
Figure (Page 2-158)

TSR-M-036
Figure (Page 2-158)

TSR-M-037
Figure (Page 2-159)

TSR-M-038
Figure (Page 2-159)

TSR-M-039
Figure (Page 2-160)

TSR-M-040
Figure (Page 2-160)

TSR-M-041
Figure (Page 2-161)

TSR-M-042
Figure (Page 2-161)

TSR-M-043
Figure (Page 2-162)

TSR-M-044
Figure (Page 2-162)
Figure (Page 2-163)

TSR-M-045
Figure (Page 2-163)

TSR-M-046
Figure (Page 2-164)

TSR-M-047
Figure (Page 2-164)

TSR-M-048
Figure (Page 2-165)

TSR-M-049
Figure (Page 2-165)
Figure (Page 2-166)

TSR-M-050
Figure (Page 2-166)
Figure (Page 2-167)

TSR-M-051
Figure (Page 2-167)
Figure (Page 2-168)

TSR-M-052
Figure (Page 2-168)
Figure (Page 2-169)

TSR-M-053
Figure (Page 2-169)

TSR-M-055
Figure (Page 2-170)

TSR-M-056
Figure (Page 2-170)
Figure (Page 2-171)

TSR-M-057
Figure (Page 2-171)

TSR-M-059
Figure (Page 2-172)

TSR-M-060
Figure (Page 2-172)

TSR-M-061
Figure (Page 2-173)

TSR-M-062
Figure (Page 2-173)

TSR-M-063
Figure (Page 2-174)

TSR-M-064
Figure (Page 2-174)
Figure (Page 2-175)
Figure (Page 2-175)
Figure (Page 2-176)
Figure (Page 2-176)
Figure (Page 2-177)
Figure (Page 2-177)
Figure (Page 2-178)
Figure (Page 2-178)
Figure (Page 2-179)
Figure (Page 2-179)

TSR-M-065
Figure (Page 2-180)
Figure (Page 2-180)

TSR-M-066
Figure (Page 2-181)

TSR-M-068
Figure (Page 2-181)
Figure (Page 2-182)

TSR-M-069
Figure (Page 2-182)

TSR-M-070
Figure (Page 2-183)

TSR-M-071
Figure (Page 2-183)

TSR-M-072
Figure (Page 2-184)
Figure (Page 2-184)

TSR-M-073
Figure (Page 2-185)

TSR-M-075
Figure (Page 2-185)

TSR-M-076
Figure (Page 2-186)

TSR-M-077
Figure (Page 2-186)

TSR-M-078
Figure (Page 2-187)

TSR-M-079
Figure (Page 2-187)

TSR-M-080
Figure (Page 2-188)

TSR-M-082
Figure (Page 2-188)

TSR-M-083
Figure (Page 2-189)

TSR-M-084
Figure (Page 2-189)
Figure (Page 2-190)
Figure (Page 2-190)
Figure (Page 2-191)

TSR-M-085
Figure (Page 2-191)

TSR-M-086
Figure (Page 2-192)

TSR-M-087
Figure (Page 2-192)

Figure (Page 2-193)

TSR-M-088
Figure (Page 2-193)

TSR-M-090
Figure (Page 2-194)

TSR-M-091
Figure (Page 2-194)
Figure (Page 2-195)
Figure (Page 2-195)
Figure (Page 2-196)
Figure (Page 2-196)
Figure (Page 2-197)
Figure (Page 2-197)

TSR-M-092
Figure (Page 2-198)
Figure (Page 2-198)

TSR-M-093
Figure (Page 2-199)
Figure (Page 2-199)
Figure (Page 2-200)
Figure (Page 2-200)
Figure (Page 2-201)
Figure (Page 2-201)
Figure (Page 2-202)
Figure (Page 2-202)
Figure (Page 2-203)
Figure (Page 2-203)
Figure (Page 2-204)
Figure (Page 2-204)
Figure (Page 2-205)
Figure (Page 2-205)

TSR-M-094
Figure (Page 2-206)

TSR-M-095
Figure (Page 2-206)

TSR-M-096
Figure (Page 2-207)
Figure (Page 2-207)

TSR-M-097
Figure (Page 2-208)

TSR-M-098
Figure (Page 2-208)
Figure (Page 2-209)

TSR-M-099
Figure (Page 2-209)
Figure (Page 2-210)

TSR-M-100
Figure (Page 2-210)

TSR-M-101
Figure (Page 2-211)

TSR-M-102
Figure (Page 2-211)
Figure (Page 2-212)
Figure (Page 2-212)

TSR-M-103
Figure (Page 2-213)

TSR-M-104
Figure (Page 2-213)

TSR-M-105
Figure (Page 2-214)

TSR-M-106
Figure (Page 2-214)

TSR-M-107
Figure (Page 2-215)

TSR-M-108
Figure (Page 2-215)

TSR-M-109
Figure (Page 2-216)

TSR-M-110
Figure (Page 2-216)

TSR-M-111
Figure (Page 2-217)

TSR-M-112
Figure (Page 2-217)
Figure (Page 2-218)
Figure (Page 2-218)
Figure (Page 2-219)
Figure (Page 2-219)
Figure (Page 2-220)
Figure (Page 2-220)

TSR-M-127
Figure (Page 2-239)

TSR-M-128
Figure (Page 2-240)

TSR-M-129
Figure (Page 2-240)
Figure (Page 2-241)
Figure (Page 2-241)
Figure (Page 2-242)
Figure (Page 2-242)
Figure (Page 2-243)
Figure (Page 2-243)
Figure (Page 2-244)
Figure (Page 2-244)
Figure (Page 2-245)
Figure (Page 2-245)
Figure (Page 2-246)
Figure (Page 2-246)
Figure (Page 2-247)
Figure (Page 2-247)
Figure (Page 2-248)
Figure (Page 2-248)
Figure (Page 2-249)
Figure (Page 2-249)
Figure (Page 2-250)
Figure (Page 2-250)
Figure (Page 2-251)
Figure (Page 2-251)
Figure (Page 2-252)

TSR-M-131
Figure (Page 2-252)

TSR-M-132
Figure (Page 2-253)

TSR-M-133
Figure (Page 2-253)
Figure (Page 2-254)
Figure (Page 2-254)

TSR-M-134
Figure (Page 2-255)
Figure (Page 2-255)
Figure (Page 2-256)

TSR-M-135
Figure (Page 2-256)

TSR-M-136
Figure (Page 2-257)
Figure (Page 2-257)

TSR-M-137
Figure (Page 2-258)
Figure (Page 2-258)

TSR-M-138
Figure (Page 2-259)
Figure (Page 2-259)
Figure (Page 2-260)

TSR-M-139
Figure (Page 2-260)
Figure (Page 2-261)
Figure (Page 2-261)

TSR-M-140
Figure (Page 2-262)
Figure (Page 2-262)

TSR-M-141
Figure (Page 2-263)

TSR-M-142
Figure (Page 2-263)
Figure (Page 2-264)
Figure (Page 2-264)
Figure (Page 2-265)
Figure (Page 2-265)
Figure (Page 2-266)
Figure (Page 2-266)
Figure (Page 2-267)
Figure (Page 2-267)
Figure (Page 2-268)

TSR-M-143
Figure (Page 2-268)

TSR-M-144
Figure (Page 2-269)
Figure (Page 2-269)

TSR-M-145
Figure (Page 2-270)

TSR-M-147
Figure (Page 2-270)

TSR-M-148
Figure (Page 2-271)
Figure (Page 2-271)

TSR-M-149

TSR-M-167
Figure (Page 2-284)
Figure (Page 2-285)
Figure (Page 2-285)
Figure (Page 2-286)
Figure (Page 2-286)
Figure (Page 2-287)
Figure (Page 2-287)
Figure (Page 2-288)
Figure (Page 2-288)
Figure (Page 2-289)
Figure (Page 2-289)
Figure (Page 2-290)

TSR-M-168
Figure (Page 2-290)
Figure (Page 2-291)

TSR-M-169
Figure (Page 2-291)

TSR-M-170
Figure (Page 2-292)
Figure (Page 2-292)
Figure (Page 2-293)
Figure (Page 2-293)
Figure (Page 2-294)
Figure (Page 2-294)

TSR-M-171
Figure (Page 2-295)

TSR-M-172
Figure (Page 2-295)
Figure (Page 2-296)
Figure (Page 2-296)
Figure (Page 2-297)
Figure (Page 2-297)
Figure (Page 2-298)
Figure (Page 2-298)
Figure (Page 2-299)

TSR-M-175
Figure (Page 2-299)
Figure (Page 2-300)
Figure (Page 2-300)

TSR-M-176
Figure (Page 2-301)

TSR-M-177
Figure (Page 2-301)

TSR-M-178
Figure (Page 2-302)

TSR-M-179
Figure (Page 2-302)

TSR-M-180
Figure (Page 2-303)

TSR-M-181
Figure (Page 2-303)

TSR-M-182
Figure (Page 2-304)

TSR-M-183
Figure (Page 2-304)
Figure (Page 2-305)

TSR-M-185
Figure (Page 2-305)
Figure (Page 2-306)

TSR-M-186
Figure (Page 2-306)
Figure (Page 2-307)

TSR-M-187
Figure (Page 2-307)
Figure (Page 2-308)
Figure (Page 2-308)

TSR-M-189
Figure (Page 2-309)

TSR-P-001
Figure (Page 2-309)

TSR-P-002
Figure (Page 2-310)

TSR-P-003
Figure (Page 2-310)

TSR-P-004
Figure (Page 2-311)

TSR-P-005
Figure (Page 2-311)

TSR-P-006
Figure (Page 2-312)

TSR-P-007
Figure (Page 2-312)

TSR-P-008
Figure (Page 2-313)

TSR-P-009
Figure (Page 2-313)
Figure (Page 2-314)

TSR-P-010
Figure (Page 2-314)
Figure (Page 2-315)

TSR-P-011
Figure (Page 2-315)
Figure (Page 2-316)

TSR-P-012
Figure (Page 2-316)

TSR-P-013
Figure (Page 2-317)

TSR-P-015
Figure (Page 2-317)

TSR-P-016
Figure (Page 2-318)

TSR-P-017
Figure (Page 2-318)

TSR-P-018
Figure (Page 2-319)

TSR-P-019
Figure (Page 2-319)

TSR-P-020
Figure (Page 2-320)

TSR-P-021
Figure (Page 2-320)

TSR-P-022
Figure (Page 2-321)

TSR-P-023
Figure (Page 2-321)

TSR-P-024
Figure (Page 2-322)

TSR-P-025
Figure (Page 2-322)

TSR-P-026
Figure (Page 2-323)

TSR-P-027
Figure (Page 2-323)

TSR-P-028
Figure (Page 2-324)
Figure (Page 2-324)

TSR-P-029
Figure (Page 2-325)

TSR-P-030
Figure (Page 2-325)

TSR-P-031
Figure (Page 2-326)

TSR-P-032
Figure (Page 2-326)

TSR-P-033
Figure (Page 2-327)

TSR-P-034
Figure (Page 2-327)

TSR-P-035
Figure (Page 2-328)

TSR-P-036
Figure (Page 2-328)

TSR-P-037
Figure (Page 2-329)

TSR-P-038
Figure (Page 2-329)

TSR-P-039
Figure (Page 2-330)

TSR-P-040
Figure (Page 2-330)

TSR-P-041
Figure (Page 2-331)

TSR-P-042
Figure (Page 2-331)

TSR-P-043
Figure (Page 2-332)

TSR-P-044
Figure (Page 2-332)

TSR-P-045
Figure (Page 2-333)

TSR-P-046
Figure (Page 2-333)

TSR-P-047
Figure (Page 2-334)

TSR-P-048
Figure (Page 2-334)

TSR-P-050
Figure (Page 2-335)

TSR-P-052
Figure (Page 2-335)

TSR-P-053
Figure (Page 2-336)

TSR-P-054
Figure (Page 2-336)

TSR-P-055
Figure (Page 2-337)
Figure (Page 2-337)

Figure (Page 2-338)

TSR-P-056
Figure (Page 2-338)

TSR-P-057
Figure (Page 2-339)

TSR-P-058
Figure (Page 2-339)

TSR-P-059
Figure (Page 2-340)

TSR-P-060
Figure (Page 2-340)

TSR-P-061
Figure (Page 2-341)

TSR-P-062
Figure (Page 2-341)

TSR-P-063
Figure (Page 2-342)

TSR-P-064
Figure (Page 2-342)

TSR-P-065
Figure (Page 2-343)

TSR-P-066
Figure (Page 2-343)

TSR-P-067
Figure (Page 2-344)

TSR-P-068
Figure (Page 2-344)

TSR-P-069
Figure (Page 2-345)

TSR-P-070
Figure (Page 2-345)

TSR-P-071

Figure (Page 2-346)

TSR-P-072
Figure (Page 2-346)

TSR-P-073
Figure (Page 2-347)

TSR-P-074
Figure (Page 2-347)

TSR-P-075
Figure (Page 2-348)

TSR-P-076
Figure (Page 2-348)

TSR-P-077
Figure (Page 2-349)

TSR-P-078
Figure (Page 2-349)
Figure (Page 2-350)

TSR-P-079
Figure (Page 2-350)

TSR-P-080
Figure (Page 2-351)
Figure (Page 2-351)
Figure (Page 2-352)

TSR-P-081
Figure (Page 2-352)
Figure (Page 2-353)

TSR-P-082
Figure (Page 2-353)

TSR-P-083
Figure (Page 2-354)

TSR-P-084
Figure (Page 2-354)
Figure (Page 2-355)

TSR-P-085
Figure (Page 2-355)

TSR-NE-002
Figure (Page 2-370)

TSR-NF-001
Figure (Page 2-371)

TSR-NM-001
Figure (Page 2-371)

TSR-NM-002
Figure (Page 2-372)

TSR-NM-003
Figure (Page 2-372)

TSR-NM-004
Figure (Page 2-373)

TSR-NM-005
Figure (Page 2-373)

TSR-NM-006
Figure (Page 2-374)

TSR-NM-007
Figure (Page 2-374)

TSR-NM-008
Figure (Page 2-375)

TSR-NM-009
Figure (Page 2-375)
Figure (Page 2-376)
Figure (Page 2-376)

TSR-NM-010
Figure (Page 2-377)

TSR-NM-011
Figure (Page 2-377)

TSR-NM-012
Figure (Page 2-378)
Figure (Page 2-378)
Figure (Page 2-379)
Figure (Page 2-379)
Figure (Page 2-380)

TSR-NM-013

Figure (Page 2-380)
Figure (Page 2-381)
Figure (Page 2-381)

TSR-NM-014
Figure (Page 2-382)
Figure (Page 2-382)
Figure (Page 2-383)
Figure (Page 2-383)

TSR-NM-015
Figure (Page 2-384)

TSR-NM-016
Figure (Page 2-384)

TSR-NM-017
Figure (Page 2-385)

TSR-NM-018
Figure (Page 2-385)

TSR-NM-019
Figure (Page 2-386)

TSR-NM-020
Figure (Page 2-386)

TSR-NM-021
Figure (Page 2-387)

TSR-NM-022
Figure (Page 2-387)
Figure (Page 2-388)

TSR-NM-023
Figure (Page 2-388)
Figure (Page 2-389)

TSR-NM-025
Figure (Page 2-389)
Figure (Page 2-390)
Figure (Page 2-390)

TSR-NM-026
Figure (Page 2-391)
Figure (Page 2-391)

TSR-NM-027
Figure (Page 2-392)
Figure (Page 2-392)

CHAPTER 3: COMMENT SUMMARIES AND RESPONSES

This chapter summarizes the comments the Department of Energy received on the Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling during public comment period, and provides responses to those comments. Identical or simil comments provided by more than one commentor were grouped together in one comment s and responded to. The responses indicate whether any changes were made to the PEIS rationale behind those decisions.

01 Land Resources

01.01 Commentors suggest that the Department of Energy (DOE) carefully consider all potential consequences of siting the proposed tritium facilities at the Pantex Plan (Pantex). Commentors express the opinion that Pantex is surrounded by some of the n richest agricultural resources and any accidental radioactive release or contaminat would seriously affect this vital national resource, as well as the surrounding population. In the commentors' view, the Programmatic Environmental Impact Statemen (PEIS) for Tritium Supply and Recycling should address this issue.

Response: The PEIS addresses the potential impacts of the proposed tritium supply a recycling facilities on the surrounding environment from facility accidents in sect 4.5.3.9. Additionally, appendix F, section F.3.4 provides information on secondary of accidents at Pantex. DOE is aware of the valuable agricultural resources surroun the Pantex facility. If the proposed tritium supply and recycling facility was site Pantex, appropriate safeguards would be taken to minimize the likelihood of an acci radioactive release, or contamination that could significantly degrade these resour such as described in section 3.4.2 and appendix section A.2.

01.02 The commentor notes that the area proposed for the proposed tritium supply an recycling facility at Pantex infringes on land that was leased from Texas Technolog University. The commentor believes that DOE should address this issue and any complications it may present in the PEIS.

Response: As discussed in section 4.5.2.1 of the PEIS, the proposed tritium supply recycling facility would be located in the interior industrial core at the Pantex s Three areas have been designated for future industrial sites within that core, and area designated as Area C on figure 4.5.2.1-3 currently encompasses DOE-leased land Texas Technological University. As can be seen from figure 4.5.2.1-3, there are two that would not affect leased land. Ultimate siting will be discussed in site-specif tiered National Environmental Policy Act (NEPA) documents. For the area in question boundaries can be rearranged to exclude any land DOE has leased from Texas Technolo University. Therefore, no complications concerning DOE-leased land and Texas Techno University are anticipated with siting the facility at Pantex.

01.03 The commentor notes that Pantex has less total acreage than the other propose sites. As a result, the commentor believes that siting the Accelerator Production o Tritium (APT) technology at that site could result in extensive and expensive reloc of existing facilities and an inadequate security "buffer" zone unless additional l obtained. The commentor suggests that DOE should address these issues and their pot impacts on properties adjacent to the site in the PEIS.

Response: Section 4.5.3.1 of the PEIS discusses environmental impacts associated wi

con- struction and operation of tritium supply and recycling facilities at Pantex. presented in table 4.5.3.1-1, siting the APT technology at Pantex would require 173 of land. Three areas (A, B, and C) have been designated for future industrial sites Pantex. The APT land requirement translates into 30, 23, and 19 percent of the avai land for areas A, B and C, respectively. Although Pantex has the smallest total acr all the candidate sites, it has sufficient land to accommodate any of the proposed supply technologies and recycling facilities.

01.04 The commentor expresses the opinion that the PEIS should include in its analy current and future value of the land surrounding Nevada Test Site (NTS) (the new fa could have an effect on its value).

Response: As discussed in section 4.3.3.1 of the PEIS, the construction and operati the proposed tritium supply site (TSS) facility would be consistent with the NTS Si Development Plan and have no impacts on prime farmland, grazing allotments, other agricultural activities, or other land uses on site. Offsite land will not be direc affected since no tritium facilities will be constructed there. The socioeconomic analysis presented in the PEIS assesses the potential impacts of the proposed triti supply alternatives on directly-affected sectors of the economy including labor sup demand, income, and public finance, as well as impacts on housing and transportatio analysis does not cover speculative issues such as the impacts to future property v and business location or expansion decisions. Potential changes to socioeconomics i region, which may indirectly affect land values, are discussed in section 4.3.3.8. example, the increase in population created by some of the alternatives could incre demand for housing.

01.05 The commentor asks whether land use assessments are being made on DOE-owned l such as those previously done for other interested landholders.

Response: As discussed in section 4.1.1 of the PEIS, changes in land use are expect occur at most, if not all, of the DOE candidate sites for tritium supply. The PEIS contains an analysis of the impacts the proposed tritium supply and recycling facil would have on the future use or development of land at each DOE site. The PEIS cons land use plans and policies, zoning regulations, specially protected lands, and exi land use. Changes in land use within existing DOE site boundaries and on lands adja or in the vicinity of DOE sites (i.e., non-DOE land) that may result from the propo alternatives are considered in the PEIS.

01.06 The commentor notes that in section 4.5.2.1 of the PEIS, area farmland is con by the Soil Conservation Service as "prime farmland when irrigated." The commentor suggests any "loss" of such potential prime farmland on Pantex to an industrial use be slight, relative to the expanse of cultivated and irrigated lands across the hig plains of Texas and the regional "Golden Spread." The commentor is of the opinion t such a loss could be balanced by application of blowdown cooling tower waters as irrigation to the immediate area.

Response: Sections 4.5.2.1 and 4.5.3.1 of the PEIS discussed environmental impacts use as a result of the proposed construction and operation of the tritium facility Pantex. Three areas have been designated within the existing industrial core of Pan accommodate the tritium supply and recycling facilities. Although classified as pri farmland, these areas are essentially removed from agricultural use by ongoing plan activities. There would be no loss of prime farmland within or outside of the Pante boundary.

As described in section 4.5.3.4 of the PEIS, there would be no discharge of cooling blowdown waters at Pantex. Any pretreated utility, process, and sanitary wastewater recycled for tritium supply water needs would be discharged to the playas in accord with the Pantex National Pollutant Discharge Elimination System (NPDES) permit. The wastewater discharges are not suitable for crop irrigation without advanced treatme processing.

01.07 The commentor notes that section 4.5.3.1 of the PEIS identifies the Bureau of Management Visual Resource Management (VRM) classification of Pantex as Class 4. Th commentor is of the opinion that the program would not downgrade that classificatio fact the commentor points out that the "most sensitive viewpoint" from the Texas Pl Trail, at the intersection of US 60 and Farm-to-Market Road 2373, designates the ex industrial structures at Pantex as a "point of interest." Therefore, the commentor believes that siting the tritium supply and recycling facility at Pantex would enha visual resource.

Response: As discussed in sections 4.5.2.1 and 4.5.3.1 of the PEIS, the tritium sup recycling facilities would be visible from the key viewpoint from any of the propos industrial areas at Pantex. The VRM classification would not change with the constr and operation of any of the technologies because existing views already include ind facilities.

01.08 The commentor states that the installation of transmission and distribution l does result in some land use and visual impacts. However, in the Pantex area, that flat plains, and along existing corridors, the commentor believes that incremental visual impacts would be slight. In addition, the commentor also believes that effec land resources during construction would be slight. The commentor also suggests tha effects on land resources during construction would be temporary, and effects on la such as grazing or farmlands, likely would be slight as well, not only because transmission structures occupy little land, but also because likely routes would be highway rights-of-way and/or existing power supply corridors.

Response: As discussed in sections 4.5.2.1 and 4.5.3.1, environmental impacts to la visual resources in the Pantex area are anticipated to be minimal. Any of the propo technologies for this site would be supported by a new electrical substation and additional electrical transmission lines. In order to minimize the potential impact natural resources, new transmission lines could be sited along existing rights-of-w addition, the presence of sensitive habitats (for example, wetland, prime farmland) be considered if the construction of new rights-of-way are needed.

01.09 The commentor references pages 3-23, 3-35, 3-38, and 3-60, noting that in the previous Environmental Impact Statement (EIS) for a New Production Reactor (April 1991), the land area required for each reactor concept (Heavy Water Reactor (HWR), Advanced Light Water Reactor (ALWR), Modular High Temperature Gas-Cooled Reactor (M varied by site, but was never less than 360 acres (for an HWR at Savannah River Sit (SRS)). The MHTGR had the largest requirement at only one site, and only during construction. The commentor points out that in this Draft PEIS, the land area requi are constant from site to site, and no extra land is needed during construction. Th commentor questions why the MHTGR now requires the most land, in spite of the fact only three modules are now needed compared with eight in 1991. Since none of the re concepts is modular, the commentor believes it is not logical that their land requi would decrease more than the MHTGR requirements. The commentor is of the opinion th either the MHTGR requirements are overestimated or the requirements of the other concepts are underestimated. For these reasons, the commentor feels that the land u impacts need to be reevaluated.

Response: Land use requirements for the MHTGR and other technologies are discussed sections 4.2 through 4.6 of the PEIS for each of the candidate sites. As discussed section 3.4.2.2, the MHTGR technology will require only three modules instead of si eight identified in the New Production Reactor EIS (April 1991) and disturb approximately 360 acres of land. Land requirements given in the New Production Reac document included acreage for reactor facilities and support facilities for tritium production, plutonium product, and spent fuel processing. In addition, the New Prod Reactors were site-specific designs incorporating infrastructure and environmental features of the candidate sites.

02 Site Infrastructure

02.01 Commentors express the opinion that the analysis of the site infrastructure i in the PEIS is unclear and vague, particularly with regard to electrical needs, and DOE needs to be more explicit and thorough in its analysis of the environmental imp and costs associated with either additional electrical consumption or a new power p The commentors believe that the PEIS should consider various energy sources (e.g., nuclear, coal, hydro) for additional power and that the choice could be based on th composition of the regional power pool. Commentors also state that DOE should clear indicate the quantity of additional water that will be needed for the additional electricity, the size (physical and electrical) of the additional power plant, and analysis of the impacts associated with buying electricity from power pools inside outside the area of each of the five proposed sites. In addition, one commentor sta that 6 years might be required to construct a 500 to 600 megawatts electric (MWe) coal-fueled steam electric plant rather than the 3 years estimated in section 4.8.

Another commentor notes that in volume I, page 4-3, column 2, paragraph 4, the PEIS states, "A detailed quantitative analysis based on the proportional contributions f each fuel source, would be conducted..." The commentor expresses the opinion that apportionment of power requirements on the basis of the current mix of fuel sources probably be inappropriate, especially for the APT which has large power requirement especially for the northwestern United States (e.g., at Idaho National Engineering Laboratory (INEL)), where current electric power use relies heavily on hydroelectri plants, and where significant expansion of hydroelectric generating capacity may be unlikely. The commentor also believes that the impact of a 500 to 600 MWe power requirement would be similar to that described in section 4.8.2 (pages 4-443 to 4-4 whether it is filled by a dedicated collocated plant or by increased generating cap elsewhere.

Response: The site infrastructure methodology found in section 4.1.2 of the Draft P explains in detail to what extent the electrical impacts are assessed. The discussi presented in the PEIS presents data and impacts in a programmatic context. For all technologies, the electrical requirements to support each technology is added to th projected site No Action requirement to determine the total site electrical require for each of these technologies. These requirements are listed in tables 4.2.3.2-1, 4.3.3.2-1, 4.4.3.2-1, 4.5.3.2-1, and 4.6.3.2-1 for INEL, NTS, Oak Ridge Reservation Pantex, and SRS, respectively. The peak power and the total annual energy required each of these technologies were then compared against the capacity margin and the t electricity production of the appropriate subregional power pool. These comparisons presented in tables 4.2.3.2-2, 4.3.3.2-2, 4.4.3.2-2, 4.5.3.2-2, and 4.6.3.2-2 for I NTS, ORR, Pantex, and SRS, respectively. In all cases, it appears that the subregio adequately support all of the technologies. However, as a bounding case for the APT option, the construction and operation of a dedicated natural gas fuel power plant site has been analyzed. Cost is not addressed in this PEIS but the cost studies bei prepared for the decision maker include the cost of buying electricity and the inco selling it, as appropriate. The cost studies are included in the Technical Referenc Report available in DOE reading rooms.

The detailed quantitative analysis referred to in the comment would not necessarily that the current mix of fuel sources is expected to equate to the future mix. The usefulness of site-specific tiered NEPA documents is that they are more able to foc the unique power characteristics of a chosen site (and its respective utility and p pool) and determine whether or not a proposed impact analysis methodology is approp for further consideration. The electrical contributions from the ALWR and the MHTGR taken into account in the environmental analysis since the designs of these reactor the operating requirements used in the PEIS are based on the fact that they generat electricity. The economic benefit of this electricity production is included in the analysis presented in the Technical Reference Report available in DOE reading rooms

02.02 Commentors express the opinion that DOE should consider the possibility of us alternative energy sources such as wind or solar energy to meet additional electric

requirements for the various technologies. In addition, one commentor believes that possibility should be addressed in the PEIS. The commentors state that solar-genera electricity from a proposed central receiving and photovoltaic facility could be us NTS. This could be handled by a private company, according to the commentors.

Response: The possibility of utilizing solar energy to supply additional electrical for the various technologies will be evaluated at NTS where a solar power demonstra project is scheduled for implementation. The potential contribution of electric sup from the central receiving and photovoltaic facility at NTS proposed by the Corpora for Solar Technology and Alternative Resources has been included in the Final PEIS analysis for NTS. Descriptions of the facility, the proposed construction and opera schedule, power output, and the contribution to the NTS energy system are discussed section 4.3.2.2.

02.03 Commentors state that the technology options which are capable of producing electricity result in avoided environmental impacts because they would displace exi generating capacity and/or new capacity, and that this should be discussed in the P One commentor also notes that the PEIS discusses at length the adverse impacts of transmission lines but provides no discussion of the avoided impacts that are reali not having to build other generating capacity to supply the needs of the surroundin service area.

Response: The PEIS does recognize the fact that the ALWR and MHTGR technologies can produce electricity. The benefit of selling this electricity is accounted for in th analysis included in the Technical Reference Report available in DOE reading rooms. Section 4.8.1 of the PEIS discusses the potential of the ALWR and MHTGR reactor technologies to produce power by a power conversion facility. This section also describes the potential for impacts associated with offsite distribution of that po Incident to producing the tritium requirements, the ALWR and MHTGR technologies wou generate significant quantities of electricity (approximately 600 MWe, 1,300 MWe, a MWe for the Small ALWR, Large ALWR, and three-module MHTGR respectively). Electrici produced from any of these reactors would likely be sold in accordance with Section the Atomic Energy Act, and DOE has incorporated the revenues from such electricity into the cost estimates for these reactors. The PEIS also addresses the potential environmental impacts of generating this electricity. In addition to this cost bene the benefit of not building future electrical production facilities could be realiz These so-called "avoided environmental impacts" are acknowledged for both the ALWR MHTGR, and are discussed below.

Primarily as a result of the Energy Policy Act of 1992, the electric power industry undergoing significant changes, most notably related to the transmission of electri power. It is expected that electric power will be more freely "wheeled" from one po pool to other power pools, essentially nationalizing the transmission of electric p Transmission of electric power will be more efficient because there will be fewer b to the use of available and future electrical generating capacity. Thus, the demand electricity in one part of the country could be met by an electrical generating fac operating in a different part of the country.

A tritium production facility that also produces electric power would provide an additional 400MWe to 1,300 MWe of electric power to supply future electrical demand could, thus, obviate the need to build some electrical generating facility in the f This means that the potential environmental impacts of this additional facility cou indeed be avoided. However, given the situation described above regarding the natio wheeling of electric power, it would be speculative to say where the environmental impacts of a 400 MWe to 1,300 MWe would be avoided, or what type of electrical gene facility (e.g., coal, gas, nuclear, etc.) would not have to be built. About all tha be said with any certainty is that the environmental impacts of such a facility cou avoided. Nonetheless, this PEIS provides an environmental impact assessment of buil 400MWe to 1,300 MWe reactors at various sites around the country, and also assesses environmental impact of constructing and operating a dedicated 550 MWe gas-powered facility at these same sites. These general types of impacts for 400 MWe to 1,300 M could be avoided because of the ALWR or MHTGR.

02.04 The commentor states that the analysis of regional power pool capacities and in the PEIS for Tritium Supply and Recycling is incorrect. The excess capacity for regional power pools is not extra electricity, but electricity needed by these powe pools. The commentor is of the opinion that the PEIS projections for future growth power pool regions may be inaccurate and this may force utilities to build new faci if the APT technology is selected. In addition, the commentor also notes that the P also incorrectly identifies the regional electrical power pool from which Pantex, t Southwestern Public Service Company, draws service. Southwestern Public Service is connected to the Southwest Power Pool, and has additional access to the Western Sys Coordinating Council and the Electric Reliability Council of Texas (refer to sectio 4.5.2.2, 4.5.3.2, and 4.8.1, and table 4.5.2.2-2). The commentor suggests that DOE want to review tables 4.5.2.2-2 and 4.5.3.2-2. As a result of this mistake, the com believes that the percentages shown in the public meetings as "percent power pool c margin" may be incorrect. Another commentor states that the future need for power i southeastern United States should be assessed as part of the EIS. Commentors furthe suggest that the document should address how the APT may affect reserve electrical capacity within the proposed power pools in general and should fully evaluate the environmental effects and electricity-rate-based real costs of the additional elect One commentor believes that the risk analysis needs to take into account the additi risk if a power plant is needed to produce the additional power required for the AP

Response: The PEIS does not equate generating capacity reserve margin with excess electricity availability. Capacity margin is defined by the North American Electric Reliability Council as the amount of generating capacity available to provide for scheduled maintenance, emergency outages, system operating requirements, and unfore electrical demand. The PEIS recognizes that the reserve margin is an amount of elec that is ineligible for use by all but the aforementioned activities. This is eviden the statement in section 4.5.3.2, site infrastructure, that additional energy and p required by the tritium supply and recycling alternatives would be accommodated wit approximately 9 miles of transmission lines and a new electrical substation. This s that the utility, and ultimately the subregional and regional power pools, could be expected to provide all of the equipment necessary to transmit the additional power does not imply that the additional power is to be supplied out of the reserve margi Rather, the statement that the tritium supply and recycling alternatives would requ between 0.47 and 4.28 percent of the reserve margin is an indication of what the subregional power pool would suffer in terms of loss of reserve margin if implement of the tritium supply and recycling alternatives were not accompanied by new power generation, power imports, or demand side management. The PEIS defers to the decisi the respective utility and power pool as to exactly how this extra power would be supplied.

The PEIS projections are only as accurate as the North American Electric Reliabilit Council projections. In an effort to limit errors in projections, North American Electric Reliability Council-projected data for 2002 was used as the estimate for 2 This was done because the PEIS does not purport to assess electrical impacts for 20 further manipulating data that have already been estimated for 2002. The power pool analysis for the Pantex site has been corrected in the Final PEIS to reflect the We Central Subregion of the Southwest Power Pool as the primary provider of electricit the site. This PEIS provides an indication of what the particular power pool would in terms of loss of reserve margin if tritium supply and recycling alternatives requirements were not accompanied by new electrical generation.

02.05 The commentor is of the opinion that the PEIS should include a more detailed analysis of the proposed transmission lines for the tritium facility. The commentor further suggests that the analysis should include the proposed route of the lines, they will be underground, what the costs will be, and any potential impacts to huma natural resources in the area.

Response: The location of tritium facilities on any of the five potential sites is representative and does not lend itself to the detailed analysis suggested in the comment. Based on the representative site, the electrical utility requirements, including amounts of new transmission lines, were assessed. Following the Record of

Decision (ROD) on this PEIS, a site-specific tiered NEPA analysis could be performe which a specific location of the facility on the chosen site would be evaluated. Th would enable a more detailed analysis of the proposed transmission lines.

02.06 The commentor states that the electrical power loads would range from 62 MWe MWe. The commentor states that the power requirements, depending on the technology, require additional transmission lines and additional supply. The commentor points o that the Nevada Power Company is assumed as the supplier. The commentor suggests th proposal should consider Valley Electric Power Company as a primary source for NTS well. The commentor feels the proposed Solar Enterprise Zone may offset environment impacts associated with power generation by providing a "cleaner" source of electri for some of the additional load requirements.

Response: The California and Southern Nevada Power Area Subregion is the assumed so any additional power that the Nevada Power Company would obtain. Any more detailed analysis of procurement from other local power companies would be analyzed in the site-specific tiered NEPA documents. The possible impact of the proposed Solar Enterprize Zone on power requirements at NTS has been added in the Final PEIS.

02.07 The commentor notes that the PEIS does not propose to use the existing natura cooling tower constructed for the K-Reactor at SRS. The commentor believes that the should consider the use of this facility, if technically feasible, because of pollu prevention considerations. Under the mitigation section (page 4-432), the commentor out that the PEIS states that the existing treatment facilities could be used. The commentor expresses the opinion that these facilities (for example, liquid low-leve (LLW) waste processing facilities, the saltstone process, and the proposed Consolid Incineration Facility) should be maintained and upgraded as a preferable alternativ constructing new facilities.

Response: DOE acknowledges that the K-Reactor cooling tower exists and that there i potential for its use and it may represent a cost savings at that site. This inform will be factored into the decision to select the tritium supply and recycling facil location. In addition, the use of other existing facilities such as waste managemen facilities mentioned in the comment would also be considered for use or possible up in site-specific tiered NEPA analysis as an alternative to constructing new facilit to do the same job. The use of the natural draft cooling tower built for the K-Reac will be considered in a site-specific tiered NEPA document if SRS is selected as th for a new tritium supply reactor.

02.08 One commentor suggests obtaining cost estimates from commercial electrical co and finding out if the power pools can support the APT electrical requirement. Anot commentor also urges DOE to consider what would happen if the electricity for the A cut off (that is, how reliable are the commercial electrical companies).

Response: Cost is not addressed in this PEIS but the cost estimates being prepared decision maker include the cost of buying electricity and the income from selling i appropriate. Reliability concerns for all of the technologies are being addressed i separate studies (feasibility reports) for the decision maker to consider. The cost technical feasibility studies are included in the Technical Reference Report availa DOE reading rooms.

02.09 Commentors are of the opinion that the PEIS should include the fact that some reactor technologies could produce electricity (or steam for conversion to electric and, as a result, would not require a new electricity source and might even be able contribute electricity to the regional power pool. The commentors further suggest t PEIS should consider this a potential benefit for selecting a reactor technology an should incorporate this into their final selection of a technology. One commentor s that the evaluation in section 4.8.1 (page 4-442) of the sale of steam from tritium technologies is grossly unbalanced. According to the commentor, the PEIS states tha impacts of the sale are "too speculative" to be addressed at this time. Concerns re

the separation of military and commercial nuclear technology are also raised by the mentor. In fact, the commentor states that the N-Reactor at Hanford sold electricit the local utility. Furthermore, the commentor notes that this issue was addressed d the New Production Reactor Program. Initial discussions with the utility companies service areas of the candidate New Production Reactor sites were quite positive, ac to the commentor. The commentor also believes that any precedents established at th should be cited as a basis under which the sale of electricity from the tritium sup reactors could proceed. The commentor is of the opinion that there is sufficient ba from the New Production Reactor Program for assuming that electricity sales would t place. The commentor believes that the positive environmental impacts that result n be considered.

Response: It is reasonably foreseeable that electricity generated by the ALWR or MH incident to the production of tritium would be sold, as allowed by Section 44 of th Atomic Energy Act. Thus, the PEIS includes an analysis of these potential impacts. 4.8.1 discusses the prospect of capturing the useful by-products (that is, steam an electricity) of operating either the ALWR or MHTGR to produce tritium. In both reac steam is produced. However, at the end of the first paragraph in section 4.8.1, the question of what to do with this steam (whether it is sold or used to generate elec which is in turn sold) is clearly deferred to a separate site-specific tiered NEPA document. The sale of electricity is similar to the sale of steam in that both transactions require an in-depth analysis of site-specific utility and power pool electricity supply and demand projections. Again, this is more appropriately left t separate site-specific tiered NEPA document mentioned above.

02.10 The commentor states that DOE should not locate a new tritium facility at NTS because there is no experience in this area for the construction of a new nuclear r facility.

Response: Technical feasibility and the schedule feasibility reports for completing various tritium supply technologies at each candidate site have been made available the decision maker and are reported in the Technical Reference Report available in reading rooms.

02.11 The commentor references the following statement in volume II, page I-10, APT siting the APT at INEL "would utilize 4.15 percent of the regional power pool capac margin." With the possibility of decreased generation by Bonneville Power Administr to help salmon recovery along the Columbia River, the commentor believes this large could become very problematic and needs significant discussion.

Response: In the event of decreased generation by the Bonneville Power Administrati Northwest Regional Power Pool Subregion in which INEL is located would adjust its resources to compensate for this loss of generating capability independent of the requirements generated by the APT at INEL. In any event, the APT electrical require could be supplied by constructing a dedicated natural-gas fueled power plant at INE the power was not available commercially. This option has been added to the Final P is evaluated on a site-specific basis.

03 Air Quality and Acoustics

03.01 Commentors express the opinion that there are some inconsistencies, flaws, an omissions in DOE's analysis of the potential impacts to air resources resulting fro proposed action. In general, one commentor believes that DOE should be more concern about increased pollution levels and the effects these could have on visibility and quality. Another commentor suggests that the analysis should include the increased pollutant levels resulting from additional power plants that may be needed or incre levels from existing plants. In addition, another commentor suggests that the emiss analysis in the PEIS for Tritium Supply and Recycling should clearly state where th

for each technology originated. Finally, if a nuclear facility is selected, one com believes that DOE should limit air exposures to more stringent standards than those currently established. The commentor believes that the air exposures should not exc 1/10 of the existing standards. In the commentor's opinion, this would provide some for error and avoid future shutdowns in the event these standards are not achieved.

Response: The Final PEIS has been revised to consider the impact of an additional p plant which could be used to support the APT alternative. Air quality impacts for a alternatives at each candidate site are conservatively estimated and discussed in s 4.2.3.3, 4.3.3.3, 4.4.3.3, 4.5.3.3, and 4.6.3.3 of the Final PEIS. DOE believes tha current air quality standards which were used in assessing impacts and the modeling approach used are sufficiently conservative to assure that the public and environme adequately protected. Sources of input data for the air quality analysis are refere for each of the alternatives throughout the document and technical support data are presented in appendixB. Source documents are provided in DOE reading rooms. The air emission standards for criteria pollutants, hazardous/toxic, and radiological emiss are set by the Environmental Protection Agency (EPA) and/or the states to protect w and the public and already include an additional margin of safety. DOE intends to m these standards and, for most categories, operations would result in small increase the site emissions. The resulting total emissions would still fall below regulated standards.

03.02 The commentor references section 4.1.3, air quality and acoustics, (volume I, 4-5, column 1, paragraph 1) and appendix B, methodology and models, (volume II, pag column 1, paragraph 1). The commentor is of the opinion that the assumptions descri modeling the effect of toxic/hazardous pollutant emissions are not necessarily conservative, especially the artificial placement of sources at the center of a lar site, such as the INEL.

Response: The sources are centrally located within the complex of facilities at the proposed TSS, not within the entire site. The phrase "within the complex of facilit has been inserted after "centrally located" in the two locations noted above for clarification. The emissions have been "double counted" to ensure that the baseline conservative. The proposed TSS emissions are accurate as described above. There wil always be limitations associated with modeling.

03.03 The commentor questions why no mention was made of the proposed action's impa global climate change. According to the commentor, the Draft PEIS indicated that if electrical power for the New Production Reactor was fossil fuel generated, then the combustion could produce "...about 0.01 percent of the total United States emission the gas (carbon dioxide) with potential significant cumulative effects on global wa The commentor recommends the addition of a clarifying statement concerning potentia project impacts on global climate change.

Response: The emissions of greenhouse gases for the reactor alternatives (HWR, ALWR MHTGR) range from approximately 64 tons per year for the light water reactor at Pan approximately 230 tons per year for the MHTGR at NTS, ORR, or Pantex. Compared to t estimated 5 billion tons per year of carbon dioxide released in the United States e year, these emissions represent less than one-hundredth of a percent increase.

The APT emissions of greenhouse gases is approximately 13 tons per year without an associated electric power facility. Emission of greenhouse gases from a 600 MWe nat gas-fired turbine facility would generate approximately 1 million tons per year of greenhouse gases. These combined emissions would be greater than those for the reac alternatives, but would still be less than two one-hundredths of a percent of the c dioxide released in the United States each year.

03.04 Referring to sections 4.5.2.3 and 4.5.3.3, air quality and acoustics, several commentors note potential advantages in the area of air emissions at Pantex. The commentors see no emission rates in appendix table B.1.4-4 that would trigger Preve of Significant Deterioration review or permitting for any of the technologies at Pa

although section 4.5.3.3 states that Prevention of Significant Deterioration permit be required. The commentors find no evidence that Prevention of Significant Deterio permits could be triggered by the Pantex tritium program and strongly encourage DOE revisit this section of the EIS. The commentors also note that Pantex is in the air quality attainment zone for automobile and industrial pollution, that this is not t of other candidate sites, and that there are no Prevention of Significant Deteriora Class I areas in the vicinity.

Additionally, one commentor points out that the estimated impacts of toxic hazardou pollutants from any of the tritium supply technologies and recycling facilities at clearly would comply with applicable air quality regulations and standards, which p human health and welfare and the environment with an ample margin of safety. The co also notes that the Pantex area, by wide margins, is in compliance with all air qua standards - with the one exception of the 30 minute standard for hydrogen chloride (exceeded occasionally at the Burning Ground, where a high explosives treatment/dis facility is expected to reduce the hydrogen chloride emissions so that even the sho standard is not exceeded). The commentor states that there appears to be nothing in Tritium Supply and Recycling Program that would degrade the air quality at Pantex. Equally, nothing in the program is anticipated to degrade the area acoustically, according to the commentor.

Response: The rationale for the text statement "that Prevention of Significant Deterioration permits may be required" at Pantex is as follows: As shown in table 4.5.3.3-1, the 2010 No Action Pantex emissions for nitrogen dioxide plus incrementa nitrogen dioxide emissions from the MHTGR facility would exceed the Prevention of Significant Deterioration applicable 100-ton-per-year emission criterion. Pantex wo therefore be designated as a major source. Also, the MHTGR facility would result in significant net increase in emissions of nitrogen dioxide (greater than 40 tons per at Pantex. Therefore, the increase of nitrogen dioxide would subject it to a Preven Significant Deterioration review.

03.05 The commentor notes that the proximity of the Great Smoky National Park, a Prevention of Significant Deterioration Class I area, to ORR may require significan more stringent mitigation for air resource impacts. The commentor recommends that t noted in the impacts section of the PEIS.

Response: The following sentence has been inserted in sections 4.2.3.3 (INEL) and 4 (ORR) of the Final PEIS: "The proximity of Prevention of Significant Deterioration I areas may require significantly more stringent mitigation for air resource impact

03.06 The commentor states that on page B-33, the value of 4.60 under APT should pr be under ALWR as it was in the previous four tables.

Response: The commentor is correct and the appropriate changes have been made in th PEIS.

03.07 Regarding section 4.4.3.3, the commentor suggests providing a cost structure possibility of lowering the airborne emissions for each tritium supply technology.

Response: A cost structure to lower the airborne emissions for each tritium supply technology is beyond the scope of the PEIS, although no exceedances of regulatory l were identified. Additional detail will be provided as appropriate in site-specific tiered NEPA documents.

03.08 The commentor states that it is difficult to locate references in the PEIS. F example, on page 4- 275, "EPA 1974a" is not even listed in the reference section (p 6-10). The commentor also notes that on page 4-273 table 4.5.2.3-1 has no reference

Response: EPA 1974a is listed in the February 1995 draft as follows: "EPA 1974a Environmental Protection Agency (EPA), Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, (550/9-74-004), Office of Noise Abatement and Control, Arlington, VA, March 1974." references for table 4.5.2.3-1 are listed under "Source" at the bottom of the table source documents are listed in the references.

03.09 The commentor claims that NTS does not and did not perform any modeling for c and noncriteria pollutants. The commentor wants DOE to explain the origins of the results on page 4-108.

Response: The modeling for NTS was performed in accordance with the methodology pre in section 4.1.3, air quality and acoustics, and further described in appendix B.

04 Water Resources

04.01 Surface Water

04.01.01 The commentor is of the opinion that DOE should be concerned about surface discharge from the APT once-through cooling system. An analysis of this discharge s be included in the PEIS, according to the commentor.

Response: As discussed in section 4.3.3.4 of the PEIS, cooling system blowdown and sanitary waste-water from the APT would be treated and recycled for reuse as coolin system makeup. The treated effluent from the process treatment would be discharged evaporation ponds. Treated effluent would be monitored to comply with the NPDES per other discharge requirements. There would be no discharges to surface water from op of the tritium supply technologies at NTS.

04.01.02 The commentor expresses several concerns about surface water at ORR. Regar chapter 4, table 4.4.2.4-1, page 4-185, the commentor requests that DOE explain how "Average Water Body Concentration" values were derived. In the paragraph "surface w rights and permits" on page 4- 186, the commentor believes that DOE should include following: "Dependent on intake location, construction may require a 26A permit fro Tennessee Valley Authority, review by the Watts Bar Inter-Agency Working Group, Sta Aquatic Resources Alteration Permit, or a Corps of Engineers 404 permit with State certification."

Response: Regarding table 4.4.2.4.-1, the average water body concentration values w derived from monitoring data provided by ORR. The site average water body concentra is derived by taking an average of the samples collected throughout the year (month quarterly), and taking an average of the results of the analysis. The text in secti 4.4.2.4 of the Final PEIS under surface water rights and permits has been changed t incorporate the commentors suggested revision: "Dependent on intake location, const may require a 26A permit from the Tennessee Valley Authority, review by the Watts B Inter-Agency Working Group, State Aquatic Resources Alteration Permit, or a Corps o Engineers 404 Permit with State 401 certification."

04.01.03 The commentor states that in the PEIS Los Alamos National Laboratory is de as infeasible and impractical as an alternative site for APT-generated tritium beca cooling water requirements. However, the commentor notes that there are similar wat limitations in southeastern Idaho. At a minimum, the commentor believes that the PE

should acknowledge that surface water in southeastern Idaho is the subject of ongoi court adjudication. The commentor notes that the outcome of this process cannot be predicted at this point, but ultimately it could affect INEL's water rights.

Response: The text has been modified in section 4.2.2.4 of the Final PEIS under sur water rights and permits indicating that surface water in southeastern Idaho is the subject of ongoing court adjudication.

04.01.04 Commentors note that DOE is currently involved with remediation of East Fo Poplar Creek (near ORR) under the Comprehensive Environmental Response, Compensatio Liability Act (CERCLA) because the creek was contaminated by past releases from the plant. Significant cleanup activities are required onsite and offsite. The commento suggest that any activities (e.g., cooling tower blowdown) involved with tritium production that include discharges to the creek causing scouring, erosion, and floo may be unacceptable and contrary to the goals of the remedial activities.

Response: The following text has been added in section 4.4.3.4 of the Final PEIS un surface water and groundwater "As discussed in section 4.4.2.4, DOE is currently in with remediation of East Fork Poplar Creek under CERCLA. Any discharges, including cooling tower blowdown, involved with tritium production that may potentially impac Fork Poplar Creek would require engineering design mitigation measures to avoid interference with the goals of the remediation effort."

04.02 Groundwater

04.02.01 Commentors express the opinion that the water resources analysis in the PE lacks consideration of some reasonable and superior alternatives, and unfairly favo other sites over Pantex. For example, treated wastewater from the sites or the surr communities could be used to provide the water and cooling requirements of the vari technologies and decrease or eliminate the need to withdraw groundwater from the Og aquifer and eliminate any aquifer drawdown at Pantex. In addition, the commentors b DOE should evaluate water conservation practices (such as those employed by the cit Phoenix) and advanced technologies that could also be employed to reduce water use impacts, particularly at Pantex and other "dry" sites. Other commentors note that t region around Pantex is dependent on the Ogallala aquifer and DOE should examine al program and other activities, such as the red bed drilling and pumping that are in process in and around Pantex, that could cause aquifer drawdowns. In addition, any activities that could introduce contamination into groundwater (either directly or indirectly through playa discharges) should be analyzed in detail.

Response: No wastewater will be directly discharged to groundwater. All wastewater recycled or treated prior to any discharge to the playas. Furthermore, such dischar will be monitored and controlled by permits. Groundwater contamination is a result past operations and with proper wastewater treatment methods will not present a pro the future. Based on public comment and new information, only reclaimed wastewater been evaluated for cooling system water usage for the proposed tritium supply techn at Pantex. Groundwater is not proposed to be used for cooling and other production operations. The reclaimed wastewater would be obtained from the city of Amarillo Wastewater Treatment Plant. The red bed drilling and pumping that are in process in around Pantex would be examined in site-specific tiered NEPA documents if Pantex is selected as the TSS. The following text has been added in section 4.5.2.4 in the Fi PEIS under surface water: "Since the 1960s, reclaimed waste effluent has been used cooling water processes on the Texas High Plains. There are two potential sources o reusable wastewater available in the vicinity of Pantex Plant: the Hollywood Road Wastewater Treatment Plant and the Pantex Plant Wastewater Treatment Facility."

The Hollywood Road Wastewater Treatment Plant is located on the southside of Amaril

approximately 20 miles from Pantex. Currently the Hollywood Road Wastewater Treatme Plant is discharging approximately 7 MGD (2,555 MGY) of advanced secondary treated that has gone through a filter treatment and is then discharged to the Prairie Dog Fork of the Red River. This amount is anticipated to increase to 12 MGD (4,380 MGY) year 2010. A commitment has been made by the city of Amarillo to develop this waste to reduce the amount of ground-water withdrawals and slow the annual decline rate o Ogallala aquifer. In addition, a commitment has been made between the city of Amari and DOE to use reclaimed wastewater from the Hollywood Road Wastewater Treatment Pl The analysis of water resources for tritium supply at Pantex now includes use of re wastewater in lieu of groundwater.

04.02.02 Commentors believe that the water requirements for the APT are significant NTS. Commentors also suggest that DOE study NTS basin recharge rates to clearly understand the amount of ground-water available to the project. In addition, commen believe that DOE should also confirm that future NTS water needs were considered in addition to current and tritium supply and recycling requirements. Considerations s include impacts on local water needs, financial and environmental costs associated aquifer drawdown, and increased water consumption as a result of future and concurr projects at the site, according to the commentor. Commentors also believe that the should include an analysis of the impacts from potential existing or future contami of aquifers associated with DOE activities.

Response: When a site has been selected, a site-specific evaluation of water resour will be performed on local water needs (farmers, businesses, etc.). The site water requirements were based on future projects and site workload reasonably foreseeable this time. Previous recharge rates furnished by NTS have been modified by the site new recharge rate numbers have been used to re-evaluate the tritium supply and recy facilities. The new recharge rates indicate that none of the technologies would exc new recharge rates. The units for flow rate of a particular area are gallons per da year. All data were based on studies that used recharge rates or flow over a given of time and over a given area. The text has been modified so the recharge rates are averages, but various estimates of flow exemplified among authors. All authors rely similar methodologies and assumptions, so the uncertainty in recharge and discharge estimates is based on a lack of complete data and different initial assumptions. Ho the following specific revisions have been made.

The discussion of groundwater in section 4.3.2.4 of the Final PEIS has been expande include the following: "A study by the United States Geological Survey (Harrill et 1988) balanced the amount of recharge and discharge throughout the Great Basin and estimated a total of 32 BGY recharge for the entire Death Valley System. Of this to about 11 BGY flowed through or near Frenchman Flat into the Ash Meadows discharge a the south. A study by the Desert Research Institute (A Deuterium-Calibrated and Discrete-State Compartment Model of Regional Groundwater Flow, Nevada Test Site and Vicinity (DOE/NV/108, March 1992)) modeled groundwater flow through discrete areas Death Valley system and concluded that of 16 BGY total system recharge, about 7 BGY through Frenchman Flat. These differences in estimates of flow exemplify common var among authors of a factor of 2 or 3 but rarely of as much as a factor of 10. All au rely on similar methodologies and assumptions, so the uncertainty in recharge and discharge estimates is based upon a lack of complete data and different initial assumptions."

The discussion of groundwater availability, use and rights in section 4.3.3.4 has b expanded to include the following: "Some proportion of the estimated flow through Frenchman Flat (11 BGY) is available for use by the tritium technologies. The exact available would have to be determined through site-specific studies to determine potential impacts on Ash Meadows and Devil's Hole and surrounding users. Harrill et 1988 estimated that there is four times as much water in storage as there is in ann recharge. Thus, there is the capacity to buffer the effects of annual or multi-year droughts through the use and replenishment of stored water. In addition, substantia more water could be made available by using resources in the Alkali Flat-Furnace Cr Ranch Subbasin to the west (service area D of figure 4.3.2.4-1)."

04.02.03 One commentor notes that NTS and the city of Las Vegas use completely inde and separate groundwater basins to meet their water needs. Therefore, the commentor believes that water resources should not be an issue at NTS. Another commentor expr the opinion that the need for jobs and an economic boost outweigh the needs to cons water source which only serves the needs of NTS.

Response: The city of Las Vegas, like the NTS, is located in the Great Basin. Even most of the city of Las Vegas's potable water is obtained from surface water resour approximately 15 percent of the water is obtained from groundwater wells, making groundwater a vitally important natural resource. Because a portion of the communit relies on groundwater to supply a portion of its freshwater needs, it will be direc affected by groundwater usage and quality. The proper water resources for the triti facility to operate effectively would also relate to additional jobs and economic b to the surrounding communities. Both the impacts to water resources and socioeconom will be weighed by the decision maker.

04.02.04 Several commentors note that the PEIS for Tritium Supply and Recycling sho have a more thorough analysis of the potential for aquifer contamination at INEL. Commentors state that past practices at the site have resulted in tritium contamina the Snake River Plain aquifer. The aquifer is vital to southern Idaho and the comme suggest that the PEIS identify all possible pathways (including those initiated by earthquakes) through which discharges (radioactive or not) could reach the aquifer land. The commentors also want DOE to provide additional information about groundwa supply impacts on the Snake River aquifer if the APT is selected for INEL.

Another commentor refers to the section on groundwater quality in volume I, page 4- the PEIS, and offers several changes. According to the commentor, the following sen is inaccurate: "Two groundwater monitoring networks are operated at the INEL, one b United States Geological Survey, the other by Radiological Environmental Science Laboratory." The commentor points out that there are several "networks" of monitori wells drilled and maintained by the USGS. These include the INEL-wide facility grou monitoring group and well networks for Resource Conservation and Recovery Act (RCRA CERCLA-required monitoring. In addition, the commentor notes that groundwater benea INEL is monitored by groups including the USGS, DOE's site contractor, Lockheed Ida Technology Company, other DOE contractors, and the State of Idaho. The commentor qu further from page 4-26: "No tritium is currently disposed of at the INEL..." The co suggests that this statement should read: No tritium is currently disposed to the groundwater at the INEL.

Continuing on page 4-26, the commentor also refers to this statement: "Other radion of significance include strontium-90, cesium-137 and iodine-129. The first two, especially cesium-137, are strongly held on mineral grains in the soil. Therefore, unlikely that either will reach the aquifer in significant quantities." The comment contends that this statement suggests that all strontium-90, cesium-137, and iodine the aquifer had to migrate through the vadose to reach the aquifer. From ORR and Ce 1991 (DOE/ID-22096), the commentor notes that in 1988 there was an area of about 1 where the strontium-90 concentrations exceeded the Maximum Containment Level. There significant enough quantities of strontium-90 present to exceed the Maximum Contain Level over this region. In addition, the commentor states that recent CERCLA inves- tigations at the Idaho Chemical Processing Plant under the Federal Facility Agreement/Consent Order indicate that there is a significant source term of stronti in the vadose and the current strontium-90 levels in the aquifer are as great as wh direct injection of strontium-90 bearing wastes was occurring. The commentor believ this discovery, with supporting information from vadose monitoring wells, suggests strontium-90 levels in the aquifer may increase in the future.

Response: Water sampling at INEL includes both onsite and offsite groundwater monit with samples taken from the Snake River and other surface streams and tributaries i INEL vicinity, some of which flow onto the site and sink into its porous soils. Bec the Snake River Plain aquifer, which lies beneath INEL, serves as one of the primar sources for drinking water and crop irrigation in the Snake River Basin, the USGS h

extensive monitoring program to maintain surveillance of the aquifer, and perched w bodies above it, on INEL and at a few locations beyond the southern and western boundaries. Results of monitoring of surveillance activities that are published in reports are summarized in the INEL Site Environmental Report annually. At INEL, not environmental monitoring responsibilities reside within the same organization. Oper contractors at each INEL facility are responsible for monitoring of effluents (rele and for any ambient environmental monitoring or surveillance performed within the f fences. The most extensive of these is conducted by EG&G Idaho. The Environmental Monitoring Unit conducts a radiological environmental surveillance program which in water.

Low, but detectable, concentrations of tritium, the most mobile low-level radioacti contaminate in the water of the aquifer, were reported in samples from wells just i the INEL boundary in 1983. However, tritium from INEL has never been detected in an the wells south of the boundary. Thus atmospheric transport is the principal potent exposure pathway from the site. Therefore, liquid-borne radioactive materials dispo surface disposal ponds could percolate down through the porous soils into the Snake Plain aquifer and into pumped water supplies. In addition, air to surface transfer airborne radioactive materials could go to the Big Lost River (intermittent stream) affect upstream fish migration, or air to surface transfer of airborne radioactive materials could fall on soils and percolate downward to the Snake River Plain aquif Assessments, including monitoring programs and self-assessments, are being conducte onsite and offsite, as discussed in the INEL baselines, section 4.2.2.4. With regar earthquakes, all proposed project structures would be built to meet DOE design stan applicable to the seismic area. In addition, facilities such as the tritium supply meet the standards of 10 CFR 100, appendix A. Additional information about groundwa supply impacts on the Snake River aquifer if the APT is selected for INEL will be addressed in site-specific tiered NEPA documents.

In the Final PEIS the first few sentences under groundwater quality, section 4.2.2. been rewritten as follows: "There are several `networks' of monitoring wells drille maintained by USGS. These include the INEL sitewide facility groundwater monitoring and well networks for RCRA and CERCLA required monitoring. Groundwater beneath INEL monitored by groups including USGS, DOE's site contractor, Lockheed Idaho Technolog Company, other DOE contractors, and the State of Idaho." Text in the second paragra section 4.2.2.4 has also been rewritten to read: "No tritium is currently disposed groundwater at INEL; however, tritium plumes are present in the Snake River Plain a and in perched groundwater under these sites (figure 4.2.2.4-2 (in USGS 1988a)."

04.02.05 Commentors assert that DOE needs to address and clarify some issues involv playas at Pantex. The commentors express the opinion that the PEIS should address w the discharge of water at high temperatures to the playas has any impacts, whether pollutants discharged into the playas will seep into the aquifer (high explosives a nitrates have been found in the aquifer), whether the characterization of the playa dry lakes is accurate, and the possibility that discharges to the playas actually s species and play a beneficial role (currently in the PEIS, wastewater discharges ar portrayed as degradations).

Response: All discharges would be in compliance with existing NPDES permits and no were identified in the analysis or are anticipated. In addition, the following text been added to section 4.5.3.4 in the Final PEIS under surface water: "Closed-cycle cooling systems include cooling ponds and towers. Because it is a closed system, wa recirculated through the plant and tower or pond and replenished only to the extent it evaporates. These systems discharge heat to the atmosphere rather than to water. only water that is to be discharged to the playa is treated sanitary wastewater of same type currently discharged. All wastewater discharged from the wastewater treat plant is at ambient temperature."

04.02.06 The commentor believes that salt deposition from cooling towers may impact groundwater quality. The commentor notes that salt was not addressed as a potential source of groundwater contamination. The commentor is of the opinion that the PEIS should address the potential effects of supply and recycling activities on downstre downgradient public water supply systems.

Response: Impacts associated with tritium supply and recycling activities on public supply systems would be addressed in site-specific tiered NEPA documents once a sit selected. Additional information has been added to all sections regarding salt deposition from the cooling towers. Any salt coming from the cooling tower originat the ground or surface water depending upon the site. At dry sites (that is, Pantex, and INEL), dry cooling towers will be used, and salt would not be released at all f cooling tower. There could be some concentration of salt in the blowdown water, but can be treated. The dry cooling tower with blowdown recycle would couple reverse os with an evaporator and crystallizer system that would remove the dissolved solids f blowdown so that water could be recycled to the cooling tower. This system would re peak requirements for makeup water and discharge would not require disposal. The so from the crystallization processes would be disposed of as waste. This system would the salt from the cooling tower as well as from blowdown. At wet sites (that is, SR ORR), because the salt is concentrated in a wet cooling tower, it can damage vegeta a small area near the facility. At all the wet sites there is adequate rainwater an groundwater flow such that the salt from the cooling tower would be flushed into th groundwater and diluted. The groundwater and surface water systems are connected su that the salt originating from the major surface water body (that is, Clinch River Savannah River) and reaching the groundwater will return to the river and the total of salt in the ecological system would remain the same.

04.02.07 Commentors believe that there are some additional water resources issues t should address in the PEIS for Tritium Supply and Recycling: DOE should provide documentation of the reasoning behind the groundwater numbers in the PEIS; the wate numbers at the sites should be adjusted for the relative humidity at the sites; DOE acknowledge and address the fact that recent studies have suggested that Pleistocen groundwater in the western United States may be a nonrenewable resource and that "d years are causing more drawdown than DOE indicates; aquifer water levels in the PEI should be shown as depths, not only as elevations; DOE should ensure that an adequa number of groundwater drawing sites are present at each site; and, DOE should indic exactly where drawdown is being measured and whether those measurements adequately characterize the total area drawdown.

Response: The PEIS groundwater quality numbers were derived by taking groundwater s from existing monitoring or water production wells, running an analysis and compari water quality criteria and standards to the sample results. Groundwater usage numbe were derived from current data on what is being used at the candidate sites. No Act (2010) water usage was derived by each site based on projected mission and related activities. No Action also included any new reasonably foreseeable projects or miss that could be added to the site and their expected water usage. Total water require for construction and operation are calculated by adding No Action water requirement the requirements for each tritium technology. The percentage increase in water use the proposed tritium supply project was then calculated based on the No Action usag

The relative humidity at each candidate site was not included in the engineering an to determine water requirements. The preconceptual design of the proposed tritium s technologies is not of the quality to determine the increase or decrease of water u based on each sites environmental setting. In addition, the preconceptual designs w "greenfield" (the same design was evaluated at each site without any modifications advantage of existing infrastructure, resources, or environmental setting) except f designation of "wet" and "dry" sites and the change in cooling systems. At the programmatic level of analysis, the water usage numbers for each technology are of sufficient quality to identify differences for selection of a tritium supply. When tritium supply technology and site are selected, the site-specific tiered NEPA docu will consider all these factors, including the effects of relative humidity on wate requirements for the selected technology.

The commentor is correct in stating that recent studies have suggested that Pleisto groundwater in the Western United States may be a nonrenewable resource and that "d years are causing more drawdown. These are just a few of the reasons why alternativ sources, such as reclaimed wastewater from the city of Amarillo Hollywood Road Wast Treatment Plant, have been proposed as potential water sources for new tritium supp facilities.

The map indicating water elevations was provided by the Panhandle Groundwater Conse District No. 3. In that region water depths are measured by the district in elevati because it gives a better indication of the areas that contain more or less water b of the land surface. The average elevation of the land surface 3,550 feet must be subtracted from the elevation to show the depth to the groundwater surface.

The groundwater drawdowns reported in the PEIS were measured from the city of Amari water production supply well field area. Further groundwater withdrawal analysis at Pantex site and in the surrounding area would be addressed in site-specific tiered documents if Pantex is selected as the TSS. Based on public hearing comments and information received during the public review of the Draft PEIS, however, reclaimed wastewater is analyzed as the source of cooling water for the tritium supply techno at Pantex in the Final PEIS.

04.02.08 In reference to volume I, page 4-28, groundwater availability, use and rig INEL, the commentor expresses concern about the following statement: "The combined pumpage of the 27 onsite production wells averaged approximately 2,100 MGY from 198 through 1985." The commentor suggests that more recent data are available and are u the Spent Nuclear Fuel INEL Environmental Restoration and Waste Management EIS. The recent data are slightly less, at about 2,000 MGY. The commentor also expresses con about another statement in the section: "This is 40 percent of the 5,280 MGY of groundwater withdrawn from the aquifer in the Eastern Snake River Plain." The comme notes that Lindholm, 1993 (USGS Open-file Report 91-98), states that in 1980, 1.9 m acre feet of water was pumped for irrigation on the Eastern Snake River Plain at 3. acre feet per million gallons, that is 619,114 million gallons. Since irrigation ac for an estimated 96 percent of all groundwater use, the commentator notes total pum from the Eastern Snake River Plain aquifer is about 645,000 MGY. Therefore, the com contends that water pumped by the INEL is more like 0.3 percent of all water pumped the aquifer.

Response: The text has been rewritten in section 4.2.2.4 in the Final PEIS under groundwater availability, use and rights, considering the new information in Lindho 1993 as follows: "The combined pumpage of the 27 onsite production wells averages approximately 2,000 MGY. This is 0.3 percent of the 645,000 MGY of groundwater with from the aquifer in the Eastern Snake River Plain. Most of the water withdrawn from aquifer in the Snake River Plain (619,114 MGY) is used for agriculture (Lindholm, 1

04.02.09 At SRS the need for excavation and dewatering for the APT, as well as the gas-cooled reactor, may lead to upsets in the natural flow of surface and ground wa in one commentor's opinion. The commentor contends that mitigation and monitoring w extremely important to ensure that there is no potential for significant flow of contaminants into the construction area because of the extensive groundwater contam already present at the site. Another commentor states that the tritium facility sho be located at SRS in order to preserve the quality of the Savannah River for drinki water.

Response: The text in section 4.6.3.4 has been modified and clarified, so the reade have a better understanding of the process of dewatering and mitigation measures th will be implemented during the process to ensure that there is no potential for significant flow of contaminants into the construction area.

04.02.10 Several commentors have serious concerns about the APT and its effect on w

resources, especially at the dry sites. One commentor requests clarification of the that the APT would require, as the number seems inflated. Additional commentors bel that DOE has overstated the water requirement for the natural gas-fired plant. One commentor notes that if treated wastewater is used for the APT, an assessment must performed on the area to which the wastewater is currently discharging. Another commentor requests clarification on the term N/A for the APT closed loop system, i. this means that the APT would not be located at a dry site.

Response: The water requirements for the various technologies were provided by an independent engineering contractor, based on preconceptual designs. Until the techn and site location have been chosen, the numbers will remain generic to the technolo type of site (wet vs. dry). Future site-specific tiered NEPA documents will further analyze water requirements and their impacts. The APT is being considered for locat all five candidate sites.

04.02.11 Regarding section 4.4.2.4, page 4-186, 2nd paragraph, the commentor asks t provide more detailed information on the flow of groundwater in the vicinity of the proposed TSS, identify sources of information used in the groundwater section, and where the "class" of aquifers originated.

Response: The text has been modified to add more detail on the flow of groundwater vicinity of the proposed TSS. The sources for the groundwater discussion in section 4.4.2.4 are DOE and the site documents cited in chapter 6. As of 1988, the sole sou aquifer (SSA) program allowed individuals and organizations to petition the EPA to designate aquifers as the "sole or principal" source of drinking water for an area. program was established under section 1424(e) of the Safe Drinking Water Act (SDWA) 1974. The primary purpose of the designation is to provide EPA review of Federal financially assisted projects planned for the area to determine their potential for contaminating the aquifer. The EPA has developed a three-part classification system the groundwaters of the United States:

Class 1: Special Groundwaters are those that are highly vulnerable to contamination because of the hydrological characteristics of the areas under which they occur and are also either an irreplaceable source of drinking water or ecologically vital in they provide the base flow for a particularly sensitive ecological system.

Class II: Current and Potential Sources of Drinking Water and Waters Having Other Beneficial Uses are all other groundwaters except Class III.

Class III: Groundwaters Not Considered Potential Sources of Drinking Water and of L Beneficial Use because the salinity is greater than 10,000 mg/L or the groundwater otherwise contaminated beyond levels that can be removed using methods reasonably employed in public water-supply treatment.

The EPA uses this classification scheme in promulgating rules and regulations at th Federal level. The highest degree of protection is given to Class I groundwater.

04.02.12 The commentor is concerned about the groundwater contamination at SRS. The commentor states that tritium from the SRS has contaminated wells in Georgia. In addition, the commentor suggests that DOE must address this issue carefully and ens that no further contamination occurs.

Response: Groundwater contamination at SRS is a legacy of past waste disposal and operational activities. Groundwater Quality Assessment reports have been submitted State of Georgia for numerous years. There are no longer discharges of waste to groundwater under present operational discharge controls. All waste water is treate discharges controlled by the permit process. The status of current operations is re annually to the public in the SRS Environmental Report.

Industrial solvents, metals, tritium, and other constituents used or generated on t have contaminated the shallow aquifer beneath 5 to 10 percent of the site. These aquifers are not used for drinking water or for SRS operations; however, they do di

to site streams and eventually to the Savannah River. During operations of a tritiu supply and recycling facility, no direct discharges to groundwater will be made. Al wastewater will be treated and then discharged to SRS streams. Discharges made to S streams that discharge to the Savannah River will be within NPDES permits and will with South Carolina Water Quality Standards. Currently there are several onsite and offsite remediation efforts being performed.

05 Geology and Soils

05.01 Commentors suggest that the PEIS for Tritium Supply and Recycling should addr general seismic and volcanic effects on new facilities, as well as site-specific conditions, when selecting a site for the proposed activities. One commentor states future nuclear testing at NTS could increase the seismic risk to any tritium facili located there. Another commentor further states that INEL is located in an earthquake-prone zone and is not a safe place to site the proposed tritium faciliti Other commentors add that site-specific issues, such as proximity to capable faults should be addressed in the PEIS.

Response: Sections 4.2.2.5, 4.3.2.5, 4.4.2.5, 4.5.2.5, and 4.6.2.5 of the PEIS disc geology and soils for the INEL, NTS, ORR, Pantex, and SRS sites, respectively. Issu such as volcanic hazard, seismicity, and proximity to capable faults were addressed those sections. The five candidate sites are considered to have little or no volcan hazard. As discussed in the summary of environmental impacts for each site (section 4.2.3.5, 4.3.3.5, 4.4.3.5, 4.5.3.5, and 4.6.3.5), the seismic risks ranged from neg to moderately low. The existence of a low or moderate seismic risk would not preclu safe construction and operation of the proposed facilities at any of the sites. NTS INEL are the only two sites where capable faults exist; however, no faults are dire located on the proposed location of the proposed TSS facility. No known capable fau were detected at the other sites, and for those areas ground shaking rather than gr rupture would be more likely. The proposed TSS facilities would be designed for ear generated ground acceleration in accordance with DOE Order 5480.28 and accompanying safety guides.

05.02 Commentors are of the opinion that seismicity and geology have been totally i in the PEIS and that Pantex is by far the superior site for the tritium production facility. The commentors categorize the following as advantages at Pantex: no evide of active faults has been found at Pantex; seismic hazards are minimal; engineering load-bearing capacities of soils and ground sediments are superior to other candida sites; Pantex has less than 7 percent land area designated as wetlands; the site ma excavated safely on steep, stable slopes; and it is suited for cut and cover constr

Response: Sections 4.2.2.5, 4.3.2.5, 4.4.2.5, 4.5.2.5, and 4.6.2.5 of the PEIS disc seismicity, geology, and soils at all candidate sites. These factors identified by commentor, as well as many others, will be considered and evaluated in the decision process leading to the selection of the tritium supply technology and the preferred

05.03 The commentor states that in terms of seismic-induced impacts, the PEIS faile address the relationship between nuclear testing and tritium production at NTS. The commentor also states that although a moratorium on nuclear testing has been extend indefinitely, the Administration's current defense policy requires DOE to retain th capability to resume nuclear testing (The President's fiscal year 1996 includes $20 million to support the nuclear testing readiness program at NTS).

Response: The PEIS did not address a relationship between nuclear testing and triti production. Although underground testing was halted in 1992, NTS maintains the capa to resume testing if required. In terms of seismic-induced impacts, although NTS is located in an area of moderate historic seismicity as discussed in section 4.3.2.5, facility designs ensure no adverse effects. As described in section 4.3.3.5, facili

would be designed for earthquake-generated ground acceleration in accordance with D Order 5480.28 and accompanying safety guides.

05.04 The commentor states that in sections 4.5.2.5 and 4.5.3.5, geology and soils, Draft PEIS correctly characterizes the soils that underlie Pantex as Pullman-Randal characterized by "very low permeability clays and clay loams." The commentor also s that this fact greatly mitigates possible concerns (on page 4-305) about percolatio groundwater of treated wastewaters discharged to playas. The commentor asserts that also correctly characterizes the seismicity of the Pantex area as low. However, the commentor notes that on page 4-278, one of the subject basins is incorrectly identi as the "Palo Verde Basin" rather than the "Palo Duro."

Response: As discussed in section 4.5.3.4, reclaimed wastewater will be used to ful the water requirements for the construction and operation of any of the proposed tr supply and recycling facilities at Pantex. Treated wastewater will be either recycl cooling system makeup or discharged to the playas. Although there is no direct disc to groundwater from the proposed facilities, treated sanitary wastewater discharged playas could percolate into the groundwater. Soils at Pantex, which are low permeab clay and clay loams, should help minimize the impacts associated with this possibil addition, a lined evaporation pond could be constructed to reduce wastewater seepag Although permeability of these clays is low, the PEIS must consider percolation possibilities; therefore, any discharged wastewater would meet NPDES permit require ments. In section 4.5.2.5 of the PEIS, the sentence has been changed to read: "Seis in the Palo Duro Basin and at Pantex is low".

05.05 Regarding page 4-385 of the Draft PEIS, the commentor states that the dewater to construction activities for the APT could be a significant problem, as could the potential spread of activation products in the soil. The commentor adds that should APT design proceed, it is possible that the required underground depth may increase resulting in further environmental impact.

Response: As discussed in section 4.6.3.4 of the PEIS, dewatering due to constructi activities of the APT could result in increases in stream flow and impacts to aquat resources without proper mitigation. Dewatering discharge could be directed to Par prevent any impacts to Fourmile Branch. The potential for activation products to be through the soil is considered low. Section 4.6.3.5 of the PEIS discussed potential impacts to geology and soils from the proposed tritium supply and recycling facilit The impacts associated with deep excavations for the APT technology would be evalua detail and potential mitigation measures identified in site-specific tiered NEPA st

05.06 Because of the seismic concerns, the commentor doubts that either a reactor technology or the linear accelerator concept could be located at NTS.

Response: As discussed in section 4.3.3.5, the construction and operation of tritiu supply and recycling facilities at NTS would have no impact on geological resources presence of a moderate seismic risk at NTS does not preclude the safe construction operation of the tritium supply and recycling facility onsite. The proposed facilit would be designed for earthquake, and any potential weapons-testing-generated groun acceleration in accordance with DOE Order 5480.28 and accompanying safety guides.

05.07 The commentor states that seismic stability should be one of the criteria for selection. The commentor considers the APT a more stable alternative. The commentor that APT has no waste production, therefore, in the event of an earthquake, wastes not be released. The other alternatives are more vulnerable, according to the comme The commentor concludes that, compared to the other sites, NTS would be the best su site because of lessened seismic activities.

Response: Section 4.3.2.5 of the PEIS discusses seismicity, geology, and soils at N These factors identified by the commentor, as well as many others, will be consider evaluated in the discussion process leading to the selection of the tritium supply

technology and the preferred site.

06 Biotic Resources

06.01 Commentors suggest that DOE carefully consider the potential impacts to area wildlife when selecting a site for the proposed activities. Commentors assert that special consideration should be given to sites such as Pantex that have several sen species and habitats.

Response: An analysis of impacts on wildlife, including sensitive habitat and threa and endangered species, is presented for each site. This analysis is presented for in section 4.2.3.6, for NTS in section 4.3.3.6, for ORR in section 4.4.3.6, for Pan section 4.5.3.6, and for SRS in section 4.6.3.6. The analysis is presented at a programmatic level; however, since an analysis of project impacts on wildlife and sensitive habitats is dependent on a specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in NEPA documentation.

06.02 One commentor suggests that the PEIS for Tritium Supply and Recycling incorre identifies the desert tortoise as an endangered species. The commentor states that PEIS should correctly classify the desert tortoise as a threatened species. Another commentor notes that the executive summary indicates the bald eagle could lose nest habitat. This is not accurate and should be changed in the Final PEIS, according to commentor.

Response: References are made to the desert tortoise as a threatened species in sec 3.6, 4.3.2.6, table C-3, and table I.1-1. No references to the tortoise as an endan species are included in the PEIS. The executive summary states that the bald eagle temporarily affected during construction but does not state that nesting habitat wo be lost.

06.03 The commentor states that the PEIS for Tritium Supply and Recycling asserts i number of places that construction of a tritium facility would affect Federal-liste Federal-candidate, or state-listed species, and could impact potential wetlands. Mo specifically, the commentor adds that pages I- 31, I-32, I-35, and I-37 of volume I reference possible impacts on the bald eagle, the swift fox, and other species. The commentor asserts that this claim fails to recognize that construction activities w occur well away from any of the Pantex playas (whose soils are inherently unsuited construction), which are the only potential nesting, foraging, and denning habitat these animals (e.g., no bald eagle nests or nesting pairs have ever been observed o site). The commentor states that the Pantex playas constitute but 5 out of approxim 25,000 playas on the southern High Plains, and cannot be considered as critical hab According to the commentor, personnel from the United States Fish and Wildlife Serv (USFWS) declined to support classification of any of the Pantex playas as "critical habitat" during a site visit in 1994. Further, notes the commentor, only a small proportion of the site (less than 7 percent) is designated as "playa wetlands". The commentor cautions that any prudent site plan for tritium facility construction wil avoid these areas. The commentor also suggests that these claims in the PEIS should corrected.

Response: The commentor indicates that the PEIS assertions that the construction of tritium facility would affect Federal-listed, Federal-candidate, or state-listed sp and could impact potential wetlands at Pantex are not warranted. These statements a conditional descriptions of potential impacts. Section 4.5.2.6 states that field surveillance would be required to determine the presence of listed species. The bal is described as a wintering species rather than a nesting species and it is well documented that eagles are easily disturbed by human presence even in close proximi perched birds. It is further stated that there is no critical habitat on Pantex. Th

playas are natural drainage areas for the Pantex site and the discharge resulting f project activities could alter the nature of these wetlands. Because an analysis of project impacts on biological resources is sensitive to specific site location and detailed project engineering data, further analysis will be conducted at the site-s level in tiered NEPA documentation.

06.04 The commentor states that the PEIS for Tritium Supply and Recycling does not a complete analysis of the impacts of the various alternatives on biotic resources. commentor also states that it is unacceptable not to evaluate the impacts of radion for onsite and offsite biota.

Response: An analysis of impacts to biological resources is presented for each site programmatic level. This analysis is presented for INEL in section 4.2.3.6, for NTS section 4.3.3.6, for ORR in section 4.4.3.6, for Pantex in section 4.5.3.6, and for section 4.6.3.6. Because an analysis of project impacts on biological resources is sensitive to a specific site location and detailed project engineering data, furthe analysis will be conducted at the site-specific level in tiered NEPA documentation.

06.05 One commentor states that siting the tritium program at Pantex would not furt threaten or endanger protected species. The commentor indicates that the PEIS notes page 4-279 that no critical habitat for threatened and endangered species exists on Pantex, and on page 4-280 that there is little undisturbed habitat at Pantex that w accommodate any of the threatened, endangered, and other special status species lis table 4.5.2.6-1. The PEIS also reports there are no Federal- or state-listed plant known to occur at Pantex. The commentor states that individual animals (for instanc moving reptiles or small mammals) might be taken by construction activities but eve possibility could be avoided (by surveys and by capture and transplantation) if dee appropriate. According to the commentor, the only consistently occurring Federal-li species at the Pantex site is the bald eagle. The commentor notes that the eagle is highly mobile and the playa habitat it has used at Pantex is abundant nearby and co throughout a great region. The commentor asserts that neither construction nor oper of the tritium program would be expected to adversely affect the species. The comme notes that a representative of a second Federal-listed species, the whooping crane, reported at the site in 1990, as the draft relates. The rarity of occurrence of the species on the site mitigates concern that it may be harmed by the program.

Relative to aquatic species, the commentor notes that it appears the only effect of at Pantex would be positive (e.g., some small increase in the availability of habit amphibians (page 4- 309)). Finally, another commentor points out that the terminolo some of the endangered species is printed in bold print for the Pantex data only. T commentor also states that there is also a grossly inaccurate statement in the PEIS foraging and denning habitats concerning bald eagles and other animals that roam th Pantex site. There will be no impacts to them, according to the commentor.

Response: The terminology in bold print was not located in the document. Because an analysis of project impacts on biological resources is sensitive to specific site location and detailed project engineering data, further analysis will be conducted site-specific level in tiered NEPA documentation. Field surveillance would be condu at that time to determine the presence of species and their foraging, denning, and habitats.

06.06 The commentor states that DOE should give more thought to the effects of the proposed facility on biotic resources. According to the commentor, the document sta that impacts to wetland and aquatic resources will not occur because these resource not located on project sites. The commentor adds that the conclusion that impacts w occur may be incorrect because impacted onsite groundwater may flow offsite and may biotic resources. Furthermore, the commentor notes on page 4-139, the PEIS states t because impacts from construction occur only at the beginning of the project life c it follows that impacts to biotic resources will be limited to only that time perio commentor asserts that this may not be true and suggests that DOE revisit the bioti resources sections.

Response: An analysis of impacts to biological resources is presented for each site programmatic level. This analysis is presented for INEL in section 4.2.3.6, for NTS section 4.3.3.6, for ORR in section 4.4.3.6, for Pantex in section 4.5.3.6, and for section 4.6.3.6. Because an analysis of project impacts on biological resources is sensitive to a specific site location and detailed project engineering data, furthe analysis will be conducted at the site-specific level in tiered NEPA documentation. impacts to wetlands and aquatic resources at INEL and NTS were not predicted based fact that these resources do not occur on the proposed TSS. Impacts are also not ex to wetlands and aquatic resources located offsite since groundwater withdrawals are expected to impact groundwater recharge rates at either INEL (section 4.2.3.4) or N (section 4.3.3.4). With respect to construction impacts occurring only at the begin of the project life cycle, the statement made in section 4.3.3.6 referred specifica the fact that all construction associated with the HWR, MHTGR, and ALWR would only at the beginning of the project but that additional construction (and hence constru impacts) could occur at a later date, as in the case of the APT if expansion of the facility were needed to meet future tritium requirements.

06.07 Regarding section 4.4.3.6, page 4-224, first column, third paragraph, the com suggests that DOE provide information regarding the relationship between the number threatened and endangered species at a proposed site and the ranking of the site in selection process. For example, the commentor asks if a site has the potential to d more threatened or endangered species than another site, is it ranked lower in the selection process.

Response: The function of the PEIS is to assess the potential environmental impacts resulting from the proposed tritium supply technologies and recycling facilities. T potential impacts on threatened and endangered species are identified in the PEIS. Environmental, cost, technical, and schedule factors are all considered in the siti decision process. The tritium supply and recycling site selection process will invo analysis of the environmental, cost, technological and schedule impacts which will considered by the decision maker.

06.08 In table 3.6-1, page 3-62, the ORR column, the phrase, "however this type of is abundant in the area," should be removed, according to the commentor. The commen asserts that this phrase appears to lessen the environmental impact of removing sev hundred acres of nesting and foraging habitat for four state-listed raptors.

Response: The appropriate changes have been incorporated into table 3.6-1 in the Fi PEIS.

06.09 The PEIS notes that no impact to biotic resources will result from supply and recycling activities, according to the commentor. For example, the commentor states on page 4-64 the PEIS states, "...the Townsend's western big-eared bat could forage evaporation and stormwater retention ponds. No adverse impacts are expected...." Th commentor asserts that this statement is not supported by any factual data. Further the commentor notes that although no state biotic resource consultation was identif INEL in table 5.3-4, DOE should confer with the appropriate state authorities to mi impacts.

Response: As a programmatic document, the PEIS discusses potential impacts and the relative level of impacts. Because an analysis of project impacts on biological res is sensitive to specific site location and detailed project engineering data, furth analysis will be conducted at the site-specific level in tiered NEPA documentation. Consultation with the Federal and state wildlife offices would be performed during preparation of this level of NEPA documentation.

06.10 One commentor states that in volume I, page 4-7, column 2, paragraph 3, the P explains that radiological impacts to onsite biota were not evaluated because studi conducted at INEL have only detected sublethal effects in individual animals. The

commentor asserts that the fact that past activities have not caused radionuclide l of concern in animals is no indication that biota are not at risk. The commentor no that the impacts of the proposed tritium alternatives must be evaluated in conjunct with potential releases from existing and proposed facilities, including the impact tritium releases into waters that may already have measurable amounts of tritium. F another, the commentor adds, the many studies conducted at INEL have shown elevated levels of radionuclides in the tissues of plants and animals at the site. In order determine that the PEIS does not need to evaluate impacts on biota, there needs to more thorough discussion of the findings of studies done at INEL, according to the commentor. In addition, states the commentor, it must be shown that, cumulatively, releases will not have a significant impact. Another commentor suggests that the PE provide details of biological and environmental impacts associated with introducing tritium from proposed TSS operations into waters that already have measurable amoun tritium.

Response: As noted in section 4.1.6, two studies have shown that man is the most se organism to radiation (Radiation Biology (U.S. Atomic Energy Commission, 1968) and Effects on Populations of Exposure to Low Levels of Ionizing Radiation (National Ac of Sciences, 1972)). In addition, the Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plant, (NUREG-0555), notes that, "although guidelines have not been established for accept limits for radiation exposure to species other that man, it is generally agreed tha limits established for humans are also conservative for other species." Information presented relative to INEL recognizes that measurable effects of radionuclides on i vidual plants and animals have occurred, but that such effects at the population, community, or ecosystem level have not been detected. A more complete discussion of findings can be found in the Programmatic Spent Nuclear Fuel Management and Idaho N Engineering Laboratory Environmental Restoration and Waste Management Programs Fina Environmental Impact Statement (DOE/EIS-0203-F, April 1995). With respect to cumula effects of existing radionuclide levels and those emitted from the proposed facilit the second sentence of the third paragraph of section 4.1.6 has been changed to cor state, "these releases when added to those associated with other site activities wo well below natural background levels and would also be within regulatory limits established to protect workers and the public." It is not believed that further dis of radiological impacts to biota is necessary for this programmatic document.

06.11 The commentor notes that, as a newly constructed facility, a tritium recyclin operation would require radionuclide National Emission Standards for Hazardous Air Pollutants (NESHAP) approval by EPA. If applicable to the site, the commentor notes EPA would evaluate the Endangered Species Act as a part of its radionuclide NESHAP decision-making process; that is, EPA would assess whether radioactive emissions pe under a NESHAP authority would adversely affect any listed species under the Endang Species Act. As a part of the determination, the commentor states that EPA would co with the USFWS pursuant to section 7 of the Endangered Species Act. In addition, th commentor also suggests that should DOE also need to consult with the USFWS, EPA is willing to work with DOE on a joint consultation effort.

Response: DOE will consult with the USFWS concerning any impacts to threatened and endangered species that may occur as a result of constructing and operating a triti supply and recycling facility, including potential impacts from radionuclides. This consultation would take place at the site-specific level in tiered NEPA documentati This is necessary since preactivity surveys are necessary to determine if any speci status species are present and their location relative to the proposed facility. DO make sure that all required permits are obtained and that all required consultation conducted.

06.12 Regarding section 4.4.3.6, page 4-226, first column, second paragraph, the co suggests that DOE provide details of the effect of sediment mobilization and change aquatic resources on CERCLA operable units in the area of the proposed TSS.

Response: A discussion of the relationship between impacts to aquatic resources fro proposed tritium supply and recycling facility and CERCLA operable units is beyond

scope of the PEIS. If ORR is selected as the site for a tritium production facility detailed design, siting location information, and additional detailed project data be developed and available to discuss any relationship between the proposed action CERCLA operable units. The analysis, if warranted, would be discussed in site-speci tiered NEPA documentation.

06.13 The commentor believes that DOE overstates the environmental concern regardin Pantex playas (sections 4.5.2.6 and 4.5.3.6). The commentor points out that there a estimated 20,000 to 30,000 playas in the surrounding area whose sizes grow and dimi a seasonal basis. The commentor states that the playas all support the same, or hig similar, plant and wildlife communities, and typically provide domestic livestock watering places as well. Furthermore, the commentor notes that wastewater discharge playas would not necessarily "cause a general degradation of the naturally occurrin ephemeral wetland system at Pantex." In fact, the commentor suggests that the perma of the playas in certain years may be "important to migratory birds and... valuable habitat for nesting and wintering birds and waterfowl."

Regarding statements on page 4-307 about an increase in open water habitat and on p 4-309 about shifts in the composition of wetland plant communities, the commentor suggests that DOE consider that it is the nature of playas to undergo temporary dep changes and limited increases and decreases in open water areas. The plant species adapted to such changes, which have occurred down through the centuries (for exampl following major thunderstorms or long, rainy seasons or droughts). Such changes do "disturb" playa plant communities. Given the great commonality of habitats provided great numbers of playas and the fact that wastewater discharges would create change degree, not in kind, the commentor asserts that there is little practical reason fo environmental concern about the Pantex playas.

Response: While the commentor is correct in stating that a large number of playas o the area of Pantex, many have been converted to agricultural use. An important aspe those occurring on the Pantex site is that, except for Playa 1, they are in a relat natural state and are within a protected area (that is, the Pantex site boundary). commentor is also correct in stating that playa vegetation has adapted to seasonal in water levels; however, existing vegetation would not be able to adapt to permane inundation caused by wastewater discharges. The results would be a shift in plant communities toward those that are adapted to permanent inundation. In fact, natural communities in Playa 1 have been displaced by a nearly uniform stand of cattail, a adapted to inundation. The analysis in the PEIS is presented at a programmatic leve is intended to identify potential impacts which could occur as a result of construc new tritium supply and recycling facilities. A more detailed analysis of potential to site playas will be undertaken as part of a site-specific EIS if Pantex is selec the site for the proposed facilities.

06.14 In the PEIS, volume II, table C-3, under the plant section, the commentor sta that: Amargosa Penstemon should be Penstemon fruticiformis ssp. amargosae and that Kingston bedstraw should be Galium hilendiae var. kinstonense.

Response: In 50 CFR Part 17, Plant Taxa for listing as Endangered or Threatened Spe Notice of Review dated September 30, 1993, Amargosa Penstemon is listed as Penstemo fruticiformis var. amargosae, and Kingston bedstraw is listed as Galium hilendiae s kinstonense. The appropriate changes have been made to the document.

06.15 The commentor states that DOE should indicate in the PEIS any records documen the existence of Parish's phacelia (Phacelia parishii) at NTS. The commentor adds t has been recently added to the Federal candidate plant species list.

Response: The appropriate changes have been made to the document.

06.16 The commentor states that SRS has a wildlife population that is within one of largest research sites in the United States. The commentor asserts that in order to

preserve and maintain this wildlife, SRS needs to assume another mission, preferabl proposed Tritium Supply and Recycling Program. Continuation of DOE missions will en that the surrounding wildlife remains intact, according to the commentor.

Response: Impacts of the proposed facilities on wildlife at SRS are discussed in se 4.6.3.6. The continuation of wildlife management and research programs, such as controlled hunts and National Environmental Research Parks projects, are not direct dependent upon the selection of the site for the proposed facilities.

06.17 One commentor urges a more even-handed and consistent analysis of biotic reso in the executive summary and the PEIS. In addition, the commentor further notes tha there are subtle discrepancies in the analysis between the sites, and Pantex is unf penalized due to the use of biased language. The commentor suggests that DOE check sections for unnecessary bias and use consistent terminology and language. Another commentor suggests that table 3.6-1 list threatened and endangered species for each candidate site with at least the specificity found in the Pantex column.

Response: The commentor suggests that the PEIS is written with a preconceived bias Pantex and recommends the use of more consistent terminology and language in the executive summary, table 3.6-1, and site analysis of biotic resources in the PEIS. entire PEIS including the biotic resources sections of the PEIS was prepared and pe reviewed without bias.

07 Cultural and Paleontological

07.01 The commentor expresses concern that the undertaking may affect historic prop eligible for listing in the National Register of Historic Places (NRHP) at ORR. The commentor expresses the desire to review a cultural resources survey report for the in addition to DOE's assessment of the existence of historic properties within the and DOE's assessment of potential for project impact upon cultural resources for th project before any work commences.

Response: Historic properties that are potentially eligible for inclusion on the NR be affected, and are discussed in sections 4.4.2.7 and 4.4.3.7. If ORR is chosen as preferred site, a site-specific tiered NEPA document will include a discussion of i to prehistoric and historic sites. In addition, if ORR is the preferred site, Natio Historic Preservation Act (NHPA) section 106 would require a cultural resources sur any impacted acreage and a report of survey results. Cultural resources survey repo ORR are available through DOE.

07.02 The commentor states that a more even-handed and consistent analysis of cultu resources in the executive summary and the PEIS is needed. According to the comment there are subtle discrepancies in the analysis between the sites, and Pantex is unf penalized due to the use of biased language. The commentor asserts that DOE should these sections for unnecessary bias and use consistent terminology and language.

Response: These sections were reexamined for any biases in the way the information presented. The language is similar among the different site descriptions in the PEI in the Executive Summary.

07.03 The commentor references Native American resources text, under the Historic Resources section, and states that the PEIS neglects to include Native American res when discussing compliance with Sections 106 and 110 of the NHPA, regarding the upd of the buildings and the decontamination and decommission (D&D) actions on these buildings and any historical properties. The commentor notes that the Native Americ resources are absent from the same 106 requirements, as specified in the PEIS, and only regarding the NEPA document. However, according to the commentor, other Federa

laws are requiring consultation between the Federal Government and the tribal gover as mandated. In addition, the commentor references the last paragraph on page 4-9, regarding the Native American resources, and asserts that the language regarding th Native American resources does not apply the appropriate criteria. The commentor no that the PEIS acknowledges only the Native American physical environment and belief systems; however, the issues go much deeper and are not being reflected within this document being provided for comment.

Response: "Prehistoric resources" in the United States refers only to remains of Na Americans and their antecedents. "Historic Resources" includes remains of all group whether of European, African, Asian, Native American, or any other descent. Both hi and prehistoric resources are protected under NHPA Sections 106 and 110. Other rele laws regarding tribal resources (American Indian Religious Freedom Act, Native Amer Graves Protection and Repatriation Act) are described in table 5.3-1.

Impacts to land and water resources and other natural resources, which can also be considered to be Native American concerns, are discussed in the other chapter 4 sec (for example, in sections 4.2.2, 4.2.2.1, land resources; 4.2.2.2, site infrastruct 4.2.2.3, air quality and acoustics; 4.2.2.4, water resources; 4.2.2.5, geology and 4.2.2.6, biotic resources; 4.2.2.8, socioeconomics; and 4.2.2.9, radiation and haza chemical environment). More details can also be found in the appendixes.

The following text change has been made to section 4.1.7: "In addition, cultural va are placed on natural resources such as plants, which have multiple purposes within various Native American groups." Section 4.3.2.7 now includes: "It is worth noting many natural resources at NTS are viewed as cultural resources by Native Americans. example, sagebrush is used as a tool, and for clothing and medicinal purposes."

07.04 The commentor references page 4-311 of the Draft PEIS and questions if "would the sentence "Some Native American (archaeological) resources would occur in Pantex areas" should read "could."

Response: The referenced sentence has been changed to "Some Native American resourc could occur within any areas disturbed..."

07.05 The commentor concurs that there exists a possibility of undiscovered cultura paleontological resources at Pantex that might be affected by construction of a tri supply and recycling facility. The commentor also concurs that such resources could protected by typical mitigation measures.

Response: Potential cultural and paleontological resources at Pantex are discussed section 4.5.2.7. If known cultural and paleontological resources at Pantex (or at a other selected site) are within areas subject to potential impact, DOE would protec resources to the extent possible, first through avoidance of the resources, and sec through mitigation of impacts. The possibility of undiscovered cultural and paleontological resources is always a consideration. Site-specific cultural resourc analyses would be conducted as part of a subsequent, tiered EIS. In onsite areas ha high probability for cultural resource discoveries, measures that can be taken to m potential impacts include employment of an archaeological monitor during constructi stopping work in the event of an unforeseen discovery.

08 Socioeconomics

08.01 The commentor suggests that DOE address in the PEIS the quality of jobs and b

that will be created as a result of a new tritium facility. The commentor also stat that DOE should include a comparison of the types of jobs that were associated with various cleanup activities at INEL with more complex and higher technology projects would be associated with a new tritium facility.

Response: Labor categories (types of jobs) were considered in the socioeconomic ana but were not specifically identified in the Draft PEIS. Instead, only total worker were analyzed and compared. More detailed information on the labor categories invol contained in the Technical Reference Report available in DOE reading rooms. Specifi socioeconomic impacts will also be further considered in site-specific tiered NEPA documents.

08.02 Several commentors express their support for this action in the NTS region. T commentors believe the project will increase the growth of the scientific community science/technology related business; reinvigorate the area economy and tax base; st light industry development in Las Vegas; and provide highly skilled technical and management positions to experienced craftsman, technicians, and scientists who may lost jobs during the phaseout at NTS. One commentor also notes that there will be a public support if DOE can assure the public that tritium transportation and product will be fairly safe. Another commentor states that NTS already has the available la skilled craftsmen, technicians, and scientists to support the tritium supply and re facility.

One commentor suggests that siting the tritium supply and recycling facility at NTS improve DOE's image within the community by working together to contribute to the positive growth of the community and its economy. Another commentor, expanding upon idea that locating the tritium supply and recycling facility at NTS helps the commu states that NTS has been good to minority workers providing much needed training an experience. According to the commentor, NTS contributes a solid education for the workers and prepares them for other responsibilities and tasks. Another commentor b that DOE has spent too much time on waste disposal capabilities, and suggests that recognize the high-technology security work force as a valuable resource for stockp stewardship and management activities.

Response: The attributes of NTS as well as each of the other four sites considered siting the tritium supply and recycling facility would be included as part of the decision making process. However, the PEIS considers these site factors only as the relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. In addition, transportation analyses were performed for all materials considered in the PEIS, and risks were found to be low. Other DOE program including those evaluating stockpile stewardship and management activities, will al evaluate these candidate sites in accordance with NEPA and take socioeconomic facto consideration.

08.03 Several commentors state that DOE should review the socioeconomic analysis to incorporate the following: that construction jobs will only be temporary; scientist and skilled workers will be drawn to NTS because of the new facility; there are pot job losses in regions that are not awarded the Tritium Supply and Recycling Program review of the accuracy of the projected employment figures as new jobs may be staff former employees of shutdown DOE facilities; an analysis of jobs that will be creat facilities supporting the planning and engineering studies necessary for the tritiu supply and recycling facility such as at Los Alamos; the need for skilled workers c by the new facility compared with the pool of skilled workers in each site's surrou area; transportation, electrical, water, and other environmental impacts from out-of-region people who move to the area to work at Pantex; and the potential spaw new production or fabrication facilities to support the tritium supply and recyclin facility and its operation.

Response: The PEIS identifies that construction jobs are temporary. The increase in construction jobs, the peak, and the decrease in construction jobs for each tritium supply technology at each candidate site have been analyzed and are presented in th The PEIS also assesses the potential impacts caused by newly created jobs which lea

in-migration. Labor availability is taken into account but employment estimates are conservative to measure in-migration and its effect on the surrounding communities. projected employment numbers at each candidate site in the year 2010 were estimated on the best available information on the expected mission and workloads for that si is not clear at this time without knowing the selected technology for tritium suppl the planning and engineering will take place or by whom, but it is unlikely that ma long-term employment would be created by this phase of the project. At the candidat sites, projected employment is expected to remain essentially the same or decrease shown in table D.2.1-1. Although the number of employees may be the same, the types jobs and staffing categories may be substantially changed.

The tritium supply and recycling project will create employment opportunities where is located. Only tritium recycling related jobs at SRS would be lost if tritium rec is collocated with tritium supply at a site other than SRS. The impacts due to trit recycling phaseout at SRS are evaluated in the PEIS.

08.04 Commentors express their support for this action in the SRS region. Some of t reasons for this support are: that the multipurpose reactor would create over 4,000 high-tech jobs in the SRS and Charleston region, offsetting defense-related cutback there is a need for additional jobs in this area as there has been a recent manpowe downsizing; a qualified work force exists at SRS with 40 years of experience; and i tritium recycling responsibilities were removed from SRS, more than 800 people woul their jobs, engendering long term impacts at SRS. As an example of local and politi support, one commentor refers to an article in the Augusta Chronicle and points out supporters of the tritium supply and recycling facility at SRS outnumbered "antis" workshops. According to the commentor, the large number of participants, including States Representative Graham, and the Metro Augusta Chamber Chair, lent support to because of expertise and infrastructure already in place to build and sustain a multipurpose reactor.

Response: The attributes of SRS as well as each of the other four sites considered siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relat evaluating the environmental impacts of the tritium supply and recycling facility a site. For SRS, the Replacement Tritium Facility, the amount of available land and w compliance with environmental regulations and agreements, site waste management act and facilities, and the surrounding local economies are all included in the environ analysis of impacts. Although the local and political support for a multipurpose re have been voiced and are factors, they are not considered in the environmental anal process presented in the PEIS.

08.05 Commentors state that there is support for this action in the Pantex region f following reasons: employees at a tritium facility are an asset to the Panhandle's economy; the business community in Amarillo would benefit and the jobs would be fil people from the community; and there is an over-80-percent public approval of Pante its missions. On the other hand, another commentor states that in the event of an i at Pantex, crops and livestock in the nation's "breadbasket" would be perceived to contaminated, destroying a multi-billion-dollar annual agriculture industry.

Response: The attributes of Pantex as well as each of the other four sites consider siting the tritium supply and recycling facility would be included as part of the decision making process. However, the PEIS considers these site factors only as the relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. The impacts referred to by the commentor are considered "sec impacts." The secondary impacts of accidents affect elements of the environment oth humans. For example, a radiological release may contaminate farmland, surface and g water, recreational areas, industrial parks, historical sites, or the habitat of an endangered species. Section F.3 of volume II discusses the potential secondary impa that potentially could occur from a design-basis accident for a typical reactor at the sites considered in the PEIS (section F.3.4 deals specifically with the effects Pantex).

08.06 Commentors state that there is support for this action in the INEL region for following reasons: the potential boost to Idaho's economy and technology base; the technology exists to handle nuclear waste; and that initiating tritium operations a would help unemployment in the area.

Response: The attributes of INEL as well as each of the other four sites considered siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relat evaluating the environmental impacts of the tritium supply and recycling facility a site.

08.07 Several commentors state that DOE should review the socioeconomic analysis, particularly for the NTS area, and incorporate the following: the economic multipli the NTS area should include not only indirect jobs, but also induced jobs (third le job creation); Southern Nevada per capita income figures in the year 2010 seem low need to be adjusted; tourism may be affected negatively by the new facility; and th facility may interfere with future housing and development needs or the new facilit have unforeseen effects on as-yet unbuilt housing.

Response: The economic multiplier used in the PEIS analysis includes the household which also includes the induced employment in the multiplier. The term "indirect" includes both induced and indirect, and was used to be more understandable for the public. The year 2010 per capita income figures presented in the PEIS were based on Bureau of Economic Analysis most recent long-term published regional forecasts. Tou the Las Vegas area has continued to increase substantially over the years even in l nuclear testing at NTS. It is highly unlikely that the addition of a tritium supply mission at NTS would affect tourism. The effects that any of the proposed tritium s facilities would have on housing in the area of Las Vegas were examined in the PEIS found to be negligible.

08.08 Commentors express concern about the construction start times for the tritium and recycling facility and the availability of jobs in the NTS area. One commentor that DOE should begin work on the tritium supply and recycling immediately at NTS a wait until the year 2000 to begin construction to offset the ongoing downsizing and provide jobs and money to the local economy. Additionally, the commentor states tha is a shortfall of work, and that there is a risk of losing more skilled workers if project does not begin soon. Another commentor notes that the local, experienced NT workforce (25,000 union workers) has an excellent safety record at NTS and is in pl right now and can begin immediately. The commentor states that DOE should be concer that local people benefit from the jobs, instead of people from outside of the regi commentor notes that many components for the tritium production facility could be manufactured locally. The commentor states an aggressive contracting program with a emphasis on obtaining required components locally would enhance the region's manufa base. Furthermore, according to another commentor, the PEIS should consider current future downsizing in its socioeconomic analysis of the NTS area. The commentor also that the downsizing at NTS should also be taken into account when making a decision the location of the Tritium Supply and Recycling facility.

Response: Construction start times and hence start dates vary depending on the tech Start dates in the PEIS were established around a peak construction date of 2005. T was done so that the potential environmental impacts of each technology could be co However, the construction of a tritium supply facility would not occur before the appropriate tiered NEPA documents were completed, and detailed engineering designs facility completed. Labor availability is included as a component in the socioecono modeling performed in preparing the socioeconomic analysis for the PEIS to determin potential in-migration of population and community effects caused by the proposed p

08.09 The commentor states that DOE should address the size and surrounding populat density of ORR relative to other DOE candidate sites (to assess cumulative impacts) Also, relative population density maps would be helpful, according to the commentor

Response: As described in the methodology discussion detailed in appendix D, the Re Influence (ROI) developed for each site was based upon where the current DOE employ contractors reside, and assumes that any in-migration would locate proportionately the same places. Any effects of in-migration in those communities where in-migratio most likely to occur would be indicated in the analysis regardless of current or ex population densities.

08.10 Commentors state that DOE should be more accurate in determining the actual n of jobs that will be provided with this project. DOE's estimates for the total numb construction and operation workers for each of its technology alternatives appears inflated according to one commentor. This overestimation is unwise because various lobby to be chosen for a particular alternative based on these values. Another comm asserts that, in the past, DOE often overexaggerated the number of potential jobs associated with a proposed project to strengthen the selling point of the project. commentor states that, when compared to the New Production Reactor project, the Tri Supply and Recycling Program seems to have a longer employment period, making the T Supply and Recycling Program appear attractive in job-starved regions. In addition, commentor adds, the predicted projections may not be representative of the number o people in the region that benefit from the project. It seems grossly exaggerated th 12,000 jobs would be created in the ORR region, according to the commentor. Additio the estimate of an operational workforce of approximately 290 persons at a 500 to 6 coal-fueled steam electric plant is double the staffing of similar plants, accordin one commentor. Another commentor references page 5-21, finding the estimate for employment at a mixed-oxide facility seems to be high. However, if pit disassembly conversion are included, then the number might be more reasonable.

Response: The PEIS identifies that construction jobs are temporary. The increase in construction jobs, the peak, and the decrease in construction jobs for each tritium supply technology at each candidate site have been analyzed and are presented in th The PEIS also assesses the potential impacts caused by newly created jobs which lea in-migration. Labor availability is taken into account but employment estimates are conservative to measure in-migration and its effect on the surrounding communities. projected employment numbers at each candidate site in the year 2010 were estimated on the best available information on the expected mission and workloads for that si the candidate sites, projected employment is expected to remain essentially the sam decrease as shown in table D.2.1-1. The estimated operational workforce for the coal-fueled steam electric plant has been revised from 290 persons to 145 persons. disassembly and conversion is included in the estimate for employment at a mixed-ox facility.

08.11 Several commentors state that DOE should review the socioeconomic analysis pertaining to the Pantex area and incorporate the following socioeconomic issues: t economic multiplier that DOE used on their overheads appears wrong and, therefore, PEIS should be checked for this mistake as well; and the River Road Independent Sch District north of Amarillo should be added to the Independent School District likel affected by the proposed action.

Response: The economic multipliers used in the PEIS socioeconomic analysis were dev from the AFSEM model described in appendix D. This model is based upon United State Bureau of Economic Analysis Regional Inter-industry Multiplier System (RIMS) II mul coefficients, which are widely accepted and have been deemed to be accurate for the analysis. An underlying assumption used in this PEIS for addressing potential socioeconomic impacts was that the inmigrating population would locate in areas sim to the existing residents. Data on table D.3-52 shows that almost all the Pantex wo living in Potter and Randall Counties live in Amarillo and that only 58 workers liv unincorporated areas of Potter and Randall Counties. If all 58 workers lived in unincorporated Potter County this would be only 2 percent of the Pantex workforce. therefore determined that even if all 58 workers' children attended schools in Rive Independent School District that this would constitute only 2 percent of any effect that the proposed alternative would cause, and as such these effects would be negligible.

08.12 The commentor states that this PEIS should not focus on jobs. According to th commentor, this element changes the focus from nuclear weapons to maintaining jobs economic stability, thus causing a potentially wrong basis for a decision.

Response: The purpose of the PEIS is to assess potential environmental impacts. In socioeconomics, potential impacts could be caused by too many jobs leading to large in-migration too quickly for the community infrastructure to absorb. The increase i as analyzed in the PEIS does not pose significant environmental impacts and some pe consider the jobs a positive benefit.

08.13 The commentor suggests that DOE clarify the basis for the calculation of the to the NTS ROI. The population and housing projections assume that people would res cities and counties in the same relative proportion as the existing population. The commentor asks if the ROI includes only specific portions of the four-county area surrounding NTS and what the boundaries are. The commentor references volume II, ta D.3-23, stating that the population estimates for Nye County appear to be underesti The commentor provides a contact for DOE to obtain current population figures.

Response: The NTS ROI covers the entire four-county area surrounding the site, but magnitude of the impacts was determined by the distribution of NTS employees within ROI. Therefore, jurisdictions within the ROI with larger numbers of resident NTS employees would be more greatly affected by the proposed alternatives than those wi fewer resident employees. The population estimates were based on the most recent Bu Economic Analysis regional projections, but because the NTS area is one of the fast growing regions in the United States these projections are constantly changing. Nonetheless, given that Clark County is so much larger than Nye County, most of the impacts would still be found in Clark County, and any additional updating of the population estimates would not substantially change the results of the analysis.

08.14 The commentor references volume I, page 4-313, and notes that the number of j the Amarillo area would increase more if the No Action alternative was chosen. Ther the commentor supports No Action for Pantex.

Response: Under No Action, Pantex employment is expected to decrease from the 1994 and total employment in the Amarillo area is expected to increase. However, as show figure 4.5.3.8- 1, total employment would increase over No Action if a tritium supp recycling facility were located at Pantex.

08.15 The commentor states that, in figure 4.4.3.8-5, it is presented that for most proposed alternatives, increases in revenue to the city of Clinton and the Clinton schools would greatly exceed increases in required public expenditure, while for al ORR governments increased revenues would be about the same as increased expenditure commentor asserts that this prediction may be erroneous and suggests a check for er made in the economic models.

Response: The purpose of the public finance analysis is to determine if there would adverse environmental impacts on local government fiscal health and the ability to provide services. Generally, most local governments tend to have fairly balanced financial statements and if there are negligible to minimal effects caused by a pro alternative this balance would remain unchanged, although revenues and expenditures rise. This was the case for most of the ORR local governments. The city of Clinton an exception to this because its recent trend data indicated a disproportionately l fund balance which was carried forward in making No Action and project alternative predictions. It is likely that this excess was created and planned for spending on capital project or some other expenditure and would not have been carried forward a our analysis, and the result would be a more balanced expenditure-to-revenue ratio. However, our methodology (described in section D.2.3) cannot account for undocument planned expenditures, and the analysis is concerned with the environmental aspects whether or not a local government would be fiscally damaged by the proposed alterna

This analysis shows that the proposed alternatives would not negatively impact the Clinton and would instead provide some financial benefit.

08.16 The commentor references volume I, chapter 4, section 4.4.2.6, page 4-188, se column, second paragraph and suggests that an analysis be provided of the effects o local economy (e.g., recreational sports, State of Tennessee wildlife resources lic and permits sales) from displacing game animals from several hundred acres of regul hunted land and possibly forcing those animals toward more contaminated areas of OR

Response: Local government finances were evaluated in the PEIS. Licenses, permits, fines were included in these analyses where local governments collected these types revenues. These revenues are a small part of these local government budgets. Consid the small acreage involved with the proposed project and the extensive recreational opportunities in the ORR area, it is unlikely that there would be even a small effe these governments' budgets. It should be noted that the primary purpose of conducti controlled hunts on ORR is to reduce collisions between deer and automobiles. Recre and economic benefits of this activity are secondary to the primary goal of public Deer displaced from the proposed TSS would migrate to other areas of the ORR. Since of the site that are a problem with respect to contamination are fenced and monitor displaced deer would not have access to these areas. All deer harvested during cont hunts are monitored for contamination prior to being released to the hunter.

08.17 The commentor references volume II, appendix D and suggests that a comparison provided of the cost advantages of labor vs. the cost of supporting the laid off wo as some workers may be in pre-retirement years. In such cases, the newer employees have to be hired and trained, according to the commentor.

Response: Cost analyses associated with phasing out tritium recycling at SRS are in in the Technical Reference Report available in DOE reading rooms and will be factor into the ROD. All other candidate tritium supply and recycling sites would have job increases.

08.18 The commentor references volume I, page 4-67, employment and local economy, u Action: "...employment at INEL decreased to approximately 10,100 persons in 1994. T a decrease of about 1,000 persons from the 1990 employment. INEL employment is proj to total almost 10,100 persons in 2010 and remain at this level through 2020." The commentor states that these figures need to be revisited. The commentor adds that i 1995, approximately 1,200 INEL employees took early retirement or voluntary separat another 1,000 may be laid-off later in 1995. The end of Naval reactor training at I the departure of several hundred Navy personnel, many with dependents, also needs t factored into the PEIS estimates, according to the commentor.

Response: The size of the workforce at the affected DOE sites is constantly changin to ongoing changes within the Complex. The employment figures used in the PEIS were most recent figures obtained from INEL. The focus of the analysis was the assessmen the impacts associated specifically with the proposed alternatives using conservati assumptions, and it is not possible to analyze all possible future employment scena However, under the scenario described by the commentor, potential negative socioeco impacts associated with the proposed alternatives (e.g., overcrowded schools, reduc housing availability, etc.) become less probable.

08.19 In reference to volume I, pages 4-479 and 4-480, figure 4.15-2, the commentor that there is a problem with the scale and/or positioning of the INEL site as shown this map. The commentor points out that the INEL site does not extend into Montana. According to the commentor, the 50- mile circle on this map also appears to be too and/or incorrectly positioned; it should be approximately tangent to the southernmo point on the Idaho-Montana border.

Response: The commentor is correct. The graphic has been changed to depict INEL's l and 50-mile radius more accurately, similar to the depiction of INEL in figure 4.2-

08.20 In reference to volume II, page D-8, table D.3-1, the commentor states that t table shows that approximately 74 percent of the INEL employees reside in Idaho Fal 76 percent in Bonneville County. Yet, according to the commentor, the text that accompanies this section implies that the effects of building a tritium supply and recycling facility at INEL would be spread out over the region of influence. The co notes that such effects would be much more concentrated and localized than the PEIS indicates.

Response: The PEIS examines the socioeconomic impacts within the entire ROI. As des in the methodology discussion in appendix D, the assumption was made that any in-migration would follow the same pattern as the existing workforce and, as such, would be proportionately greater in those places where the current workforce reside PEIS analysis measures the effects at the ROI, county, and city levels.

08.21 The commentor references volume I, pages 4-477 and 4-478 of the PEIS, which discusses environmental justice considerations associated with the project, includi maps depicting minority and low income population distributions in Idaho, Tennessee Texas, and South Carolina, within 50 miles of the DOE proposed site. The commentor recommends that a Nevada map be added because the 1990 United States Bureau of Land Management Nevada state map shows the Las Vegas Paiute Indian Reservation is locate approximately 40 miles from the southeast corner of the NTS.

Response: Additional maps have been included in the Final PEIS depicting minority a income populations in the vicinity of NTS.

08.22 The commentor notes that page 4-478 states that any disproportionately high, health or environmental impacts on low-income or minority communities "would most likely result from toxic/hazardous air pollutants and radiological emissions." Alth agreeing that such pollutants and emissions are highly significant, the commentor s that the PEIS analysis be expanded to assess groundwater withdrawals for NTS techno The commentor states, in light of the tremendous importance of groundwater in the western United States, that the PEIS assess any potential impacts to Native America communities and reservations associated with pumping groundwater, since the loss of groundwater to Native American populations can have a significant, adverse impact t agriculture- and livestock-based tribal economies.

Response: As discussed in section 4.16, the analysis of impacts for each of the can sites indicates that even if there were any health impacts to minority and low inco populations, these impacts will not have disproportionately high and adverse affect therefore, adverse impacts to agriculture- and livestock-based tribal economies wil negligible. Based on revised recharge rates for the NTS aquifer system, no adverse are expected. Implementation guidelines for the President's recent Executive Order Federal Action to Address Environmental Justice in Minority Populations and Low-Inc Populations are still in draft form. This issue will be analyzed in more detail in site-specific tiered NEPA documents once a site has been selected.

09 Intersite Transportation

09.01 The commentor believes that DOE should provide a separate EIS to address the of transportation in more detail.

Response: The intersite transportation section 4.7.2 has been expanded based on pub comments received during the review of the Draft PEIS. DOE believes the analysis of intersite transportation impacts presented in the Final PEIS is appropriate for a programmatic NEPA document. A more detailed intersite transportation assessment wou prepared for site-specific tiered NEPA documents when a tritium supply technology a

are identified.

09.02 The commentor expresses the opinion that DOE should consider transportation a of the selection criteria. Under that criterion, the commentor believes that NTS wo a suitable location because there is no need to transport wastes offsite. The comme also notes that disposal options for all waste streams exist onsite.

Response: Intersite transportation of Complex material is a consideration in the de process and has been evaluated in this PEIS. Waste streams were also evaluated, inc low-level radioactive waste. As stated in section 4.7.2.2, LLW can be disposed of a candidate sites except Pantex. Impacts from the transport of LLW from Pantex to NTS presented in table 4.7.2.2-2. The waste management program and facilities at NTS ar discussed in section 4.3.2.10 and appendix H.2.2.

09.03 The commentor urges DOE to ensure that shipments of solid LLW from Pantex to SRS are handled with the utmost precaution and personnel screening.

Response: All DOE shipments of LLW, including those from Pantex to NTS, are shipped Department of Transportation (DOT)-approved containers/packages in accordance with applicable Federal and state regulations, and DOE orders. DOE does not ship LLW fro Pantex to SRS.

09.04 Commentors express concern over the shipment of radioactive materials/waste t One commentor is opposed to such shipments while another commentor expresses concer about the safety of nuclear waste-carrying casks that are transported through the t Shoshone, ID, "at 60 mph." In addition, the commentor believes that DOE should addr the PEIS the possibility of derailments, based on the four train derailments that h occurred in the last 6 months near the town of Shoshone. On a broader scale, anothe commentor feels that DOE must account for all INEL- and non-INEL-related radiologic materials that are being transported across Idaho. The unprecedented level of radio material movement associated with upcoming DOE decisions must be comprehensively evaluated.

Response: As part of the Tritium Supply and Recycling Program, DOE is not proposing ship any spent nuclear fuel or radioactive waste to INEL. Shipments containing radioactive materials would be made in compliance with Federal hazardous materials transportation regulations (DOT and/or NRC, as applicable). As stated in section 4. tritium shipments are made almost exclusively by air, and not by rail. Radioactive material shipments are required by Federal regulations to be made only in high inte packaging. The DOE safety record is exemplary, as there has never been a transporta accident involving a release of radioactive material.

09.05 Commentors express concerns with railroad transportation at NTS. If the APT i selected for supply and recycling, one commentor believes that there is no need for railroad line to NTS for tritium production. In addition, another commentor also st that an emergency management plan/structure for accidents on rail or road is needed NTS. The commentor believes that responsibilities involved in such a plan should be clearly defined as to whether it is local, state, or Federal responsibility. DOE's planning in this area is not adequate and should incorporate the Department of Defe (DOD) experience and knowledge in shipping hazardous waste.

Response: There is no requirement for a railroad for the APT option at NTS and it h deleted from table 4.3.3.2-1. Tritium would be transported by air (not rail, and ra by truck). DOE has an established emergency response program, which is promulgated directives (principally in series 5500). These directives are implemented and suppl by NTS's emergency response procedures. In any case, DOT is responsible, under the Hazardous Materials Transportation Uniform Safety Act of 1990, for coordinating Fed training programs and for providing technical assistance to states, tribes, and loc governments for emergency response training and planning.

09.06 The commentor notes that DOE uses inconsistent terminology in the intersite transport section of the executive summary. The commentor believes that the wording the "relative transportation risk of tritium" paragraphs should be changed to make section consistent.

Response: The phrasing of the relative transportation risk is different between the executive summary and section 4.7, although both are correct. The discussion in sec 4.7 has been revised to be more consistent with the summary.

09.07 The commentor references volume I, page 4-14, column 2, paragraph 3 and pages to 4-441, section 4.7, and asks whether an assessment of the impacts of transportat reactor fuel or spent fuel from the sites was analyzed. At a minimum, the commentor believes the rate of spent fuel generation in metric tons of heavy metal should be provided so that it can be compared to other sources.

Response: The transport of reactor fuel and highly enriched uranium for HWR and MHT fabrication has been added to the Final PEIS analysis. Reactor fuel would be provid and transported by commercial vendors. Reactor fuel is routinely transported throug the United States. The radiological health risks from transporting reactor fuel are expected to be very low and would not vary significantly regardless of the site sel This transportation risk would be evaluated in more detail in site-specific tiered documentation once a site is selected. Spent fuel would be stored onsite during the of the project. The Final PEIS now includes the spent fuel generation in metric ton heavy metal.

09.08 The commentor suggests that the DOD share shipping knowledge with other agenc

Response: DOE and DOD must comply with and ship materials in accordance with the sa regulations (49 CFR). Shipments of tritium and other weapons complex materials betw and DOD sites are closely coordinated.

09.09 Commentors express concerns about the transportation of large amounts of trit One commentor suggests that the nuclear weapons stockpile stewardship and managemen program may be centered at a distant site (other than SRS) where the tritium recycl facility is presumed to be located in the year 2010. This raises questions concerni transportation of large amounts of tritium to and from another location (other than according to the commentor. The commentor is concerned that the cost impact of this transportation of tritium is not being evaluated; and inquires whether states, coun and municipalities can stop such shipments from passing through their jurisdictions make this proposition invalid in 2010. Another commentor also asks what the risk is transport tritium to and from assembly and disassembly sites. While the PEIS addres risk of moving low-level waste from Pantex to a DOE disposal site, the commentor be the analysis fails to consider the risk of transporting tritium containers from the assembly/disassembly site to the tritium site. In addition, the commentor notes tha executive summary states that the relative transportation risk of tritium at NTS is percent lower than the No Action alternative and asks how this was concluded since, the No Action alternative, Pantex is the assembly/disassembly site.

Another commentor references the PEIS alternative of producing tritium at one facil then recycling the tritium at SRS. According to the commentor, other than the transportation of virgin tritium, which is addressed in section 4.7.2.2, the enviro impacts associated with extracting the tritium at the production facility, loading some sort of transport container, transporting the containers from the production s SRS, and then unloading the containers at SRS are not addressed in the Safety Analy Report. In any case, some commentors feel the increased costs of the additional han along with unnecessary health/environmental risks associated with transportation of tritium and related hazardous wastes, would seem to argue for a collocation alterna with the facility at one site.

Response: The PEIS evaluates environmental impacts due to intersite transport of pr

radioactive materials; cost impacts are not addressed in the document. The cost analysis for each tritium supply technology can be found in the Technical Reference available in DOE reading rooms. The cost analysis along with the PEIS results will evaluated and considered as part of the ROD. Transportation of tritium between all candidate sites (not just SRS) is addressed in the PEIS. Shipments would be made in compliance with Federal hazardous materials transportation regulations that superce those of state and local jurisdictions. Inconsistent state and local regulations ar preempted by the Federal Hazardous Materials Transportation Uniform Safety Act of 1 Placing only tritium supply at INEL, NTS, ORR, or Pantex and transporting tritium b to SRS would increase the relative risk by approximately 2 percent per year, as exp in section 4.7.2.2. Handling was considered in determining the consequences of an accidental tritium release during transport. The relative transportation risk of sh tritium is related to the current location of the tritium recycling facility at SRS the assembly/disassembly facility at Pantex. Moving the tritium supply to NTS and retaining assembly/disassembly at Pantex would decrease the risk by 30 percent due shorter distances involved.

09.10 The commentor references volume I, chapter 3, table 3.6.1, intersite transpor 3-95, ORR column, first paragraph and asks for clarification on why no intersite transport of LLW would be required.

Response: For the purposes of this PEIS analysis, the planned LLW disposal capabili ORR was assumed to be available in 2002; thus, no offsite transport of LLW would be required.

10 Waste Management

10.01 Commentors suggest that the Nevada Test Site has a superior waste management capability. The commentors further note that since it has existing low-level radioa waste disposal facilities, it could avoid the need for transporting wastes from tri production facilities if such production were located at NTS. According to the comm NTS is isolated, has plenty of room for expansion, and has been a repository for ot sites' wastes.

Response: The waste management capability at NTS has been discussed and analyzed as of the tritium proposal in the PEIS. The PEIS analysis, including waste management issues, and other supporting program reports will be considered in the process lead up to the decision presented in the ROD.

10.02 Commentors note that DOE needs to seriously address the short-term and long-t nuclear waste disposal issue before undertaking a new project that will generate mo spent fuel, more LLW, more hazardous waste, and more sanitary waste. The commentors that no new wastes should be generated until all other wastes have been cleaned up, cleanup should be a first priority. Commentors are of the opinion that there is no to dispose of spent nuclear fuel in the United States, and the operation of the tri supply and recycling facility will further add to the volume, no matter where it is located. One commentor states that disposal of high-level radioactive waste in the zone will prove to be unacceptable, resulting in longer delays in putting a reposit into operation. Moreover, commentors believe wastewater from tritium production cou pollute groundwater resources in Amarillo. Adding additional waste at NTS, which ha become a weapons waste dumping ground in the commentors' opinion, would only add to problem there. Commentors feel that the costs of short-term and long-term cleanup s also be presented in the PEIS. Another commentor states that Oak Ridge needs money clean up radioactive mess left by past practices.

Response: As stated in chapter 2, DOE is responsible for developing and maintaining capability to produce nuclear materials that are required for the defense of the Un States. This responsibility includes the production of tritium. Because tritium dec

over time, a new supply of tritium will be needed in the future. A major thrust of Tritium Supply and Recycling Program has been, and will continue to be, the minimiz of wastes through an overall philosophy of pollution prevention. Tritium supply and recycling facilities that will support the nuclear weapon stockpile requirements (b and existing facilities) would treat and package all waste generated into forms whi would enable long-term storage and/or disposal in accordance with all applicable Fe and state regulations and DOE orders. Materials will be stored until a final dispos is determined. The alternatives include a technology that does not generate spent n fuel. Dry site designs for the various tritium supply technologies include provisio maximum recycle of any wastewater in order to minimize liquid discharges from the facility. Any liquid discharges would be fully permitted by the applicable Federal state regulatory authority.

10.03 One commentor suggests that DOE should analyze long-term waste management cos the tritium production facility throughout its life and after closure. The commento asks that DOE use correct LLW figures in the "Waste Management" overhead used at th public hearings. Moreover, the commentor believes DOE should be alarmed by the mass increase in LLW generation (from 25yd3 per year to 15,980 for HWR). Commentors urge to break down wastes by type, volume, disposal methods, and costs.

Response: The PEIS does break down waste by type and volume. In the waste managemen ronmental impacts section for each site the disposal method was discussed for each type. The cost analysis for each tritium supply technology can be found in the Tech Reference Report available in DOE reading rooms. To the extent practical, the long management of those wastes is addressed in the Technical Reference Report. The cost analysis along with the PEIS will be evaluated and considered as part of the ROD. A in table A.2.1.1-4, section A.2.1.1 the annual LLW volume to be disposed of is 1,87 for the HWR. This would be added to the 117 yd3 (table 4.2.2.1-4, section A.2.2.1) the recycling facility for a total of 1,987 yd3 per year.

10.04 The commentor indicates that spent fuel wastes from a multipurpose reactor pr will be treated in the same manner as spent fuel from commercial reactors and this important characteristic of such an option.

Response: The management of spent nuclear fuel from a multipurpose reactor would be in the same manner as that described for the tritium supply reactors. A spent nucle fuel storage facility capable of stabilizing and storing the spent nuclear fuel gen during the design life of the reactor will be constructed as part of the facility. some point in the future, a Spent Fuel Repository is established, then the fuel wou most likely be transferred there.

10.05 The commentor expresses the opinion that the planned liquid LLW facility at N should be considered by DOE.

Response: A sentence has been added in section 4.3.3.10 under the No Action paragra between the sentences in line 22 as follows: "A liquid LLW treatment facility is pl for the treatment of wastewater from soil decontamination." Liquid LLW is not trans by DOE, it must be solidified first. The treatment facility would have to be colloc with the other facilities. If sited at NTS, the potential utilization of the facili would be evaluated in a site-specific document.

10.06 One commentor addresses the disposal of spallation products in the APT, and s that the accelerator design should comply with NRC and EPA standards since minute b extremely hazardous radioactive elements may be produced. Another commentor believe wastes from a coal plant to generate the power required to operate the APT should b factored in.

Response: All tritium supply and recycling facilities would treat and package all w generated into forms that would enable long-term storage and/or disposal in accorda with the RCRA, and other applicable statutes. The management of DOE radioactive was

be conducted in accordance with DOE Order 5820.2A, Radioactive Waste Management. Hazardous waste will be managed in accordance with RCRA. NRC does not provide regul oversight for DOE wastes, but does review DOE orders which are developed through a regulatory development process. The PEIS has added an analysis to the environmental sections for each site throughout sections 4.2, 4.3, 4.4, 4.5, and 4.6 to account f power required to operate the APT; however, the environmental parameters are based gas-fired power plant not a coal plant.

10.07 The commentor is of the opinion that the PEIS should include an analysis of long-term waste management costs, including facility life and afterward, past 2050.

Response: Costs are not analyzed as part of the environmental impacts. However, cos part of the input into the analysis for the ROD.

10.08 One commentor notes that the large volume of spent fuel waste associated with MHTGR includes the moderator. According to the commentor this technology does not p more fission products than other reactor types. Another commentor feels that the PE not make it clear that additional storage space (above that required by the other r technologies) would be needed for MHTGR spent fuel generation. This need is due to thermal (criticality) requirements of storing spent fuel, and the PEIS needs to men this, according to the commentor.

Response: In addition to the volume of the spent nuclear fuel, which for the MHTGR includes the moderator, the heavy metal content has been added to the waste tables section 3.4 and appendix A.2 for all of the reactors for a more equitable compariso

10.09 Commentors state DOE should not consider spent nuclear fuel as an asset.

Response: Spent nuclear fuel was considered a resource by DOE when it was reprocess obtain special nuclear materials. With the reduction in the Nation's nuclear weapon stockpile, supplies of these special nuclear weapons became more than sufficient to satisfy needs for the foreseeable future. Accordingly, the decision to discontinue reprocessing was made and spent nuclear fuel is presently being stored only until a suitable repository becomes available. Processes similar to reprocessing may be uti for treatment and stabilization.

10.10 One commentor questions why there is no consideration for onsite storage and disposal at Pantex (unlike the other sites under consideration) and why the city of Amarillo needs to change its landfill design. Another commentor suggests that addit solid waste from a tritium supply and recycling facility sited at Pantex would not substantial impact on current landfill capacity even if the city's landfill were ut

Response: The current site practice for sanitary waste disposal at Pantex is to uti the landfill for the city of Amarillo. If Pantex were to construct an onsite sanita landfill, it would certainly be used. Since the solid sanitary waste would increase factor of 13 to 20 depending on the technology chosen, there would be a substantial impact on current landfill capacity. There is no statement that a landfill design c is required; however, the increase in solid sanitary waste volume could affect the lifetime of the current landfill.

10.11 The commentor states that the Tritium Supply and Recycling Program would add incremental increase in wastes compared to previous DOE projects which have contaminated ORR. In the commentor's opinion, this seems to position ORR as a likel candidate by avoiding more prominent impacts at another site.

Response: The Tritium Supply and Recycling Program would add an incremental amount waste to any site selected. It is true that the increment is more of an impact at a such as Pantex as opposed to ORR or SRS. However, the waste impacts are only one in into the overall decision process.

10.12 The commentor refers to page 3-87 and notes that in the previous EIS for a Ne Production Reactor (April 1991), the hazardous solid waste generated for each react concept (HWR, light water reactor, MHTGR) varied from site to site, but was general for the light water reactor than for the MHTGR and HWR by factors of 7 to 24. Here, MHTGR allegedly produces 2.5 times as much as the light water reactor and HWR, and produces more in three modules than it produced in 1991 in eight modules. The comme indicates they have been unable to obtain the reference document to check the basis these numbers, but there appears to be an error. According to the commentor, this s be re-evaluated.

Response: The data for the PEIS were prepared by DOE's architectural and engineerin contractor by extrapolating data from the New Production Reactor Program to include ensuring consistency across all tritium supply and recycling alternatives. The reac assessed for the Tritium Supply and Recycling Program were down-sized to meet the decreased tritium requirements outlined in the Nuclear Weapons Stockpile Memorandum production of plutonium and the reprocessing of spent nuclear fuel were also elimin from the proposed New Production Reactor Program.

10.13 The commentor is of the opinion that DOE should consider the possibility of reprocessing tritium from spent fuel.

Response: There is little or no tritium that can be recovered by the reprocessing o nuclear fuel. It is for that reason that specially designed target rods must be use manufacture tritium in a reactor.

10.14 The commentor notes that spent fuel storage is a function of heat. Therefore, less heat generated, the less storage required. The commentor asserts that the docu does not adjust the environmental impacts for storage of spent fuel as function of

Response: Spent fuel storage requirements and environmental parameters were develop DOE's architectural and engineering contractor. The PEIS analysis assumed that the fuel storage requirements and environmental parameters did account for the differen spent fuel characteristics of the various technologies. Assumptions about volume requirements for a repository based on heat load are speculative.

10.15 The commentor suggests that DOE present the percentage of spent fuel to be ha in the Tritium Supply and Recycling Program relative to total amount of spent fuel currently managed. The commentor believes that a more accurate perspective of the differences between reactor and APT technologies would result.

Response: The residual heavy metal content of the spent nuclear fuel for the reacto technologies has been added to the Final PEIS. For comparison purposes, the DOE inv in the year 2035 as reflected in the ROD from the Department of Energy Programmatic Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (2,7 metric tons) and an estimated inventory in the year 2030 of commercial spent nuclea (85,700 metric tons) has been added. The tritium supply reactor technologies would contribute the following amounts of heavy metal per year: Large ALWR (105 metric to Small ALWR (68 metric tons), MHTGR (0.3 metric tons), and HWR (0.2 metric tons).

10.16 The commentor believes the Final PEIS should express LLW in curies or mass un addition to yd3 and acres3).

Response: LLW is defined as waste that contains radioactivity but is not classified high-level waste, transuranic waste, spent nuclear fuel, or as "11e(2) by-product material" as defined by DOE Order 5820.2A, Radioactive Waste Management. Test speci fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided th

concentration of transuranic waste is less than 100 nanocuries per gram. LLW is not typically measured in terms of curies, it is quantified in terms of cubic yards. An of environmental impacts are not based on curie content per se but rather on the nu curies potentially released.

10.17 The commentor, who was present at a public hearing at NTS, refers to a slide indicates the need for a new organic mixed-waste facility and asks what are the pri constituents of this waste stream. The commentor also wonders if it is the same as LLW. The commentor believes DOE should clarify this.

Response: This is a solid mixed waste stream consisting typically of contaminated o absorbed on wipes, contaminated protective clothing, and plastics in relatively sma volumes. NTS does not have a facility capable of treating this waste. Currently NTS such wastes offsite for treatment. If the tritium supply were located at NTS, an or mixed-waste treatment capability would be needed either onsite or offsite.

10.18 In reference to volume I, chapter 4, table 4.4.3.10-1, page 4-254 (transurani (solid) row, disposal method column, second and third statements), one commentor su that since the status of events cannot be accurately projected as to the opening of repository, DOE should remove the phrase "Federal repository in the future." Anothe commentor states that reactor technologies would generate from 7 (HWR) to 30 (MHTGR of spent fuel a year. If Yucca Mountain is chosen, this commentor states that the projected disposal needs already exceed capacity. INEL and Spent Nuclear Fuel Final appear to address only how to manage DOE spent nuclear fuel over next 40 years unti disposition options are available.

Another commentor references volume I, chapter 4, section 4.4.2.10, page 4-201, and for clarification of where the LLW disposal area would be located and if acreage ha been committed for the amounts of excess LLW waste identified in the table 3.6.1 un waste management. Assuming that LLW disposal facilities will be available on ORR, t commentor believes that waste disposal siting options by the NRC should be discusse commentor also asserts that there is much uncertainty about the location of an onsi storage facility since there is no progress on the storage problems already existin ORR.

Response: It is agreed that the status of events cannot be accurately projected as opening of a Federal repository for transuranic waste; however, the discussion stil accurately depicts DOE's future plans. It should be noted that it is widely accepte such a facility will have to be built sometime in the future. As shown in the PEIS, current plans call for the Class II LLW disposal facility to be operational in 2002 disposal facility is part of the overall LLW management program at ORR and is not b proposed to be constructed solely to meet the requirements of the Tritium Supply an Recycling Program. There are many factors that could affect the schedule, location, capacity of this facility. These include: (1) Defense Nuclear Facilities Safety Boa recommendation 94-2, concerning performance assessments for LLW disposal facilities the National Disposal Working Group, (3) the ROD from the Department of Energy Wast Management Programmatic Environmental Impact Statement, (4) future funding, and (5) ORR environmental restoration program. The acreage quoted in the PEIS is the amount required to dispose of the LLW from the proposed action based on the current land u factor for the proposed Class II facility. Currently DOE LLW disposal facilities ar licensed or regulated by the NRC. The management of LLW is outlined in DOE Order 58 The DOE Committee on External Regulation of DOE Facilities is now looking into the possibility of external oversight of DOE facilities by NRC.

10.19 One commentor refers to page 4-208 which states that radioactivity limits for L1 wastes are 560,000 curies per yd3. But the commentor believes that no amount of radioactive material produced in this program, however diluted, can be below regula concern. Another commentor believes that because of the waste hazard, no nuclear wa should be placed in Tennessee or anywhere near people.

Response: The LLW generated as part of the Tritium Supply and Recycling Program is

considered to be below regulatory concern. The management of LLW is outlined in DOE Order 5820.2A, Radioactive Waste Management. As stated in the DOE order, it is DOE that "low-level waste operations shall be managed to protect the health and safety public, preserve the environment of the waste management facilities, and ensure tha legacy requiring remedial action remains after operations have been terminated."

10.20 The commentor notes that Pantex does not currently generate high-level radioa waste; however, three of the production reactors would create high-level waste. Thi would force the Panhandle to deal with storage of both plutonium and high-level was according to the commentor. The commentor feels that this is unacceptable to reside since there is no storage facility for these wastes.

Response: The three production reactors would generate spent nuclear fuel. Because spent nuclear fuel is not being reprocessed, there is no generation of high-level w The design of the production reactors includes spent fuel storage. The preconceptua design has sufficient capacity to store the spent nuclear fuel for the life of the facility.

10.21 The commentor suggests that the volume I summary should provide information a LLW generated for each technology, maintenance frequency, and effort.

Response: The PEIS does provide the amount of LLW generated from each of the reacto technologies (see appendix A, section A.2). The PEIS also provides the amount that requires disposal in a LLW disposal facility (see effluent column for technology in appendix A, section A.2). As described in section 3.1.2, the volumes of waste descr this PEIS are intended to be bounding for each technology as they are based at the production level that the facility could achieve.

10.22 In reference to volume I, chapter 3, table 3.6.1, page 3-71, ORR column, seco paragraph, the commentor asks for clarification on whether there would by any liqui releases associated with tritium supply and recycling operations at ORR. The commen notes that tritium, as well as other radionuclides, is already found in groundwater ORNL.

Response: Section 4.4.2.4 discusses potential liquid releases for all the technolog ORR. Potential impacts of these releases are given in section 4.4.3.4 for ORR.

10.23 The commentor refers to volume I, chapter 3, section 3.6 and asks that NRC da the nature of fission by-products from reactors and spallation-induced products fro be provided and that waste characteristics from each alternative be compared.

Response: The comparison table in section 3.6 presents the waste data for each of t various technologies and compares it among sites. The data for the comparison reque by the commentor is available in the table. The data used that describe the fission by-products from reactors and the spallation-induced products from the APT are incl appendix E, as tables listing radioactive releases for normal operations for each o technologies, and in appendix F, as source terms for various accident scenarios.

10.24 The commentor believes that siting tritium supply and recycling facility at P will create toxic wastes affecting environmental health in the Panhandle.

Response: The PEIS acknowledges that waste generation at Pantex would increase from proposed action. The PEIS also states that tritium supply and recycling facilities treat and package all waste generated into forms that would enable long-term storag and/or disposal in accordance with the Atomic Energy Act, Resource Conservation and Recovery Act (RCRA) and other relevant statutes. The management of DOE radioactive would be in accordance with DOE Order 5820.2A, Radioactive Waste Management. Hazard

waste would be managed in accordance with RCRA. There are no wastes estimated to be generated that are regulated under the Toxic Substances Control Act. DOE is committ manage any waste generated from the Tritium Supply and Recycling Program in a manne assures protection of the health and safety of the public, DOE and contractor emplo and the environment.

10.25 The commentor believes that DOE needs to consider if new processes, management/handling criteria, or containment will be required to dispose of the spe lead and tungsten targets from the APT.

Response: The lead target assemblies from the LiAl option and the tungsten targets the He-3 option have high activity levels immediately after irradiation. However, t total amount of activity decreases rapidly with time since the activation products such short half-lives. As noted in the PEIS, the lead target assemblies are tempora stored in pools until the activity levels have decreased to the point that the lead assemblies can go through metal recycling to recover the lead or be macro-encapsula be disposed of as solid mixed LLW. The tungsten targets would be disposed of as sol If the APT is the selected technology, new processes would be investigated as part refining the design.

10.26 Commentors state that the PEIS should include a discussion of the different t wastes from the four technologies and how they will be disposed of. Another comment believes that the PEIS should breakdown waste numbers for each technology.

Response: The PEIS does provide a discussion of the types and quantities of wastes will be generated from each of the tritium supply technologies (see sections 4.2.3. 4.3.3.10, 4.4.3.10, 4.5.3.10, 4.6.3.10, and appendix A, section A.2). As stated in PEIS, the tritium supply and recycling facilities would treat and package all waste generated into forms that would enable long-term and/or disposal in accordance with applicable Federal and state regulations, and DOE orders.

10.27 In reference to volume I, chapter 4, section 4.4.3.10, page 4-252, the commen requests clarification on whether the new storage facility for spent nuclear fuel a the new treatment facility would be placed on the tritium supply and recycling site existing facilities at ORR.

Response: Due to capacity limitations, there are no plans to use existing facilitie third sentence has been revised to read "As part of their design, all reactor technologies would provide stabilization and storage of spent fuel for the life of facility."

10.28 The commentor wonders how LLW figures were generated and for what timeframe.

Response: For the HWR and MHTGR the LLW figures were generated using New Production Reactor data that were reviewed and revised to account for smaller reactors and was minimization initiatives. For the ALWR and APT LLW estimates were taken from preconceptual design information on NRC documentation. The timeframe used was a 40- lifetime of the facilities.

10.29 The commentor believes that DOE should include in the Final PEIS analyses of costs to and impacts of a pipeline carrying wastewater from Amarillo to Pantex on t environment and surrounding communities, as well as the effects and costs of a pipe carrying wastewater to the new tritium supply and recycling facility.

Response: A pipeline carrying reclaimed water to Pantex from Amarillo will be const regardless of the Tritium Supply and Recycling Program and, therefore, is not analy However the use of this water at the Pantex plant for cooling purposes has been add

the analysis in section 4.5.3.4. The wastewater generated by the tritium supply and recycling facility would not be recycled and would leave the plant site.

10.30 The commentor refers to volume II, page H-12, LLW and the statement: "...(incinerator, which was shut down for modifications, completed startup and resu limited operations in 1994)." The commentor indicates that while sizing and compact have resumed at Waste Experimental Reduction Facility (WERF), the incinerator has y restart actual waste incineration. According to the commentor, some incinerable LLW the INEL is currently being sent to Tennessee for processing with stabilized ash an returned to the INEL for disposal. Once incineration at WERF resumes, it will be ma low-level mixed waste that will be incinerated.

Response: The referenced sentence in section H.2.1 has been changed to read: "...wh shut down for modifications, is in startup and is expected to resume operations in 1996.)"

10.31 The commentor suggests that the following statement be clarified in volume II H-12, transuranic waste: "Approximately half of the TRU wastes are expected to be reclassified as alpha contaminated LLW in the future. These wastes do not meet INEL waste acceptance criteria for LLW, and therefore will be managed as TRU waste." The commentor indicates that current plans are to ship the majority of INEL TRU waste t Isolation Pilot Plant (WIPP) for disposal. Only low-level TRU waste can be disposed WIPP. The alpha-contaminated waste will likely be treated and disposed of elsewhere

Response: Transuranic wastes contain transuranic contamination over 100 nanocuries gram. Alpha LLW contain transuranic contamination of more than 10 but less than 100 nanocuries per gram. While the wastes are in interim storage at INEL, they will be similarly. However, the transuranic waste will be certified for disposal at WIPP or another suitable repository should the WIPP prove unavailable. The Waste Characteri Facility will be utilized to determine which wastes are in the alpha contaminated category. The alpha contaminated low-level waste will be packaged to contain the alpha-type contamination and to permit disposal as LLW. The last sentence of the transuranic waste paragraphs (section H.2.1) has been modified as follows: "These w do not meet INEL waste acceptance criteria for LLW, and therefore will be managed a waste until they can be characterized and repackaged to contain the alpha-type contamination to permit disposal as LLW."

10.32 The commentor suggests that in volume II, page H-11, transuranic waste, the statement "INEL contains 30 percent of DOE's TRU wastes," should be more like 60-65 percent.

Response: The Final PEIS referenced text has been revised to state: "Since that tim wastes have been segregated into contact-handled, remote-handled categories, and pa and stored for ultimate retrieval and transport to an offsite repository at WIPP or another suitable repository should the WIPP prove unacceptable. INEL contains more percent of DOE's TRU wastes."

10.33 The commentor notes that in volume I, pages 4-94 to 4-99, the amounts of vari waste types that would be generated by the different technologies are discussed. Th commentor states that while there would be increases to all waste streams by all technologies, the increases in low-level radioactive waste, which is disposed of on by shallow land burial, would be the most significant. The increases in possible si disposal range from 109 percent with the HWR to 18 percent with the ALWR (small) an With such large increases the commentor wonders whether the subsurface disposal are

where LLW is disposed of, would be able to meet the performance criteria for LLW di contained in DOE Order 5820.2A. The commentor further notes that while the current surface disposal area performance assessment indicates that operations conducted on scale similar to the present and recent past will likely meet the performance crite the performance assessment's sensitivity analysis indicated that subsurface disposa performance might be close to the upper limit allowed.

Response: Under DOE Order 5820.2a, INEL must establish performance objectives for t agement of LLW to protect human health and the environment. INEL is responsible for implementing and maintaining performance assessment documentation to certify that t dose limitations are not exceeded. The performance assessment is based on assumptio engineered barriers and packaging. The text in section 4.2.3.10 of the EIS, in the paragraph under Potential Mitigation Measures, states "Utilization of these facilit would require site-specific engineering and NEPA analysis." The isotopic analysis w available for the projected waste streams when this document was completed. The rep waste volumes to be disposed of are also assumed to have not undergone any volume reduction other than compaction. INEL uses both onsite and offsite commercial incineration of LLW.

10.34 In reference to page 4-288, section 4.5.2.10, waste management, the commentor that the last sentence in the third paragraph which begins: "In September..." is incomplete. After the second sentence, the commentor suggests the text should be mo to add, "after the public comment period on the proposed listing for Pantex, the NP ranking score increased from 34.42 to 51.22."

Response: The sentence has been revised to read: "In September 1991, DOE submitted its technical comments regarding the proposed listing." The NPL ranking score was j as not being necessary for a programmatic EIS.

10.35 The commentor refers to the following statement in volume I, page 4-49, nonha waste: "INEL has eliminated the commercial/industrial waste streams that had previo been generated and disposed of in the commercial/industrial landfill." The commento the opinion that this statement needs to be clarified or corrected. It is the comme understanding that the solid, nonhazardous waste generated on the INEL is, with one exception, classified as a commercial/industrial waste and the landfill is an indus waste landfill.

Response: Section 4.2.2.10 has been changed. The referenced sentence (last sentence nonhazardous waste) has been deleted and replaced with: "Continuation of existing programs will require expansion of the industrial/commercial landfill, adding 225 a provide capacity for the next 30 years."

10.36 In reference to volume I, chapter 4, section 4.4.2.10 page 4-201, second colu third paragraph, "high-level waste," one commentor requests that the relationship t the proposed tritium supply and recycling facility would have with NRC regulations described. In addition, the commentor suggests that spent nuclear fuel produced by proposed facility should be defined and regulated as high-level waste by NRC. Anoth commentor states that consistent with the assumption by the DOE Office of Fissile Materials Disposition that options for the disposition of plutonium would have to b licensed by NRC to be deployed, the DOE should assume that the tritium supply techn will be licensed by NRC. The commentor notes that NRC can provide the necessary independent review and oversight, and it is likely that the NRC would be required t oversee the confirmatory inspections, tests, analysis of the ALWR if selected for t supply so that the conditions of certification are validated for licensed operation commentor states that the Defense Nuclear Facility Safety Board is judged not to be equipped for this task without using the NRC as permitted under law. The commentor that it would be best not to burden the process with the Defense Nuclear Facility S Board when the NRC has a proven track record for nuclear safety assurance based on licensing and ongoing regulation of over a hundred commercial reactors and numerous

nuclear materials facilities. The commentor points out that the NRC has also provid with the independent reviews for Naval Reactors, the Fast Flux Test Facility and th Light Water Breeder Reactor at Shippingport.

Response: In response to concerns that DOE needs regulatory oversight at its nuclea facilities, the Secretary has created an independent Task Force on External Regulat This task force is presently reviewing various alternatives for external oversight activities at DOE's nuclear facilities and will submit a report, with recommendatio early in 1996. The NRC currently does not have regulatory authority over DOE facili DOE differentiates between spent nuclear fuel and the waste that results from the reprocessing of spent nuclear fuel. The DOE management of spent nuclear fuel is ref in the ROD for the Department of Energy Programmatic Spent Nuclear Fuel Management Idaho National Engineering Laboratory Environmental Restoration and Waste Managemen Programs Final Enviornmental Impact Statement (DOE/EIS-0203-F). The definitions of nuclear fuel and high-level waste are in appendix H, table H.1.1-1. Since spent nuc fuel is not reprocessed, the tritium supply and recycling proposed action would not generate any high-level waste.

10.37 One commentor refers to volume I, page 3-4, column 1, second bullet and notes comprehensive assessment of ultimate disposition of spent fuel is not yet possible. Yet, the commentor believes that a comparison of the amount of fuel (in units of me tons of heavy metal) that would be disposed from the proposed facility to that from government and commercial sources would be helpful in assessing the impact of the t facility and its contribution to the cumulative impact of management and dispositio spent fuel from various sources. Another commentor references volume I, section 3.4 pages 3-32 to 3-39 and pages 4-92 to 4-99, volume II, appendix A (tables), and sugg that spent nuclear fuel quantities in metric tons of heavy metal (instead of or in addition to yd3) should be provided in order to compare to quantities currently bei stored at DOE facilities and expected to be produced in the future from other sourc addition, several commentors state that they are extremely supportive of DOE's effo reduce its hazardous waste generation and encourage DOE to include appropriate wast minimization commitments as an integral component of the proposed course of action project's ROD.

Response: The PEIS has been modified to include the residual heavy metal mass conte the spent nuclear fuel generated from the various reactor alternatives. These data included in the waste tables in section 3.4 and appendix A.2. DOE recognizes that pollution prevention (as opposed to pollution control) is the preferred option to w management. This approach has been emphasized by both former President Bush and Pre Clinton. As outlined in DOE Order 54001, it is also DOE policy that any new facilit required to incorporate waste minimization/pollution prevention principles and prac into its design.

10.38 The commentor observes that waste minimization/pollution prevention is mentio frequently throughout this PEIS and the PEIS claims that it is a concept that will incorporated into the design and operation of all the proposed technologies. The co points out that the PEIS also states that INEL has an active waste minimization/pol prevention program. The commentor argues that, in reality, there seems to be a lack long-term commitment to the program on the part of DOE- Idaho and its contractors. example, the commentor notes that funds have been cut for waste minimization/pollut prevention activities and the program has been "zeroed out" for fiscal year 1996. T commentor notes that in fiscal year 1997, it falls below the available budget and w probably not be funded. The commentor also states that in day-to-day dealings with management operators at the site, they have experienced an opinion that waste minimization/pollution prevention is not a waste management function. Therefore, th commentor believes that there is some question as to whether it should be funded fr EM-30.

Without a strong commitment to waste minimization/pollution prevention, the comment believes that the costs and environmental impacts associated with the proposed trit technologies will increase. In other words, the commentor asserts that it makes goo economical and environmental sense to avoid the creation of waste in the first plac

commentor acknowledges that waste minimization capability can be built into the des of a new facility, but without a commitment from the operators of the facility, man the benefits mentioned in the PEIS are unlikely to be realized. Another commentor r to volume I, page 3-4, first column, first bullet, which states that consideration been given to waste minimization and pollution prevention in the design goals for n facilities with regard to their eventual D&D. The commentor suggests that considera should also be given to the minimization of waste from facility operation.

Response: DOE recognizes that pollution prevention (as opposed to pollution control the preferred option to waste management. This approach has been emphasized by both former President Bush and President Clinton. As outlined in DOE Order 54001, it is DOE policy that any new facility is required to incorporate waste minimization/poll prevention principles and practices into its design. The second sentence of the fir bullet has been changed in section 3.1.1 of the Final PEIS to read: "The design goa all new facilities include consideration of waste minimization and pollution preven to minimize the generation of wastes from operation and facility and equipment contamination thereby making the future D&D of these facilities as simple and inex- pensive as feasible."

11 Human Health

11.00.01 The commentor believes that radiation monitoring at NTS has been inconsist over the past 30 years. The commentor expresses the opinion that the radiation base used in the PEIS is not accurate; therefore, the radiation analysis is not accurate addition, the commentor suggests that DOE needs to ensure consistent monitoring in future, and that the PEIS should take into account this inconsistent monitoring.

Response: The PEIS baseline is taken from the annual site environmental report whic filed annually by the sites with appropriate regulators. This is believed to be the consistent information available and receives independent review by the EPA. It is generally available in site reading rooms. The data from these reports is used to determine the calculated annual dose for the No Action alternatives as presented in sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9.

11.00.02 One commentor states that the number of cancer fatalities per year for the versus the other technologies appears to be misleading. The APT considers only the risks associated with construction of the facilities, whereas the risks associated the other technologies include both the construction and operational risks. The commentor suggests that DOE include in the PEIS the risks associated with construct and operating the electrical source to power the APT, whether the source is coal-fi nuclear powered.

Response: A generic and site-specific analysis of impacts for a dedicated gas-fired supply to support the APT has been incorporated in the Final PEIS, throughout secti 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3. For the APT, both construction and operation included in the PEIS.

11.00.03 The commentor indicates that recent epidemiological research suggests that large influx of people in a region may lead to higher rates of leukemia. This unkno phenomena may result from viral transmissions in an unstable population. The commen believes that the document should attempt to include this in the human health secti

Response: The sections on health effects studies that were summarized in the affect environment sections, and which were reviewed in more detail in appendix sections E E.3, did not include unknown phenomena. Only published study findings were reviewed presented in the PEIS. Quantifying impacts from unknown phenomena was deemed specul

due to the current state of research and information available on this type of impa

11.00.04 The commentor states that construction deaths (industrial accidents) will cancer deaths from the tritium supply and recycling facility. The accident deaths i PEIS result from radiological releases or accidents, not industrial accidents. The should account for industrial accidents.

Response: Section 5.5 of the PEIS addresses project compliance with the Occupationa Safety and Health Administration (OSHA), including the regulations regarding workpl safety and accidents. Included in that section is a discussion of potential impacts might result from industrial accidents during construction. This issue will be furt addressed in following site-specific tiered NEPA documents.

11.00.05 The commentor believes that the document should include information relati DOE intends to monitor radiation health within a 50-mile radius, as well as the techniques it will use.

Response: The monitoring of human health is discussed in section 4.1.9 under the su "Epidemiological Studies." Information on specific epidemiological studies already performed or planned around each site are presented in appendix E, sections E.2 and discussion of study methods is also presented in section E.4.

11.00.06 The commentor believes that there are some minor changes that would improv document. On page E-3 of volume II, the commentor notes the internal committed dose combined with external effective doses. For convenience, the sum is also called the committed effective dose equivalent in the Draft PEIS. Although this may be conveni the commentor notes that it is not correct or conventional. A committed dose has a specific definition that involves only radioactive materials taken internally in th The definition implies that an intake today results in a dose received over subsequ days or years depending on the radiological and biological half-life of the specifi radionuclide. For external effective doses, the dose ends when the person or the so removed from the area of influence. Therefore, the commentor believes it is more co to call this combined dose a total effective dose equivalent or just effective dose that year of practice.

Response: The commentor is technically correct and it was a matter of choice as to nomenclature is used for such combination. The definition is included as used in section E.2.1.1 so as not to confuse readers.

11.00.07 One commentor contends that the comparison of health effects between the A the reactor technologies is not a fair comparison. According to the commentor, the health effects that result from the high electromagnetic effects of an APT are unkn The commentor states that the American Nuclear Society would not accept the compari addition, the commentor notes that the history of the five reactors at SRS shows an of leukemia. In the commentor's opinion, the human health section would not be acce professionals in epidemiology. The commentor argues that DOE is presenting a narrow analysis to the public by displaying only radiation exposure. The Final PEIS should include the health risks from the electromagnetic radiation produced by the APT, ac to another commentor.

Response: The basis of the human health effects analysis is outlined in appendix E, section E.2. The Final PEIS presents information on health risks from electromagnet radiation in appendix E.2.3.4.

11.00.08 The commentor believes that the draft seeks to preempt NRC licensing stand placing significance upon accidents that might happen every 100,000,000 years. The commentor notes this particular accident frequency was chosen as significant but th basis for selection is not explained in the Draft PEIS. According to the commentor, establishing the safety goal for ALWRs, the NRC stated that "the overall mean frequ

a large release of radioactive materials to the environment from a reactor accident be less than 1 in 1,000,000 per year of reactor operation." The commentor notes tha Electric Power Research Institute proposed that ALWRs meet a conservative goal of accident frequencies less than once every 1,000,000 years for any accidents that pr releases exceeding 25 rem whole body dose over 24 hours at 0.5 miles from the react boundary, for example. According to the commentor, the NRC's Final Safety Evaluatio Report for the System 80+ design, Electric Power Research Institute concluded that probability of exceeding the 25 rem criterion was once every 20,000,000 years. The commentor notes that this probability is about 20 times better than the Electric Po Research Institute goal. The commentor further points out that the NRC also noted t "the risk is very low compared to the current generation of operating plants." The commentor states that the total exposure over a 50-mile radius was estimated to be person-rem over a 60-year plant-life based upon population and weather data develop Electric Power Research Institute to bound 80 percent of the reactor sites in the U States. Using the conversion factors proposed in the Draft PEIS, such an exposure w result in no measurable latent fatalities, according to the commentor. The commento states that based upon these and many other findings, the NRC issued a final design approval of the System 80+ design in July 1994. The commentor feels that the Draft should not preempt the NRC's safety findings by placing relevance upon extremely lo probability accidents. Instead, the commentor believes that Draft PEIS should incor the NRC results, thereby presenting an accurate dose value for the Large ALWR.

The commentor suggests that the Draft PEIS grossly overstates the potential for rad releases from ALWRs during "low-to-moderate consequence accidents." According to th commentor, the results outlined in the table on page F-28 are completely wrong. The commentor states that what would be correct for System 80+, is that there would be measurable offsite release and no fatalities. The probability of a large break loss coolant accident is less than once every 1,000,000 years, because the reactor pipin the NRC criteria of "leak before break." Even if such an accident did occur, the pl designed to withstand it. No fuel rod failures would be expected and, therefore, no measurable radiation releases would result.

Response: As described in appendix F, dose information has been revised using more representative accident scenarios. New values are located in appendix F and section 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9. The results are more consistent wi licensing reviews.

11.00.09 The commentor expresses the opinion that the PEIS should display the curre regulatory limits to be met and their history, and predict what these limits may be the future.

Response: DOE expects any tritium supply facility would comply with 10 CFR 100, DOE 1A dose limits, the Secretary of Energy SEN-35-91 safety goals, and the Internation Commission on Radiological Protection ICRP 26/10 CFR 834 recommendations regarding acceptable radiological risks. Appendix table E.3.3-1 gives regulatory limits for hazardous chemicals that could be documented for each alternative and at each of th sites analyzed. Table E.3.2-1 gives other pertinent information about each of the hazardous chemicals. Since it would be speculative, at best, to predict what limits be applied to the very large number of chemicals cited and because limits are based current toxicological, epidemiological and occupational information, it would be in priate to predict the regulated limits for any chemicals.

11.00.10 Commentors state that the proposed tritium facility will not appreciably a the public. One commentor states that construction and operation of facilities to rejuvenate and maintain tritium supply will not jeopardize the safety of his family addition, the commentor states that DOE's process of documenting every activity or and designing mitigation features virtually eliminates consequences to the public. Another commentor states that more fatalities will occur as a result of electrical accidents than of nuclear radiation. Additionally, another commentor states that DO should take into consideration the fact that, in general, construction and operatio workers are healthier than the general population. This fact may influence the conclusions of the human health section. Another commentor references pages 4-421 a

4-385, and notes that the severe accident risk for ALWRs is stated as being low whe compared to the risk of cancer fatalities from all other causes. The comment that " results of the analysis indicate that the tritium supply technology with the highes severe accident sequence is the ALWR" seems misleading and should be deleted, accor the commentor.

Response: DOE is very concerned about the safety of the public. All designs would m exceed applicable environmental, health and safety regulatory standards for workers risk associated with all technologies is low; however, the statement concerning the is correct.

11.00.11 The commentor states that the fatality figures presented in the document a misleading because there is a large disparity between the technologies.

Response: As explained in section F.1.3, the accident consequences were estimated u accident source terms from the best available public documentation and the GENII an MACCS computer codes. The computer models used the same weather conditions and popu patterns associated with a specific site for the comparison of candidate technologi each candidate site. Disparities would be expected between different technologies b of differences in their designs and accident scenarios, not because of a difference the analyses presented in the PEIS were performed.

11.00.12 Commentors express general concerns about tritium, radiation and human hea Commentors state that tritium production will create additional environmental, safe and health risks for the general population as well as the workers themselves. One commentor states that tritium is a radioactive gas with the potential for causing c and birth defects, in addition to genetic, chemical, and toxic health effects. The should analyze for all of these effects, according to the commentor. Another commen states that increased radiation dose to workers and public is not acceptable. The p and their health are too valuable an asset to have them destroyed by a pipe dream o according to the commentor. Other commentors believe that SRS has released hundreds thousands of curies of radiation into the air and water and that this is harmful to who live along the Savannah River. Another commentor states that the safety of the supply and recycling and its waste products is very difficult to maintain and there always the danger of an accident or low-level radiation leak that is harmful. For t reason, the commentor does not want the tritium supply and recycling at ORR, fearin contamination of the Tennessee River. The commentor is also opposed to a tritium su and recycling facility near any area universities, cities, land, or near the Smoky Mountains. Another commentor believes that to have nuclear waste stored directly ab the largest aquifer in Idaho is unwise. The commentor is concerned that the safety thousands is at stake should the inevitable accident occur. Another commentor state that the proximity of current and future schools and housing projects to the new fa should be fully analyzed in the PEIS. The commentor is specifically concerned about radiological risks to school and housing posed by tritium supply and recycling faci The document should also include the projected construction worker fatality rates i human health section, according to the commentor. Finally, another commentor feels risk assessments for the project may be insufficient considering the health effects ORR are significant.

Response: The radiological and chemical doses, risks and health effects presented i PEIS include the impacts associated with tritium production. The analyses demonstra that the operation of all tritium supply and recycling facilities would result in i that are within regulatory limits, and the risks of adverse health effects to the p and to workers would be small. Impacts to aquifers from chemical or radiological contamination are not expected due to the Tritium Supply and Recycling Proposal. Wh selected tritium supply technology is identified in the ROD, more detailed site-spe tiered NEPA analysis will be performed to further analyze the potential of aquifer contamination. Impacts from past operations at SRS are under study and are discusse section 4.6.2.9 and appendix section E.4.6.

11.00.13 The commentor expresses the opinion that there is new scientific evidence

there exists a threshold of radiation and this may not be able to be accounted for document.

Response: The basis of the human health effects sections are outlined in appendix E section E.2.1.2. The PEIS analysis is based on the more conservative scientific opi that any radiation causes an associated human health impact. This is consistent wit generally accepted report on health consequences of radiation exposures, the BEIR V report discussed extensively in that section.

11.00.14 The commentor states that risks depend on the choices people make. For ins the commentor notes that radiation may cause cancer but people may choose radiation cure cancer.

Response: The PEIS presents a full disclosure of all the human health risks associa with each of the alternatives based on best available data.

11.00.15 One commentor, referring to page E-14, states that the 170 person-rem expo for the reactor and tritium extraction is inconsistently high. System 80+ conservat estimated 79 person-rem and defended this number successfully to NRC as shown on pa 12-11 of the Final Safety Evaluation Report (NUREG 1462), according to the commento

Response: The value of 170 person-rem is taken from DOE's Data Report on Advanced L Water Reactor Tritium Supply Plant (February 1995). This value includes contributio from the tritium extraction which was not part of NUREG 1462. This source is consis with the sources used for all technologies evaluated.

11.00.16 The commentor claims that in table 4.5.2.9-2, the doses of 2x10-5 mrem for maximally exposed individual (MEI) and 5x10-5 person-rem for the population within miles are incorrect numbers to calculate risk.

Response: The dose values reported in the Draft PEIS were taken directly from the P Plant Site Environmental Report for Calendar Year 1992. The environmental report is provided to regulatory agencies and the public as a tool for assessing the environm performance of the Pantex Plant.

11.00.17 The commentor expresses the opinion that the PEIS is significantly flawed assessing and accounting for the safety and health effect uncertainties and confide values usually associated with the immaturity of APT, which has never been operated concept demonstrated for an APT "machine" the size the PEIS is proposing. The comme believes that DOE risk analysts must figure in these "additional penalties" directl the APT results. The commentor further suggests adding in the "common mode failure and Baysian update methods" to account for APT lack of experience.

Response: Although the APT design has yet to be demonstrated, most of the technolog required for this facility are sufficiently mature to yield the required quantity o tritium. The technical risks, which take into account the maturity of the design, a evaluated in the Technical Reference Report available in DOE reading rooms. If the technology is selected, a more detailed analysis of safety and health impacts will presented in site-specific tiered NEPA documents.

11.00.18 The commentor contends that if the APT technology is selected and found to require additional power from a facility which will be constructed in the future, t the document's evaluation is short on latent fatalities from the associated electri production.

Response: A generic and site-specific analysis of impacts for a dedicated gas-fired supply to support the APT has been incorporated in the Final PEIS in sections 4.2.3 4.3.3, 4.4.3, 4.5.3, and 4.6.3.

11.00.19 In reference to page F-25, commentors state that the treatment of the alte concepts is obviously imbalanced, as revealed by the selection of an event for the that includes multiple failures, whereas single failures were considered for the ot concepts. According to one commentor, the event to analyze should include an isolat containment from the start of the event, as was assumed for all the other reactor concepts. The commentor notes that this discrepancy was present in the April 1991, EIS for the New Production Reactor, was commented upon, and DOE agreed to resolve t issue. Unfortunately, the issue remains according to the commentor. The commentors state that the assumption of 1.0x10-2 per year for the MHTGR event frequency is ext and unfairly conservative for an event with multiple failures of safety systems, es cially when an event with a single failure is assumed for the ALWR to have a 1.0x10 year frequency. For the releases given, numerous safeguards would have to fail whic would lower the event frequency to the 1.0x10-6 range. The commentors assert that t event should be less likely than the initiating event frequency of 2.1x10-4 per yea affects footnotes to tables F.2.2.2-2 and F.2.2.2-3, according to the commentors.

Response: Appendix F has been revised to include a spectrum of low-to-moderate and consequence accidents for the tritium supply technologies. The spectrum of accident has been selected from the best available public documentation for each of the trit supply technologies. The applicable page number or table number in the reference document for source terms, release fractions, core inventories, accident frequencie have been cited. All of the tables that present accident consequences have been cha reflect the results of new accident analyses. In addition the complementary cumulat distribution functions have been reformatted to provide risk-based summary comparis

The ALWR accident source term used in the analysis was designated by the reactor ve a design-basis accident in a submittal to the NRC. The postulated design-basis acci was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. The documentat submitted to the NRC did not define the accident frequencies for design-basis accid The ALWR accident analyses have been revised to evaluate a spectrum of design-basis beyond design accident source terms that had been submitted to the NRC as part of s analysis reports. The design-basis accident analysis postulates the normal compleme safety systems for accident consequence mitigation.

11.00.20 Commentors indicate problems and some errors in the PEIS regarding safety environmental results and comparisons of the alternate technologies. In reference t F-10, a commentor states that the source term for the Advanced Boiling Water Reacto appears incomplete, since the list of nuclides is significantly shorter than for th reactor concepts, including the Simplified Boiling Water Reactor. The commentor ask the inclusion of strontium, ruthenium, antimony, tellurium, barium, lanthanum, and chlorine. Commentors refer to table F.2.2.3.5, volume II, page F-29, and state that 1,500 cancer fatalities at ORR from a low-to-moderate consequence Advanced Boiling Reactor accident is unrealistic and argue that no one would permit such a reactor t licensed. The commentors feel DOE should follow the NRC approach so that anyone who examines and compares results would recognize that risks are essentially identical present power reactors and the proposed DOE production reactor. Another commentor references page F-29, and states that, according to page 3-80, the individual cance fatality at NTS for the Large ALWR is 4.9x10-5, which is more reasonable than 4.9x1 The commentor suggests that table F.2.2.3-4 be fixed.

Response: Appendix F has been revised to include a spectrum of accidents for the AL technologies based on source terms that are part of safety analyses submitted to th NRC as part of safety analysis reports. The applicable page number or table number reference document for source terms, release fractions, core inventories, etc. have cited.

The ALWR accident source term used in the analysis was designated by the reactor ve a design-basis accident in a submittal to the NRC. The postulated design-basis acci was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. Accident analy submitted to the NRC normally define the doses at the site boundary to demonstrate

the doses are within acceptable NRC guidelines. The analyses do not assess the impa propagating the accident consequences on the population within 50 miles of the plan The ALWR accident analyses have been revised to evaluate a spectrum of design-basis beyond design accident source terms that have been submitted to the NRC as part of analysis reports. The design-basis accidents postulates the normal complement of sa systems for accident consequence mitigation.

DOE agrees with the commentors opinion on licensing such a reactor. A re-analysis o reactor accident scenarios was conducted for the Final PEIS which indicates this nu is substantially lower and more in line with expected licensing documents.

11.00.21 The commentor expresses concern with the creation of gamma radiation from spallation.

Response: A detailed discussion of the APT is presented in appendix A. The amounts types of radiation expected are given in table E.2.3.4-1 in appendix E. Argon-41, w emits gamma rays, is included in this table. Anticipated doses to the worker popula from the APT and all its support facilities with spallation-induced lithium convers target have been provided in section E.2.3.4.

11.00.22 The commentor suggests that in volume II, appendix E, information on why O viable option having the highest risk associated with working onsite and also to th public calculated on an annual dose basis (to the maximally exposed member) as comp with other sites be provided.

Response: The dose for the No Action alternative at ORR is noted in section 4.4.3.9 mrem and is near the same for a site worker at INEL and SRS as noted in sections 4. and 4.6.3.9. The risk is also similar. The No Action alternative risk for the publi higher at Pantex and INEL than at ORR, as noted in sections 4.5.3.9 and 4.2.3.9.

11.00.23 Commentors suggest corrections and explanations for numbers and text in th health section. The commentors request that DOE explain how ORR can have a higher chemical hazard index (by a factor of 100) than Pantex, and yet have no cancer risk Pantex does. Also, the commentors believe that the cancer risk for Pantex is incorr based on the chemicals listed. A Pantex employee does not have a 1 in 100 chance of death as stated in the PEIS. An onsite contractor, using the same methodology as DO calculates the risk at 7.7x10-7. Furthermore, one commentor notes that SRS has a hi hazard index than Pantex, yet has a lower cancer risk. Finally, the commentor notes the executive summary of the PEIS references potential cancer fatalities at only on - Pantex, which is also the only site upon which a review of nonradiological factor done. The commentors feel DOE should correct the data and explain the errors as soo possible.

Response: As stated in section E.3.1, the Hazard Index (HI) applies only to noncanc adverse effects, whereas the cancer risk considers only carcinogenic chemicals that been classified as such and for which a slope factor or unit risk exists. There wer carcinogens identified from the site emissions reported for ORR. Since only chemica posed health hazards other than cancer were reported, it is not unexpected for the be higher than at Pantex. For the same reason it is also possible for any given sit (e.g., SRS) to have a larger HI and the cancer risk to be lower compared to the oth sites. However, the data from Pantex listed compounds that were carcinogenic or che categories containing carcinogens. Based on inadequate information concerning the carcinogens, a worst case representative was chosen for analysis which resulted in high cancer risk values presented in the Draft PEIS. Subsequent information supplie Pantex clarified the carcinogen issues and these results have been incorporated in Final PEIS.

11.00.24 The commentor states that the risk assessments from exposure to hazardous chemicals at Pantex are incorrect. In reference to table E.3.4-28 in volume II, the commentor contends that the 0.01 number for total cancer risk is incorrect. The com

suggests that DOE check all the numbers in this table and make sure they performed correct analysis.

Response: Based on the information available (data call response from Pantex, i.e., Paradee, L.M. 1992 a:10) at the time of preparation of the Draft PEIS, the analysis appropriate for the best available information, given the uncertainties about conte within generic chemical classes and the information reported in the data call. Howe corrections and explanations received from Pantex [received 4-11-95 and 4-21-95] ha factored into the recalculations from which the risk was significantly lowered to acceptable values, i.e., ~1.7x10-9 and 7.7x10-7, for the maximally exposed individu the public and onsite worker, respectively. The regulatory threshold generally acce EPA for cancer risk is 1x10-6.

11.00.25 The commentor suggests revising the second and third sentences in the disc concerning electromagnetic field and transmission lines to read: "Electric field le associated with transmission lines and distribution lines are a function of the vol the line, while magnetic field levels are a function of the current carried by the conductors. Both field magnitudes are affected by the size of conductor, conductor separation distance, and the distance from the conductor." The commentor also sugge inserting after the present fifth sentence, "The magnitude of the fields and the ti duration of exposure will both affect exposure levels. No correlation between vario exposure levels and adverse health affects has been determined." Finally, the comme suggests the present sixth sentence should begin a new paragraph.

Response: DOE agrees and the appropriate changes have been made to section 4.8.1 of Final PEIS.

11.00.26 One commentor, referring to page E-11, table E.2.2.2-1, states that one se numbers (perhaps the second group) should be for general population consumption ins of both being for maximum individual consumption.

Response: The commentor is correct and the appropriate changes have been made to ta E.2.2.2- 1 in section E.2.2.2 of the Final PEIS.

11.00.27 The commentor references volume I, table 3.6-1; volume II, page I-66; and E.2.3-1 and E.2.4.1-2. According to the commentor, radiation doses and cancer risks workers under the heading "tritium supply alone" in table 3.6-1 apparently include doses and risks from other site activities as well as those from tritium supply (by comparison to table E.2.3.-1) but not those from tritium recycling. However, the co notes the dose and cancer risk in table 3.6-1 and on page I-66 under "tritium suppl alone" to the maximally exposed individual (MEI) from the APT (helium-3) alternativ INEL are less than those derived from those in table E.2.4.1-2. If the "tritium sup alone" doses include those from other site activities, then the commentor states th dose and risk to the MEI cannot be less than those from the other activities alone Action alternative). The commentor suggests that this apparent discrepancy be corre explained.

Response: The doses in question are for average workers, not MEIs, and are consiste throughout the document.

11.00.28 In reference to pages F-30 and F-31, the commentor states that, for all of preceding concepts, when no frequency of occurrence was estimated the PEIS assumes However, no such assumptions are presented for the APT alternatives, according to t commentor. The commentor suggests that treating the concepts differently should be avoided. Another commentor, referring to section F.2.2.4.1, page F-30, states that selection of an administrative violation instead of an equipment failure as the design-basis accident for the APT severely negates the credibility of this PEIS, si is not consistent with the fact that equipment failures are considered for all the concepts.

Response: The APT design-basis accident frequency of occurrence would be expected t the range of 1.0x10-4 to 1.0x10-6. The design-basis accident for the APT was initia equipment failure and is described in appendix section F.2.2.4.2 and F.2.2.4.3. The incorrect administrative procedure accident only applied to the APT beam transparen system.

11.00.29 One commentor believes that siting considerations of the tritium facility Pantex should be conducted in such a manner as to ensure that the safety of area residences is held paramount. In addition, another commentor suggests that any curr future functions at Pantex must be conducted in a safe and environmentally sound ma

Response: The final siting of a tritium supply technology at Pantex, if selected, w include considerations of public health as well as the environment. DOE is committe operating the Pantex Plant as well as all of its facilities in a safe and environme sound manner.

11.00.30 The commentor refers to volume II, appendix E, footnotes on tables E.2.4.1 E.2.5.1-2, E.2.6.1-2, E.2.7.1-2, and E.2.8.1-3, where annual background radiation d are presented for INEL, NTS, ORR, Pantex, and SRS sites as 350, 323, 306, 323, and mrem, respectively. The commentor questions why different values are presented in v I, section 4, tables 4.2.2.9-1, 4.3.2.9-1, 4.4.2.9-1, 4.5.2.9-1, and 4.6.2.9-1. Sec of the Draft PEIS lists background radiation doses for INEL, NTS, ORR, Pantex, and 418, 382, 371, 411, and 380 mrem, respectively. The commentor notes that there shou only one referenced value for background used, despite the fact that the values com different referenced sources. This commentor believes such discrepancies will confu and mislead the reader. In addition, the commentor states that the reported values NCRP 1987a are annual effective dose equivalents and not committed effective dose e lents as the column heading in the volume I tables indicate.

Response: The footnotes to the tables in appendix E present natural background radi values while those in section 4 include manmade radiation, e.g., diagnostic x-rays. footnotes have been clarified. The use of the term "committed effective dose equiva for both internal and external radiation is for convenience, as is noted in appendi section E.2.1.1. Also, refer to the response to comment 11.00.06.

11.00.31 The commentor refers to volume II, appendix E, footnotes on tables E.2.4.1 E.2.5.1-3, E.2.6.1-3, E.2.7.1-3, and E.2.8.1-4, where collective doses to the popul within 50 miles from background radiation in the year 2030 are presented for INEL, ORR, Pantex, and SRS as 52,600, 5,770, 325,000, 88,500, and 240,000 person-rem, respectively. The commentor questions why different values are presented in volume section 4, tables 4.2.3.9-1, 4.3.3.9-1, 4.4.3.9-1, 4.5.3.9-1, and 4.6.3.9-1. Sectio the Draft PEIS lists the collective doses to the population within 50 miles from background radiation in the year 2030 for INEL, NTS, ORR, Pantex, and SRS as 53,270 5,860, 329,800, 99,470, and 233,300 person-rem, respectively. In addition, the comm notes that individual background radiation doses differ between these tables (for example, table E.2.5.1-2 and table 4.3.3.9-1 gives 323 and 317 mrem respectively; t E.2.7.1-2 and table 4.5.3.9-1 gives 323 and 346 mrem, respectively; and table E.2.4 and table 4.2.3.9-1 give 350 and 353 mrem, respectively).

Response: The natural background radiation levels for each site are now consistent appendix E and section 4 tables in the Final PEIS.

11.00.32 The commentor notes that in volume I, table 4.4.2.9-2 and table 4.4.2.9-3, 4-199, are incorrectly titled, `Doses to the General Public from Normal Operations Nevada Test Site, 1992'. The corrected version should read `... at Oak Ridge Reserv

Response: The commentor is correct and the appropriate changes have been made to ta 4.4.2.9- 2 and 4.4.2.9-3 in section 4.4.2.9 of the Final PEIS.

11.00.33 The commentor states that there is at least one error in the first paragra summary page S-21. The commentor believes that the cancer risk value in the second (first column) should be 1.4x10-10 and not 7.1x10-6. The commentor also states that other numbers are part of the MACCS or GENII output and cannot be easily checked.

Response: The commentor is correct and the appropriate changes have been made to th discussion of radiological and hazardous chemical impacts during normal operations accidents for SRS in the summary of the Final PEIS.

11.00.34 The commentor believes that the summary should more clearly state that: (a calculated consequences are based upon the accident occurring and that the accident particularly the high consequence accident, is a low probability event. The probabi is included in each summary paragraph, but the commentor believes it is not emphasi The commentor also notes that a "risk-based" summary comparison, such as tables 4.2 and 4.2.3.9-4 should be included in the summary. According to the commentor this ma compensate for higher doses with lower frequencies; (b) also, while this will affec system, the summary presents the consequence levels as absolute, i.e. "this exposur result in 230 cancer fatalities" (see page S-2). The tables in appendix F state tha numbers are mean values (based on variations in meteorological conditions for an ac occurring throughout the year), which is typical of this type of analysis. The comm suggests that all values, i.e., doses, cancer risks, and fatalities are mean values the summary should acknowledge this. Therefore, overlap of the consequence level fr different systems is possible and likely.

Response: Appendix F has been revised to include a spectrum of accidents for the ca tritium supply technologies. The complementary cumulative distribution function fig have been reformatted to provide risk-based summary comparisons. Appendix F now identifies all accident consequence numbers as mean values. All of the tables in vo I and in appendix F that present accident consequences have been changed to reflect results of the new accident analyses. In addition, the associated complementary cum distribution functions have been reformatted to provide risk-based summary comparis

11.00.35 The commentor states that tritium occurs naturally and is far less toxic/d than plutonium. The commentor suggests that DOE take steps to ensure that the publi understands this to avoid irrational fears about the gas.

Response: Additional discussions regarding the relative toxicity of tritium versus materials have been added to appendix E.

11.00.36 The commentor quotes from the document "Deadly Defense: Military Radioacti Landfills" (1988) that events occurred at SRS, where DOE was producing and disposin tritium. On May 2, 1974, 180,000 curies of tritium oxide were released to the air i minutes. In December 1975, 480,000 curies of tritium gas were released to the air i minutes. As of 1988, about 1/4 of the 420,000 curies of tritium that had been disch to seepage basins had migrated to Four Mile Creek. The tritium plume in the groundw under the burial grounds exceeded EPA's drinking water standard by 3,500 times. The commentor notes that the PEIS executive summary (page 24) states that no individual exposure data for chemical worker exposures are available. If DOE and its predecess have not kept good health records on their employees proving their operations are s the commentor contends that the public is justified in withdrawing its support of D nuclear weapons activities. Regarding the estimated cancer risk among workers and t public at the various alternative sites and with the alternative technologies, the commentor believes it is unacceptable for the Federal Government to knowingly proce with a project that they know will cause these levels of cancer.

Response: The PEIS evaluates the potential environmental impacts for the PEIS alternatives. To the extent possible, past activities are accounted for in describi affected environment. The potential impacts to human health will be factored into t

11.00.37 One commentor states that the tables and figures that contain information

relative to latent cancer deaths (for example, figure 4.6.3.9-1) must also identify risk alongside or as an integral part of the figure or table. Otherwise, the commen believes that this latent cancer information out of context may be misunderstood or misused. Another commentor states that in the appendices, the explanation of the complementary cumulative distribution functions is incorrect, although the error ag affects each system. The commentor suggests rewrites for the following statements o AP- 600 system (page F-13, second column): "The curves show the possibility that th number of cancer fatalities that may result when an AP600 ALWR severe accident exce value N on the horizontal axis. The curves assume that the accident has occurred." commentor believes that the text should be replaced with the following: "The curves based on the assumption that the accident has occurred and show the variation in ca fatality magnitude based on the site meteorological conditions, that is, to account an accident occurring throughout the year. Therefore, the actual probability of a s consequence level (that is, fatality magnitude) is equal to the probability of the accident times the conditional probability of the consequence level."

Another commentor refers to volume II, pages F-4 to F-16, and states that the patte probability curves in most of the figures showing conditional probability vs. laten cancer fatalities for high consequence reactor accidents are similar; they are essentially shifted to the right or left. However, states the commentor, the patter figure F.2.1.3.4-1 for the Simplified Boiling Water Reactor is quite different; the much greater difference between the NTS curve and those for the other sites. This difference should be explained or corrected according to the commentor. The comment states that the tables of population dose in person-rem and cancer fatalities do no appear to show this difference; the ratio of INEL population dose to NTS population or of INEL cancer fatalities to NTS cancer fatalities is consistently about 10 in a the tables.

Response: The complementary cumulative distribution functions (e.g., figure 4.6.3.9 have been reformatted based on this and other comments.

11.01 Human Health - Normal Operations

11.01.01 The commentor notes a three orders of magnitude difference for the release tritium between the MHTGR and ALWR. The commentor believes this to be an error.

Response: Table E.2.3.2-1 (MHTGR), table E.2.3.3.1-1 (Large ALWR), and table E.2.3. (Small ALWR) show tritium releases between 2.1x103 (MHTGR) and 1.62x104 (Small ALWR This range is less than a factor of 10 and is not in error.

11.01.02 The commentor states that it would be deplorable for DOE to site the Triti Supply and Recycling Program at Pantex, since it is in this agricultural area that food chain begins and any contamination risk to the agricultural industry would devastate Texas. Texas High Plains is one of the most diversified agricultural area the world, with 14 million acres of agricultural land, commercially producing 25 cr generating more than 100,000 jobs.

Response: The PEIS presents the potential impacts of the Tritium Supply and Recycli Program, including an analysis of human health (e.g., radiation exposures, potentia accidental releases, etc.) and socioeconomic resources. Potential secondary impacts agricultural areas due to an accident are discussed in appendix F.3.

11.01.03 The commentor states that DOE fails to consider diseases other than cancer fatalities resulting from the operation of a tritium production facility. According the commentor, tritium causes birth defects. The commentor believes that DOE should examine what other health effects a new tritium production facility would have upon populations.

Response: Health impacts from radiation exposure, whether from sources external or internal to the body, generally are identified as "somatic" (affecting the individu exposed) or "genetic" (affecting descendants of the exposed individual). Radiation more likely to produce somatic effects rather than genetic effects. Therefore, for PEIS, only the somatic risks are presented. The somatic risks of most importance ar induction of cancers. Except for leukemia, which can have an induction period (time between exposure to carcinogen and cancer diagnosis) of as little as 2 to 7 years, cancers have an induction period of more than 20 years.

11.01.04 In reference to volume II, page E-10, paragraph 2, the commentor questions whether the writers intended to use two different time periods: 1989 to 1992 versus to 1992.

Response: Only the 1989 to 1992 time period was used. The appropriate changes have made to the discussion of food production and consumption data in section E.2.2.2 o Final PEIS.

11.01.05 The commentor references volume II, page E-71, section E.3.1, and states t this section is very sketchy, especially the third paragraph, outlining how HQs wer calculated. The commentor notes that it appears that all HQs were summed to yield H all options relevant to the site. The commentor requests a definition for "options relevant to the site." The commentor also notes that HIs should only be summed for when the individual chemicals contribute to the same toxicological endpoint and the toxicity is additive, otherwise, effect-specific HIs need to be calculated. The com questions whether the HQ and HI modeling methods consider Short Term Exposure Limit ceilings. According to the commentor, ceiling values are used by all included agenc exposure limits, so why were they not considered in the background statement (e.g., n-butyl alcohol). The commentor further notes that the only stated exposure time fr were 15 minutes and 8 hours and asks in addition to ceilings, what about 16 hour (d shift) or 4-10 hour workdays or overtime in general.

Paragraph one in this section, further states that risk assessors calculated the ri long-term low-level (chronic) and short-term high level (acute) exposures. However, paragraph two states that workers are assumed to have a low exposure 8 hour day, 40 work week. The commentor asks about acute exposures and chemicals which have Short Exposure Limits or ceilings. In such cases, the commentor notes that the 8 hour day hour work week assumption would not apply. If all exposures are going to be maintai less than the exposure limits, the commentor wonders whether a health risk assessme workers should be performed. The commentor states that the slope factors for all carcinogens are multiplied by the inhaled dose to determine the cancer risk and sug that the fourth sentence in paragraph 3 should read: "The inhalation slope factors carcinogens are multiplied by the inhaled dose to determine the cancer risk from inhalation." The overall cancer risk for each chemical is determined by summing the lifetime cancer risks for each relevant route (ingestion, inhalation, and dermal) o exposure. Different slope factors often exist for each route of exposure. Finally, commentor notes that Permissible Exposure Limits were used in the calculations and whether Threshold Limit Values, Recommended Exposure Limits, and Short Term Exposur Limits, which were mentioned earlier in this section and those listed in the exposu limit table E.3-2, were used.

Response: "Options relevant to the site" means "alternative actions" relevant to th The text has been changed using "alternative actions" in place of options for clari consistency with other PEIS sections.

EPA's Superfund guidance allows for preliminary screening methods to be used, such summing all of the HQs regardless of toxicity endpoint in order to eliminate unnece calculations and evaluations. Hence, summing the HQs for an overall HI tells the ev whether a potential problem exists. If the HI exceeds a value of 1.0, then one woul proceed with the analysis based on common toxicity endpoints, but if the total HI v less than 1.0, the sum of effect-specific HQs will be less than 1.0. Based on the screening analysis, effect-specific HIs are not needed for the PEIS. It should also pointed out that by using single point emission concentrations at site positions cl

the source terms, the values will be conservative compared to other approaches, e.g Monte Carlo simulation results (Risk Analysis, Aug. 1994, page 437) which utilize m points to generate a range of HIs or cancer risks. It is also useful to point out t should calculate from single point exposures as a first step in risk assessment bef proceeding with more complex procedures as a way to save resources without compromi the integrity or usefulness of the analysis to the risk manager (Risk Analysis, Aug page 478). The modeling methods could have, but did not consider Short Term Exposur Limits and ceilings because the analyses were performed on data for normal operatio where the Permissible Exposure Limits set by OSHA are the relevant regulations. Fur analyses would not serve any purpose and would only add to the cost and burden on resources available.

Before undertaking the analyses, many potential deviations from a "standard/normal" operation were considered. Considering all of the conservative assumptions made in approach and knowing that Reference final Concentrations, Permissible Exposure Limi etc. values for regulation are already made conservative by incorporating large uncertainty factors, it was decided that the approach taken easily bounds the "wors of normal operating conditions without the necessity of excessive analyses on data PEIS; it is even doubtful whether site-specific EIS analyses would require a more i approach.

Section E.3.1 of the Final PEIS deals with normal operations of the various alterna technologies within the boundary of specified sites where emissions associated with site can be based upon reported levels of releases that have occurred for documente periods. Based on anticipated activities at future dates, emission levels are proje (e.g., to the year 2005). It is then assumed that technologies proposed will add to total site emissions if added to the existing site activities. By modeling the concentrations projected for the alternative technology and the concentrations due other site activities, using appropriate dispersion factors for each site, it can b validated whether the exposures are actually likely to be maintained within the lim that are regulated. Since emissions averaged over one year periods of time are used derive concentrations at specified distances from source terms through modeling, on cannot apply Short Term Exposure Limits and ceiling values (concentrations that can exceeded during any part of the work day) to the data. In fact, unless concentratio values were so extraordinarily high that the Permissible Exposure Limits would be exceeded, the Short Term Exposure Limits and ceiling values should never be reached if they were reached the Permissible Exposure Limits by virtue of its being the reg tory value relevant to normal operations is the "ruling" regulatory value to protec worker. The text where the Short Term Exposure Limit, Recommended Exposure Limits, Threshold Limit Values are mentioned has been expanded in the Final PEIS to explain they were included in the tables while the Permissible Exposure Limits, being the l value, was the only one used in calculations.

In the Final PEIS text has been modified to explain why these values have been give table E.3.3- 1. It should also be noted that table E.3.2-1 has information on physical, chemical, and toxicity properties that were not necessarily utilized in a direct sense. However, information such as this as well as other limit values should help inform the reader as to concentration and dose levels that would cause an immediate problem, or a long-term one, and how the estimated concentrations compare to these values.

11.01.06 In reference to volume II, page E-71, section E.3.2, chemical toxicity pro the commentor asks in the last sentence, what does, "for those chemicals for which adverse health effects were developed in this PEIS," mean.

Response: This sentence has been modified in the Final PEIS for clarity as follows: E.3.2- 1 presents the information described above for the hazardous chemicals analy

this PEIS."

11.01.07 The commentor refers to the following statement in volume II, page E-72, paragraph 1: OSHA Permissible Exposure Limits are also for preventing cancer effect not just noncancer adverse effects. According to the commentor, this paragraph indi that all three (OSHA, National Institutes of Occupational Safety and Health (NIOSH) American Council of Governmental Industrial Hygienists (ACGIH)) were used to develo and HIs. Therefore, the commentor questions why NIOSH was not included in the risk assessment section tables. Also, the commentor asks why does the equation for the H Permissible Exposure Limits and not the others.

Response: While the OSHA Permissible Exposure Limits might also be effective in pre cancer effects, they are designed for 8 hour occupational exposures and do not fact any calculations that can be used for predicting the risk of cancer from exposures, fact, identified human carcinogens are not assigned Permissible Exposure Limits. It therefore, be misleading to represent them as such. In fact, the OSHA-regulated carcinogens do not carry Permissible Exposure Limits values, but these compounds ar controlled through the required use of engineering controls, work practices, and pe protective equipment, including respirators. The specific details of these requirem are in 29 CFR 1910.1003-1910.1016. The paragraph clearly states that OSHA's Permiss Exposure Limits regulate the hazardous chemicals, whereas the others only provide guidance. The document should not have cited a regulatory role for NIOSH, and this correction in the paragraph was made in section E.3.3 of the Final PEIS. It is, the correct to use the legal value for Permissible Exposure Limits provided by OSHA.

11.01.08 Numerous specific comments were received on table E.3.1 in volume II, page Some of the concerns raised by the commentor included: how were the myriad of chemi entities in the table selected to be included in the risk assessment; compound name should be standardized (IUPAC or ACS) and the use of trade names (e.g., the DuPont names for Freon Brand Chlorofluorocarbons) should be avoided; the CAS Registry No. heading does not require a footnote; flash point would be a more useful heading tha flammability, and the ranges currently used therein; criteria for "Carcinogenicity" ranking need additional defining in the text; and where in the document are the pub reference sources mentioned in the table footnotes.

Response: All the comments received on the table in section E.3-1 have been reviewe appropriate changes made to table E.3.2-1 in the Final PEIS.

The chemicals listed in table E.3.2-1 were identified as emissions at the specific candidate sites or by other referral sources as toxic chemical releases or as chemi associated with specific proposed technologies. They were selected based on quantit (generally 100 lb. or more) and their relative toxicity based on a variety of refer sources, e.g., EPA's Integrated Risk Information System and OSHA exposure limits.

A standardized nomenclature is preferred, but the sources of information frequently traded or common names. The chemical name, e.g., Chlorodifluoromethane (Freon 22) a CAS Registry number were included to add certainty to the identification of the spe chemical.

The CAS Registry No. heading has been removed.

The heading "flammability" was considered appropriate for table E.3.2-1 because the is whether or not the chemical is flammable and to what degree it is considered fla or combustible. For some readers the "Flash Point" may be more useful while for oth the OSHA flammability classification is more useful. The flash point can be found i reference document cited.

Table E.3.2-1 has been revised to replace "none" with the International Agency for Research on Cancer classification as noted by footnote (r). "Not applicable" means there is no cancer classification. Based on the resources available the chemical wa

identified as carcinogenic. "Information not available" (e) is based on the availab of resource information on carcinogenicity, and it means that this information coul be found using standard references. The footnote references are located in volume I chapter 6.

11.01.09 The commentor refers to volume II, pages E-73 to E-90, tables E.3-1 and E. asks when the intent of the health risk section is to evaluate risk to the public a workers, why is the EPA's cancer classification the only one listed in the chemical toxicity profiles and table of exposure limits. The commentor notes that OSHA, NIOS ACGIH classify carcinogens. In particular, the commentor states that ACGIH has a ve detailed cancer classification system.

Response: It is acknowledged that there are other classification systems that provi guidance on cancer classification and many were reviewed for this PEIS; however, it EPA's system that is used in regulation of carcinogens. As noted in the PEIS, the International Agency for Research on Cancer also classifies carcinogens, but again not have regulatory status in the United States for carcinogens. Furthermore, the E unit risk and the slope factor for each carcinogen are the ones that are to be used calculation of cancer risk.

11.01.10 Numerous specific comments were received on table E.3-2 in volume II, page Some of the concerns raised by the commentor included: why are the 1992 Threshold L Values used instead of 1994; what does an entry of "NA" in the cancer class mean; a is the method of calculating the Reference final Dose and Reference final Concentra from the ACGIH Threshold Limit Values, the OSHA Permissible Exposure Limits, the NI Recommended Exposure Limits, the Registry of Toxic Effects of Chemical Substances (time-weighted average (TWA)/Permissible Exposure Limits, and the RTECS LD50.

Response: All the comments received on the table in section E.3.3 have been reviewe appropriate changes made to table E.3.3-1 in the Final PEIS.

A cutoff point in time for regulated numbers was chosen to avoid unnecessary rewrit tables and redoing calculations for the PEIS; however, the Threshold Limit Values a only guidance and not used for calculations due to this status. The Threshold Limit and Permissible Exposure Limits (actually used in calculations) available at the ti the Draft PEIS were those available. Only after completing the Draft PEIS did the n numbers become available. Action taken by the U.S. Supreme Court overruled the Perm Exposure Limits so that they reverted to the 1970 standards until new ones are deve by OSHA; these are now in progress and may take up to 5 years, since they must be reconciled with the guidance from other agencies. Obviously, the 1994 published Permissible Exposure Limits are less conservative based on additional information g during the 24 year time gap.

The entry "NA" was intended to mean that the compound is either not been classified that it is a noncarcinogen. This has been changed in table E.3.3-1 of the Final PEI replaced with the published classification, e.g., the official EPA or in the absenc EPA classification where decision is pending, used IARC classification.

The method of calculating the Reference final Dose and Reference final Concentratio the ACGIH Threshold Limit Value, the OSHA Permissible Exposure Limit, and the NIOSH Recommended Exposure Limit is RfD (mg/kg/d) = 0.007 TWA (mg/m3) and was taken from source citation in footnote reference b of table E.3.3-1 in the Final PEIS. The NIO Recommended Exposure Limits were not used in the calculation.

The RTECS TWA/Permissible Exposure Limit values are actually LD50s which have been in the table where appropriate. Also, the LD50 is used only if there is no other wa approximating an Reference final Concentration or Reference final Dose for which th are no official values. In this case the following was used to estimate a Reference Dose, according to the source in footnote reference b of table E.3.3-1 in the Final RfD = LD50 x (4 x 10-5). The RTECS citation has been added as an EPA document citat where appropriate.

11.01.11 In reference to volume II, page E-85, table E.3-2, the commentor notes tha formaldehyde NIOSH Recommended Exposure Limit is not 0.16 ppm as listed, but rather ppm. Furthermore, the commentor indicates that the OSHA Permissible Exposure Limit 0.75 ppm and not 1 ppm. The commentor suggests that a thorough check should be made other errors. The commentor notes that the result of such errors is to produce inco HQs and HIs for workers. Also, formaldehyde does not appear in the risk assessment so the commentor wonders why is it included in the exposure limit table. The commen further states that it seems logical to include only information on the chemicals o concern.

Response: The error in the NIOSH Recommended Exposure Limit has been so noted and corrected from 0.16 ppm to 0.016 ppm and the OSHA Permissible Exposure Limit was al noted and changed to 0.75 ppm. In table E.3.4-22 (Pantex No Action) under aldehydes formaldehyde appears as the representative used because it would be the worst case chemical which had been reported at this site. However, this chemical has been remo from the Pantex risk assessment based on new information that it is no longer prese a potential chemical emission.

11.01.12 In reference to volume II, beginning of page E-91, tables E.3.4-1 to E.3.4 commentor states that either the risk assessment calculation used the least stringe exposure limits of the two listed or did not consider the Threshold Limit Values wh listed in the risk assessment tables as indicated by footnote c. The commentor note the Threshold Limit Values happen to be more stringent for the two chemicals, check page E-93, methanol and ethanol. This results in a smaller hazard quotient and a sm hazard index, which implies less risk than if all the agency standards were conside OSHA is the only law. However, it is recognized that the other agencies' standards and ACGIH) are more current with available toxicology and epidemiology. The comment questions why only Permissible Exposure Limits would be considered and not the most conservative (e.g., ammonia) as listed in exposure limit tables PEL: 27 TLV: 17 REL

Response: The risk assessment calculation did not use Threshold Limit Values becaus are guidance only, whereas the Permissible Exposure Limits are the regulated number OSHA and constitute the law. Consideration was given to using the most stringent nu regardless of whether it was guidance, e.g., ACGIH, NIOSH, or OSHA, but since the O the enforceable regulation, it was decided to present the other guidance numbers an only OSHA Permissible Exposure Limits, thus making the calculations uniform and fro official regulatory source.

11.01.13 In reference to volume II, pages E-91 to E-130 (tables E.3.4.1 to E.3.4.36 commentor notes that the contaminants of potential concern vary from site to site. commentor asks how they were chosen for each site.

Response: The containments of potential concern vary from site to site only under N Action due to differing current activities at each site. Those identified for each technology are consistent from site to site.

11.01.14 The commentor refers to volume II, page E-92, table E.3.4-2 and states tha Threshold Limit Value listed for methanol of 200 mg/m3 is incorrect. The commentor believes that it should be 262 mg/m3. The commentor indicates that only a spot chec conducted so the rest of the numbers should be checked for errors. According to the commentor, it appears as though the larger the Permissible Exposure Limit, the larg the rounding. For example, the commentor notes that acetone was rounded up to 1800 1780 and nitric acid from 5.2 to 5. The commentor expresses the opinion that one wo like to think that a fair amount of scientific rigor goes into establishing exposur limits. Therefore, the commentor wonders what is the purpose of rounding and especi rounding up.

Response: The Threshold Limit Value corrections were noted and entered on the table CFR 1910, the TWA is listed as 1800 mg/m3; this value was utilized as the Permissib Exposure Limit; likewise, in the same document nitric acid is listed at 5 mg/m3. If rounded up number was used in our calculations, it would only be so because of the reference source that was used. However, the difference is only 1 percent which wou hardly make a difference, if any, in the calculation and would still be protective Permissible Exposure Limits and Threshold Limit Values are highly conservative, bei reduced by large conservative factors. All numbers and references in table E.3.4-2 rechecked against the original references on a page by page basis and corrected in final table. The table references were corrected when it did not match the precise reference.

11.01.15 The commentor refers to volume II, tables E.3.4-29 and E.3.4-35 and indica that these tables mention tetrachloroethylene as a contaminant of potential concern However, the commentor notes that it is not listed in either table E.3-1 or table E The commentor requests an explanation as to why it is not reviewed in those tables is, in fact, a contaminant of potential concern.

Response: The chemical mentioned above, tetrachloroethylene, was inadvertently dele from both tables. It has been reinstated in both tables in section E.3 of the Final

11.01.16 The commentor refers to volume II, page E-133, paragraph 2 and offers the correction: Odds Ratio not Odd Ratio.

Response: Odds ratio is correct, and this change has been incorporated in section E of the Final PEIS.

11.01.17 The commentor refers to volume II, page E-133, section E.4.2, INEL, and no that two Idaho Department of Health and Welfare and one National Cancer Institute epidemiologic cancer studies are referred to in the text (that is, 1991a and 1991b) commentor wonders where these references are located.

Response: The National Cancer Institute and the Idaho Department of Health and Welf references are located in chapter 6.

11.01.18 The commentor refers to the following statement in volume II, page E-133, E.4.2, workers: "No occupational epidemiological studies have been conducted to dat although NIOSH is planning one in 1994." Considering the date of publication of the as February 1995, the commentor suggests that this statement needs to be corrected updated.

Response: The text has been changed in section E.4.2 of the Final PEIS to: "Althoug occupational epidemiology studies have been conducted to date, according to NIOSH o is currently underway, but no results are expected before 1997."

11.01.19 For clarity to the public, the commentor suggests that the Final PEIS expl the annual average doses to a site worker differ for each of the five proposed loca

Response: The Final PEIS has been revised to include this explanation. Basically, t differences result from the fact that the doses presented are the averages among al workers, including those involved in activities other than tritium supply and recyc This explanation has been added to the introduction in appendix E which covers the following concepts: the sites vary considerably in size, geography, meteorology, an topography, as well as the source terms present at each of the sites. They are pres performing different functions and the amount of activity is also different. Theref toxic releases will be different, the dispersion of these releases will be differen consequently the level of exposure at any given distance from the source terms will

vary.

11.01.20 The commentor, referencing volume II, appendix E, states that it is not cl that the Plutonium Pit Disassembly Conversion/Mixed-Oxide Fuel Fabrication Facility impacts are appropriately included in the proposed alternatives. The potential impa from this facility should be evaluated as direct impacts associated with proposed alternatives, according to the commentor. The commentor believes that the occupatio doses from normal plutonium handling and glovebox operations, as well as postulated accident scenarios to both onsite and offsite personnel, could be significant depen the processes involved within this facility. The commentor further states that thes actions will all contribute to cumulative impacts both onsite and offsite.

Response: Cumulative impacts from the Plutonium Pit Disassembly Conversion/Mixed-Ox Fuel Fabrication Facility impacts are included in site-specific radiological human sections for the multipurpose reactor.

11.01.21 In reference to health risks data listed in volume II, page E-8, column 2, paragraph 5; page E-9, column 1, paragraph 1; page E-21, column 1, paragraph 3; etc commentor wonders whether the document identified is HNUS 1993b or HNUS 1995a.

Response: The reference is HNUS 1995a. The citation in the text has been changed to reflect this.

11.01.22 In reference to pages I-53, I-55, I-59, I-63, and I-67, the commentor stat the cancer risk from hazardous chemicals to the maximally exposed member of the pub SRS differs from that shown in table E.3.4-36. The commentor asserts that this shou reconciled.

Response: These values have been changed to be consistent with the text tables as w the appendix. Other changes have been made for other sites in appendix I due to cha in site data made after the Draft PEIS.

11.01.23 In reference to page E-124, the commentor states that this table shows six chemical hazards for the MHTGR at SRS, whereas five hazards were listed for MHTGR a the other sites. The commentor questions why ammonia and trichlorotrifluoroethane (113) would be hazards at SRS and not at other sites. The commentor also asks why sh methane emissions not be listed at SRS. If changes are made, states the commentor, table E.3.4-36 on page E-130 should be corrected accordingly.

Response: Ammonia and trichlorotrifluoroethane were inadvertently added to the MHTG SRS. The affected tables have been corrected and updated.

11.01.24 In reference to page 3-71, the dose and risk for the APT (helium-3) at ORR be re-evaluated, according to several commentors. The commentors state that accordi table E.2.6.1-2 APT (helium-3) contributes a factor of 20 less than APT spallation-lithium conversion target, not a factor of 2 less. The commentors also note that th comment applies to page 3-76. Commentors referring to page F-21 state that it is no reasonable that the population dose and cancer fatalities at ORR are only 20 percen higher than at INEL for the APT spallation-induced lithium conversion target, when were nearly an order of magnitude higher for all the other concepts. The commentors suggest that this be reconciled with page 3-83, which indicates more than an order magnitude difference between the two sites.

Response: The values given in table 3.6-1 and appendix E are consistent in the Fina It should be noted that the values in table 3.6-1 include total site operations, no technology alone. Appendix F has been revised to include a spectrum of accidents fo of the candidate tritium supply technologies. The applicable page number or table n in the reference document for source terms, release fractions, core inventories, ac frequencies, etc. has been cited. The data in section 3 have been revised and updat

reflect the changes.

11.01.25 In reference to page 3-71, the commentor states the doses at SRS given her approximately 0.5 mrem higher for all concepts than values in section E.2.8.2. The corresponding risks are also higher, according to the commentor. The commentor sugg that this be reconciled.

Response: The values given in table 3.6-1 and appendix E are consistent in the Fina However, the reader should refer to section E.2.8 for an explanation of how the tot doses for each tritium technology are calculated.

11.01.26 In reference to page 3-72, the commentor states that the population doses given here are approximately 10 person-rem higher for all concepts than the values section E.2.6.2. The commentor asserts that the risks are 0.4 fatalities higher, wh a factor of 2 more than would be expected from 10 person-rem. The commentor suggest this be reconciled.

Response: The values given in table 3.6-1 and appendix E are now consistent. It sho noted that the values in table 3.6-1 include total site operations from both air an liquid pathways.

11.01.27 In reference to page 3-73, the commentor states that the population doses given here are approximately 40 person-rem higher for all concepts than values in s E.2.8.2. The commentor adds that the risks are also correspondingly higher. This sh reconciled, according to the commentor.

Response: The values given in table 3.6-1 and appendix E are now consistent. It is believed that the commentor meant to reference page 3-72 instead of 3-73. It should noted that the values in table 3.6-1 include total site operations from both air an liquid pathways.

11.01.28 In reference to page 3-77, the commentor states that the value of person-r APT (helium-3) at INEL should be rounded to 0.6 instead of 1, to maintain consisten with the fatal cancer value.

Response: All numbers have been rounded to be consistent with the fatal cancer valu

11.01.29 In reference to page 3-77, the commentor states that the population doses given here are approximately 10 person-rem higher for all concepts than values in s E.2.6.2. The risks are 0.4 fatalities higher, according to the commentor, which is factor of 2 more than would be expected from 10 person-rem. The commentor suggests this be reconciled.

Response: The values given in table 3.6-1 and appendix E are now consistent. It sho noted that the values in table 3.6-1 include total site operations from both air an liquid pathways.

11.01.30 In reference to page 3-79, the commentor states that based on information table E.3.4-7, the worker reduction for HWR at INEL should be 0.2 percent, not 0.02 percent, and the public reductions for the MHTGR, ALWR, and APT, should be 0.3, 0.0 and 0.3, respectively, not two orders of magnitude higher. The commentor suggests t this be reconciled. Also, referring to page 3-79, based on information in table E.3 the public reductions for the HWR, MHTGR, ALWR, and APT should be 0.1, 0.1, 0.09, a respectively, not two orders of magnitude higher. This should be reconciled.

Response: The error was due to not converting a decimal to a percentage. These corr and others associated with the calculations have been made.

11.01.31 In reference to page E-13, the commentor states that the text for the HWR risk of fatal cancer from 1 year of operation, whereas for all the other concepts t text gives risk of fatal cancer from 40 years of operation (except for Large ALWR, which no discussion paragraph is provided). The commentor suggests that the same fi of merit be quoted for all concepts, to avoid confusion or deception.

Response: The text and the fatal cancer risk values have been modified to reflect 4 of operation.

11.01.32 In reference to page E-20, the commentor notes that the annual tritium rel given for tritium target extraction facilities in table E.2.3.5-1 is equal to the d criterion for the New Production Reactor Tritium Recovery Facility. This is not reasonable, according to the commentor. Since the current goal of producing 3/8 as tritium would result in handling less than such a facility was designed for in the Production Reactor Program, the commentor would expect a commensurate reduction in release.

Response: The technology designs for the Tritium Supply and Recycling Program diffe the technology designs in the New Production Reactor Program as the tritium supply recycling facility is designed specifically to produce only tritium. In addition, t tritium releases estimated for the New Production Reactor Program were conservative bounding. A site-specific analysis would incorporate the as low as reasonably achie concept to minimize releases.

11.01.33 In reference to pages E-27 and E-28, the commentor states that the same va are entered in both tables (for maximally exposed individual and for population) fo Full APT with spallation-induced lithium conversion. The commentor asserts that thi be a mistake.

Response: This typographical error has been corrected in tables E.2.4.1-2 and E.2.4 the Final PEIS.

11.01.34 In reference to page E-30, the commentor states that the paragraph summari health effects should quote values for NTS, not INEL.

Response: The appropriate changes have been made in section E.2.5.2 of the Final PE

11.01.35 In reference to page E-37 and E-48, the commentor states that in table E.2 the committed effective dose equivalent (and next two entries to the right) for the APT cases are probably switched since they cannot be derived by adding the values t left. The commentor suggests that alternatives be presented in the same order in bo tables. (ALWR cases are switched with other reactor cases, Full APT cases are switc The commentor notes that on pages E-37 and E-38, the alternatives should be present the same order in both tables (Full APT cases are switched) and the title of table E.2.5.1-3 should be "...at Nevada Test Site".

Response: The appropriate changes have been made to the document.

11.01.36 In reference to page E-123, the commentor states that the table shows five chemical hazards for HWR at SRS, whereas seven hazards were listed for HWR at all t other sites. The commentor asks why nitric acid (a dominant hazard at other sites) trichlorotrifluoroethane (Freon 113) are not also hazards at SRS. If they are added states the commentor, summary table E.3.4-36 on page E- 130 should be fixed accordi

Response: Nitric acid and trichlorotrifluoroethane were inadvertently omitted from for SRS. The affected tables have been corrected and updated.

11.02 Human Health - Facility Accidents

11.02.01 One commentor wonders what are the risks and consequences for the accident scenarios presented for the proposed technologies. Another commentor expresses conc about the increased likelihood of cancer fatalities to the population within a 50 m radius of a tritium recycling or extraction facility during an accidental release.

Response: Appendix F of the PEIS presents the methodologies and assumptions used fo facility accident scenarios. Potential human health impacts are discussed in the PE the ROD will consider these in any decisions for selecting a tritium supply technol site.

11.02.02 The commentor refers to the following statement in volume I, page 4-454, c 2, paragraph 1: "...compared to doses resulting from direct exposure to such a criticality event, these doses are inconsequential and well below DOE standards for extreme accidents given in DOE Order 6430.1A." The commentor questions the estimate resulting from direct exposure to such a criticality event. Also, the commentor sug that a more specific reference to DOE standards for extreme accidents be provided.

Response: Recommendations for the Preparation of Environmental Assessments and Envi tal Impact Statements, prepared by the DOE Office of NEPA Oversight in 1993 provide guidance in the evaluation of extreme accidents. Facility design and operational information required for a PEIS is not detailed enough to identify the location of criticality source in relationship to normal work stations and available shielding. available information is not adequate to estimate involved worker doses due to a criticality event.

11.02.03 The commentor states that the release fraction values listed in appendix F tables F.2.1.1-1, F.2.1.3.1- 1, F.2.1.3.2-1, F.2.1.3.3-1, and F.2.1.3.4-1 from post accidents could not be verified. The commentor asserts that reference documents pro in a DOE reading room did not provide adequate documentation to support release fra value usage.

Response: These sections in appendix F have been revised to include a spectrum of accidents. The applicable page numbers or table numbers in the reference document f source terms, release fractions, core inventories, etc. have been cited.

11.02.04 Commentors believe that appendix F, facility accidents, of the Draft PEIS to be revised substantially for the Final PEIS to assure parity between the reactor APT assumed accident scenarios. The high consequence accident analyses reported in Draft PEIS compare latent cancer deaths from very low probability, beyond design-ba severe accidents for the reactor alternatives, in which major safety related system including the robust containment are assumed to fail, to design-basis accidents for APT, in which key safety systems are assumed to operate to mitigate the accident. T commentors note that for even the bounding low-to-moderate consequence accident, it unclear as to whether the reactor containment and isolation systems are also assume fail making the probabilities much lower than these assumed in the Draft PEIS. The commentors state that in the Draft PEIS presentation of the APT low-to-moderate consequence accidents, all protective systems are assumed to operate. The commentor suggests that the assumed equipment failures and the specific reference documentati the reactor accident analyses (deterministic safety analysis reports, probabilistic analyses, and other topical reports submitted to NRC for bounding assessments) shou identified. The commentors further suggest that the source term total inventory of releasable nuclides and the release fraction should be quantified for each accident alternative technology. The commentors assert that nonconservative assumptions that APT requires no containment, the APT's non-seismic design, the lack of environmenta qualification for equipment, and the lack of fire protection are just a few example design features that will be challenged by NRC and result in a more expensive desig

the APT.

Response: A reanalysis of the reactor accident scenarios was conducted, indicating accident consequences are substantially lower and more in line with expected licens documents. For the ALWR, the postulated design-basis accident was more severe than design-basis accidents because the analysis assumed the complete loss of safety sys that mitigate accident consequences. A more reasonable value was used to obtain the results presented in appendix F and the associated human health sections. Additiona the accident analysis for the APT has been revised to be more consistent with assum for the reactor alternatives.

11.02.05 The commentor offers several content and editorial changes to table 3.6-1. reference to pages 3-80 to 3-83, the commentor asserts that the data entered on the pages is actually for tritium supply alone not for collocated tritium supply and recycling, as the headings allege. The commentor also suggests that the cancer risk the accidents considered for the tritium target extraction facility in table F.2.2. for the tritium recycle facility in table F.2.4-1 should be included on pages 3-80 3-81. The commentor believes this is especially significant for the APT concepts, s for the reactor concepts presented, the tritium supply dominates the cancer risk. According to the commentors, it would be more appropriate to present the sums of th cancer risks to the individual and the population along with the doses and fataliti associated with the risk dominant event/facility.

In reference to page 3-82, the commentor states that, based on information in table F.2.1.4.2-3, the cancer risks at INEL for the APT concepts do not seem to have been adjusted for the accident frequency. The commentor additionally states that for all sites excepts SRS, the cancer risks and cancer fatalities for the APT concepts diff those in tables F.2.1.4.2-3 and F.2.1.4.2-3 for no apparent reason. Also, for NTS, and Pantex, the individual doses for the APT concepts differ from those in tables F.2.1.4.2-3 and F.2.1.4.3-2 for no apparent reason, according to the commentor. The commentor suggests that this be reconciled. The commentor further states that, acco to tables F.2.2.3-2 and F.2.2.3-4, the population doses at ORR for the large and Sm ALWRs should be 4.9x105 and 2.2x104, respectively. This should be corrected on page according to the commentor.

Response: Chapter 3 has been reformatted to address the relationship between the AP MHTGR technologies and the target extraction facility. Appendix F has been revised include a spectrum of accidents for each of the candidate tritium supply technologi The complementary cumulative distribution function figures have also been reformatt provide risk-based summary comparisons. The ALWR accident analyses have been revise evaluate a spectrum of design-basis and beyond design accident source terms that ha been submitted to the NRC as part of safety analysis reports. The data in section 3 been revised and updated to reflect these changes. The tables in appendix F have al revised. In the accident consequence tables, the "Average Individual Risk of Cancer heading has been changed to "Cancer Fatality." That column in the table does not re cancer risk because accident frequency was not considered.

11.02.06 The commentor states that the Final PEIS should include more information o emergency preparedness for each site, especially if a reactor technology is chosen the preferred alternative.

Response: The PEIS includes an expanded discussion on emergency preparedness at eac the candidate sites in sections 4.2.2.9, 4.3.2.9, 4.4.2.9, 4.5.2.9, and 4.6.2.9. Additional information has been provided that explains some of the changes to emerg preparedness planning and local agency agreements that would be required for candid sites that would, if chosen, be receiving reactor technology for the first time. Th also references the Emergency Preparedness Plan for each site. The referenced plans available in DOE reading rooms.

11.02.07 In reference to page I-77, the commentor states that it seems inflammatory include statements such as "If this accident occurred, this exposure would result i

total of ---- cancer fatalities.

Response: The statement is used to indicate a constitutional probability of cancer fatalities, given that the accident occurs. It does not imply this event as a likel occurrence.

11.02.08 In reference to page F-31, the commentor states that the population dose a Pantex should be 25,000 and not 0.00025.

Response: The typographical error has been noted. The exponent has been changed fro 4.

11.02.09 In reference to page 3-83, the commentor states that, according to table F.2.1.4.2-3, the population dose for APT (helium-3) at NTS should be 1.8x10-3 and n 1.8x103.

Response: The exponent has been changed from 3 to -3.

11.02.10 In reference to page 3-84, the data in table F.2.1.5-1 show that the triti target extraction facility poses more cancer risk for high consequence accidents th either the MHTGR or the APT concepts, and the data in table F.2.2.5-1 show that the tritium target extraction facility poses more cancer risk for moderate consequence accidents than the APT concepts. Therefore, states the commentor, it is erroneous t that "the radiological impacts from the recycling and extraction facilities are neg ligible compared to those from the supply technologies." The commentor states that tritium supply alone section needs to be revised by incorporating the data currentl pages 3-80 through 3-83.

Response: The table 3.6-1 has been revised in the Final PEIS to reflect that accide consequences for tritium extraction and recycling associated with the APT and MHTGR tritium supply technology alternatives are more severe than the accident consequenc associated with the APT and MHTGR tritium supply "alone" technology alternatives.

11.02.11 In reference to page F-6, the commentor states, the reference for MHTGR so terms should be a document applicable to the MHTGR, which DOE 1992r is not. The com states that table F.2.1.2-1 indicates that DOE 1995e is the source.

Response: Table F.2.1.2-1 is correct, DOE 1995e is the source.

11.02.12 Commentors observe some discrepancies in chapter 6 references. In referenc page F-8, one commentor states that the references for ALWR source terms should pro be DOE documents, instead of DOESNL documents, which are not included in the chapte references. A commentor referencing page F-12, notes that reference DOE 1993n:2 is as the source of table F.2.1.3.2-1 data, but is not included in the chapter 6 refer

Response: The correct references for the ALWR source terms is the Data Report for A Light Water Reactor Tritium Supply Plant, DOE 1995f. Chapter 6 has been revised to include all references cited in volumes I and II.

11.02.13 In reference to page F-31, the commentor states that section F.2.2.5, four sentence, ("Air leakage...") is garbled and appears incomplete as written.

Response: The sentence has been changed in Section F.2.1.6 of the Final PEIS to rea explosion was initiated by air leakage from furnace leaks, tank leaks, connection l pump leaks, valve leaks, or during process maintenance. The air leakage formed a flammable mixture that subsequently ignited."

11.02.14 In reference to page F-31, the commentor suggests that, in section F.2.2.4 term "worst single failure" be explicitly defined. The commentor also suggests that "minimal" release be quantified.

Response: The reference document stated "The accident assumes that all plant-protec safety systems function as designed. The worst single failure in an active system responding to the initiating event is assumed to occur." No other information relev to the single failure was presented. Normally in large break loss of coolant accide analyses, the worst single failure in an active system responding to the initiating would be the loss of one leg of an active cooling system. The reference document st "The source term for this event will consist of a small fraction of the circulating inventory of tritium released from the D20 coolant that is expelled into the confin The source term to the environment will be a small fraction of this and is expected determined by the confinement leakage rate." Quantification of these small release fractions would be developed and analyzed in subsequent NEPA reviews as appropriate

11.02.15 In reference to page F-26, the commentor states that, in more than 10.87 y actual PWR experience as of January, 1992, no large pipe breaks have been observed. commentor states that the vessels and piping in both the MHTGR and the ALWRs will b similar. Thus, the frequencies of the events in sections F.2.2.2 and F.2.2.3 can be estimated based on the X(2) variate at the 50 percent cumulative probability level less than 2.1x104 per year, instead of 102 and 103, respectively. (See page 19.3-10 CESSAR for Design Certification of the System 80+.) This affects text on page F-26 footnotes to tables F.2.2.2-2, F.2.2.2 -3, and F.2.2.3-2 through F.2.2.3.2-7, accor the commentor.

Response: The size of the 1/8 size MHTGR module primary piping is anticipated to be significantly smaller than the primary piping associated with the 3/8 size ALWR. AL safety analysis reports submitted to the NRC typically show that the probability of large break loss of coolant accident is an order of magnitude lower than a small br loss of coolant accident. The PEIS assumes that the same relationship was valid for 1/8 size MHTGR module pipe breaks (i.e. small break loss of coolant accident) and t size ALWR pipe breaks (that is, large break loss of coolant accident). The PEIS est that the frequency of ALWR large pipe breaks are in the range of 1x10-3 to 1x10-5 p and the frequency of MHTGR pipe breaks is in the 1x10-2 to 1x10-4 per year range. T estimated ranges are not inconsistent.

11.02.16 In reference to page F-24, the commentor states that, according to page 3- individual dose at NTS is 8.4x10-3, not 8.4. This should be reconciled according to commentor.

Response: The typographical error in table F.2.2.1-2 has been corrected and 8.4 has changed to 8.4x10-3.

11.02.17 Commentors believe that values for radiation exposures and resulting fatal for low/moderate accident consequences of HWR and ALWR are not accurate. The commen note that the values of the accident consequences for the APT and MHTGR are unusual In addition, the commentors note that the 10-6 accident probability for the APT res in consequence orders less than the reactor technologies while the MHTGR consequenc inconsistent with past analyses. The commentors also note that the document uses a of 10-3 for accident probability for the HWR and ALWR when 10-6 would have been a m accurate value. In the commentors opinion, this makes reactor technologies look mor dangerous than they are. According to the commentors, the document should integrate risks of all potential accidents identified instead of the two individual events an to present a range of consequences. The commentors believe that the risk values in human health section are the more important figures and these values are extremely irrespective of the technologies. Commentors further suggest the document put human health numbers in perspective by comparing the numbers to other activities which ca cancer risk, such as smoking or living in a brick house.

The commentors state that risks for the tritium supply dominate the moderate conseq cancer risk for all reactor concepts. According to the commentor, the sums of the c risks and fatalities associated with the risk dominant event/facility should be pre The commentors assert that the ALWR low/moderate consequence accident assumptions a inconsistent with NRC standards. The commentors also caution that DOE must be caref state what accident probabilities were used from NRC reports, such as accident prob value from a worst case scenario Safety Analysis Report, because these would lead t misleading values of consequences.

Response: The accident consequences were estimated using source terms from the best available public documentation and the GENII computer code. The referenced document did not provide accident frequencies, so a frequency range was estimated. For conservatism, the lower end of the range was used for point estimates of risk. Volu compared the cancer risk due to accidents to the risk of cancer due to other causes

The ALWR accident source term used in the analysis was designated by the reactor ve a design-basis accident in a submittal to the NRC. The postulated design-basis acci was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. The documentat submitted to the NRC did not define the accident frequencies for design-basis accid

The ALWR accident analyses have been revised to evaluate a spectrum of design-basis beyond design accident source terms that had been submitted to the NRC as part of s analysis reports. The design-basis accident analysis postulates the normal compleme safety systems for accident consequence mitigation.

12 General/Miscellaneous Environmental

12.01 The commentor states that DOE should analyze the consequences of its actions the year 2050. The PEIS should take into account the consequences of the proposed a after 2050, according to the commentor.

Response: For the purposes of selecting a site and technology for the supply of tri well as designing and operating this facility, the analytical period ending with 20 appropriate. This amount of time allows for operation through a reasonable operatin based on a 40 year design, as well as providing sufficient time for the closing and such a facility. To expand the analytical timeframe beyond this date would introduc sufficient technical uncertainties to render projections based on this analysis too subjective for programmatic planning purposes.

12.02 One commentor asserts that the new tritium facility will cost taxpayers billi dollars, produce more spent fuel for which there is no repository, and use too much vital water supplies. Another commentor questions how waste generation and water consumption will be weighted in the final decision. These two issues, according to commentor, should count heavily in the decision making process. The commentor also that the PEIS should include a comparative analysis study on the benefits and risks involved with these two issues and that DOE should outline how they will be weighte Other commentors express concern over the possible negative impacts the tritium sup recycling facility might have on the environment.

Response: Environmental impacts associated with spent nuclear fuel, waste managemen water consumption are being considered in the decision process as well as the cost technical feasibility of the alternatives.

12.03 The commentor states that each of the proposed sites has a unique set of environmental challenges to mitigate if a tritium supply facility is constructed an operated on it. At all sites there are potential impacts on the habitat of flora an

fauna. If SRS is chosen DOE will need to minimize impacts on the natural flow of su and ground water. Both the NTS and Pantex plant have the potential for aquifer draw the accelerator technology is selected and have the potential to impact the habitat threatened and endangered species. If reactor technology is selected, ORR has the g potential to impact the offsite population should a severe accident occur. NTS is a located in a tectonically active region and would require the largest amount of infrastructure upgrades. INEL does not appear to have any significant discriminatin environmental attributes associated with it.

Response: The existing environmental conditions and past operations at each of the supply candidate sites contribute to the environmental impacts and required mitigat for construction and operation of any of the proposed tritium supply technologies. PEIS has identified the affected environment and potential impacts resulting from construction and operation of each of the technologies at each site. Potential miti has been identified based on the current conceptual design impact assessment. The i to SRS surface and groundwater resources are described in section 4.6.3.4 of the PE Because the green-field design of the tritium supply technologies did not consider candidate site site-specific characteristics, the design features normally used to mitigate many of the potential impacts were not identified. If selected, the techno design would proceed and site-specific NEPA documentation would analyze the potenti impacts in much more detail.

The potential impact to groundwater resources at NTS and Pantex from the APT techno has been reanalyzed in the Final PEIS based on information provided during the Draf public hearing and review process. The NTS aquifer recharge rate and potential impa have been changed to reflect additional studies conducted on the aquifer. Water requirements for the APT technology have also been lowered based on more design implementation. Even including the potential water use of the proposed solar enterp informational activities at NTS, the projected water use would not exceed the estim lower aquifer recharge rate. If selected as the tritium supply technology at NTS, f design development would be expected to reduce the conceptual design water use substantially. The aquifer issue and potential impacts at Pantex have been essentia eliminated. The availability of a substantial quantity of tertiary treated reclaime wastewater for use as tritium supply technology cooling has replaced the use of Oga aquifer water for the tritium supply project at Pantex. The potential impacts to threatened and endangered species at Pantex and NTS was discussed in sections 4.5.3 4.3.3.6, respectively. As discussed in the PEIS, critical habitat for threatened an endangered species as defined in the Endangered Species Act (50 CFR 17.11; 50 CFR 1 exist on Pantex and NTS. The potential impacts to the bald eagle at Pantex and the tortoise at NTS are identified and potential mitigation measures proposed. If selec a tritium supply site, more detailed site-specific analysis would be included in ti NEPA documentation. The commentors observations on the ORR severe accident setting, NTS tectonic setting and INEL attributes are correct. All of these issues and poten impacts, if any, are identified in the PEIS. Mitigation has been proposed for impac based on the conceptual design impact assessment. If any of these sites is selected tritium supply site, more detailed analysis and technology design would be included minimize potential impacts.

12.04 The commentor suggests that, when evaluating current designs, the PEIS should consider terrorist attacks, that is, aircraft attacks or trucks with weapons.

Response: Security concerns are of paramount importance to DOE. Although there is n great deal of description as to the importance security plays in the DOE's activiti the PEIS, security concerns are a major consideration for the design and operation of DOE's Defense Programs facilities. This PEIS is a programmatic level document an focused on selecting the appropriate technology and site for the tritium supply and recycling facility. In the initial selection of candidate sites, security considera played a strong role and, accordingly, only those DOE facilities which could offer certain degree of security were considered. Once a site and technology selection is DOE will undergo a detailed site-specific design process which will include a lengt analysis of all security requirements.

12.05 Several commentors note problems with the text, organization, and analysis in PEIS. One commentor suggests that a clear statement about the tritium production go provided in either the executive summary or chapter 1. The commentor states that, currently, the explanation is not found until the reader reaches chapter 3, where t terms "steady state requirement" and "baseline requirement" are finally explained a fractions of the original New Production Reactor Program goal quantity. Another com states that the PEIS does a poor job of distinguishing among the alternatives. The commentor asserts that this is due to an analysis that relies on uncertain modeling potentially unrealistic assumptions about the quality of operation. One commentor requested that a table listing the key discriminators for each technology independe the sites be included. Another commentor suggests adding the acronyms HEU and MGY t iv of volume II, while another states that in figure 1.4-1, the ORR geographical lo should be referred to as `at Oak Ridge, TN', not `near Oak Ridge, TN'.

Response: As with any large and complex document minor text problems and editing slip-throughs can be expected. Every effort has been made in preparing the Final PE discover and correct these errors. The organization of the PEIS was felt to be the approach and format for presenting the many tritium supply technologies, potential and the variety of other options (e.g., collocation of recycling facilities, less t baseline operation). The organization also allows readers to concentrate on a parti site of concern and compare with other sites.

The analysis presented in the Draft PEIS was based on best available existing data project information developed specifically for the PEIS. In many instances however, because of the new designs and technologies being considered for analysis, the leve detail was not of sufficient quality to evaluate potential impacts without making conservative assumptions. Some of these assumptions, especially concerning conceptu design and accident analysis of tritium supply technologies, were questioned during public review of the Draft PEIS. Based on the comments received, appropriate change have been made in the Final PEIS.

The acronym HEU is listed in the "acronyms and abbreviations" section of volume II xxv). The unit of measure MGY is listed on page xxvii under "chemicals and units of measure". Figure 1.4-1 has been changed to "at Oak Ridge, TN". The tritium producti and the terms describing the different production scenarios have been added to the PEIS summary under the heading "Tritium Supply and Recycling Proposal."

12.06 The commentor states that the tritium production/recycling siting decision sh focus on equity issues, human health and socioeconomic risks, and unavoidable environmental impacts.

Response: The siting decisions will consider the issues which are analyzed in the P raised by the commentor. However, the decision on siting the preferred tritium supp technology will also consider many other factors and issues such as cost, technical uncertainty, and scheduling.

12.07 The commentor suggests that, in the Final PEIS, DOE should include a descript the old tritium facility, its current and planned disposition, the wastes generated a comparison between the old and new tritium facilities. The commentor asserts that may help DOE learn from past mistakes and educate the public as to what can be expe from the new facility.

Response: DOE has had more than a dozen facilities over the years that have provide tritium and other nuclear materials for the fabrication of nuclear weapons. All of facilities are of the first generation reactor design and were designed and constru a timeframe prior to existing environmental and safety requirements. The operation these facilities and the wastes they generated bear no resemblance to the facilitie presently being considered. DOE has a separate action underway to study contaminati resulting from past operations and will develop various technical alternatives for remediation of these facilities.

12.08 Several commentors express the opinion that the PEIS does not account for imp associated with the D&D of alternative technologies. Commentors note that the reaso given in the PEIS is that the level of detail is not developed enough (page 3-4), therefore, this evaluation will be conducted as part of future site-specific tiered documents. While tiered environmental review may be appropriate for D&D activity, o commentor believes this PEIS should estimate the amount and type of waste that coul generated by such activity. Maximum quantities of each type of waste should be iden In the commentor's opinion, such an accounting is necessary in order to present a realistic picture of the total contribution this proposed action will make to the w DOE must manage. One commentor states that DOE waste management planning must ensur appropriate facilities are available to handle projected waste streams from all of activities. Otherwise, the proposed action presented in this PEIS could contribute cumulatively to an impact on DOE's waste treatment and disposal capability. Another commentor recommends that the Final PEIS include more D&D information concerning th proposed technologies and highlight any impact differences among the technologies.

Response: The specific environmental impacts of D&D cannot be determined at this ti because of the preconceptual designs of proposed facilities. However, a relative comparison of the D&D activities and potential impacts among the tritium supply technologies is presented in section 4.14 of the PEIS. The costs associated with D& included in the Technical Reference Report available in DOE reading rooms.

12.09 The commentor states that, on March 15, 1994, Dr. Harold Smith relayed to the Appropriations Subcommittee on Energy and Water Development that tritium requiremen are based on START I stockpiles, and not START II stockpiles as DOE claims today.

Response: For purposes of the PEIS, tritium requirements are based on a range of st requirements. For the base case, a stockpile consistent with START II requirements been considered. DOE also performed analysis on tritium requirements based on a muc stockpile requirement, as well as a higher stockpile requirement, consistent with S requirements. Analysis of three different stockpile requirements will enable the de maker to utilize and benefit from additional factors which may develop prior to the decision.

12.10 The commentor suggests that the PEIS include an analysis on safety issues, fo on past performance of the potential sites. Past safety records should count heavil the decision making process, according to the commentor.

Response: The focus of the PEIS is on how the tritium supply and recycling faciliti would be operated in accordance with all applicable DOE orders, not on how past facilities were operated. A discussion of site accident history is provided for eac in the affected environment sections.

13 Tritium Supply and Recycling Proposal and Alternatives

13.00.01 Several commentors express the opinion that the No Action alternative is t option most consistent with international negotiations to achieve arms reductions a nonproliferation goals. One commentor also suggests that it is the preferred option relative to the health issues related to production, handling, and safe disposal of tritium. Another commentor notes that DOE could continue to reuse existing tritium dismantled weapons until well beyond 2011 with no adverse effect on U.S. nuclear de capability. In light of the START II Protocol, according to this commentor, tritium not be needed as the number of nuclear warheads is reduced. In a similar vein, one commentor states that, since there are between 16 to 21 years before tritium become seriously low, it is more economical to further explore the options that have alrea been dismissed.

Response: At the present time, DOE has no capability for the production of tritium. Furthermore, tritium is a short-lived radionuclide which is an integral component o every weapon in the Nations's nuclear weapons stockpile. Although the tritium in we which are being retired from the stockpile as a result of recent arms negotiations recovered and utilized in the existing weapons, this supply, alone, is not sufficie replace the tritium which is decaying in the existing weapons. Based on a stockpile consistent with the requirements of START II levels, it is expected that an additio supply of tritium will be required by 2011. Accordingly, DOE is proposing to constr new tritium supply facility. The PEIS analyzes the potential environmental impacts ciated with various site and technology alternatives for the production of tritium. Action alternative is utilized in the PEIS as a baseline case, from which the environmental impacts of various alternatives can be developed and compared. Under Action scenario, DOE would not have sufficient quantities of tritium to fulfill its requirements under the Atomic Energy Act to support the enduring stockpile as direc the President and approved and funded by Congress.

As to the health and safety and disposal issues of the No Action alternative relati the other alternatives, there are no significant health and safety issues associate with any of the alternatives being considered in the PEIS. All alternatives fall wi reasonable and generally acceptable levels of risk. Furthermore, DOE does not dispo any quantity of tritium and has no future need for the disposal of tritium, consequ this document does not look at any tritium disposal alternatives.

13.00.02 Commentors express concern that uncertainties exist with the APT and MHTGR technology designs and with the associated cost estimates. One commentor asserts th there is not enough operating experience for the APT and MHTGR technologies; theref analyses of their environmental impacts or cost estimates cannot be fully accurate. Another commentor suggests that DOE build a small accelerator to test before buildi full-sized one with questionable results and wasting money. Still, another commento argues that the APT and MHTGR be eliminated from contention because they are not sufficiently proven and have an unreasonable risk of achieving success. The comment contend that either the HWR or ALWR technology is a better choice. Another commento references the following statement in the PEIS, on page ES-8: "only the HWR has tri production operating experience." The commentor states that although DOE intends to repeating past mistakes, three out of the four possibilities presented are unproven could cause problems. Another commentor feels that the Large ALWRs which have compl NRC review have a solid basis for evaluation in the PEIS. Although the threat of intervenor delays in the licensing of a new nuclear plant is often cited as a sched uncertainty, the commentor feels we should not lose sight of the fact that even the accelerator has been delayed by intervenors (at Los Alamos). In the Los Alamos case commentor notes that the research accelerator was much smaller than that proposed f

In addition, commentors express concern over the reliability and maturity of the technologies. According to one commentor, the more immature the technology, the gre the risk of substantial cost overruns, schedule delays, and overall unreliability w may threaten the technology's ability to supply tritium when needed. Some commentor suggest that reliability is the most important criterion when choosing a technology the PEIS should include information on reliability and safety for the technologies. fact, one commentor states that safety reports for each technology should be made available to the public. Another commentor expresses concern about how cost versus efficiency/reliability is going to be compared for all four technologies.

Response: Although there is no real operational experience for the specific APT or facilities being considered in the PEIS, most aspects of these technologies have be researched and fully demonstrated for more than 30 years. The specific designs bein considered will draw on this experience and will operate as required, within accept levels of technical risk. For the MHTGR alternative, the Peach Bottom 1 Atomic Powe Station demonstrated gas reactor technology as early as 1967. While the proposed configuration for the APT has never actually been constructed or operated, all of t various significant components have been used in various accelerators operated by D the past. The Technical Reference Report available in the DOE reading rooms provide estimates of the technical feasibility of the various technologies, as well as cost

schedule estimates. These estimates include the effects of the various issues such design maturity.

13.00.03 The commentor notes that the Final PEIS should include a full evaluation o gas-turbine modular helium reactor as one of the technology alternatives in additio the steam cycle MHTGR, rather than the current limited treatment. The commentor bel that the ROD evaluations of cost, schedule, and production assurance should include gas turbine modular helium reactor as one of the candidate technologies. In referen pages A-31 and A-97, another commentor states that it is not clear why the relation between the 600 MW gas turbine-modular helium reactor and the 350 MW MHTGR is any different from the relationship between the Small ALWR and the Large ALWR. Both ALW evaluated in this PEIS. The commentor believes that if information on the ALWR from Surplus Fissile Materials Program is to be used, information from that program on t MW gas-cooled reactor should also be used. Both gas-cooled reactors should also be evaluated in this PEIS. One commentor notes that it is stated that the gas turbine-helium reactor "represents a different technology." In fact, the commentor believes the reactor technology of the two designs is the same while the differences lie in power conversion system technology. The commentor suggests that the comparison of t gas turbine-modular helium reactor with a boiling water reactor is inappropriate. T turbine-modular helium reactor would not be plagued with the operating problems tha been experienced by the boiling water reactor and other light water reactors, accor the commentor.

Response: As stated in section A.3.1, the direct cycle gas turbine design is basica design modification of the basic gas reactor design. Inclusion of it as an alternat would offer nothing new in terms of environmental discrimination between technologi Technical Reference Report available in the DOE reading rooms provides estimates of technical feasibility of the various technologies, as well as cost and schedule est The cost estimates have accounted for the cost differences between the 600MW and 35 reactors referenced by the commentor, and there is comparatively little technical difference between the technologies. If the MHTGR technology is chosen then further studies may show that consideration of this new design is warranted.

13.00.04 The commentor remarks that it is stated that, "The MHTGR and light water reactor....lack tritium production experience and the development of tritium target technology. The APT technology....also has no tritium production experience and onl recent development of tritium targets." This statement is incorrect, according to t commentor. DOE should refer to Tritium Target Development Project Executive Summary Topical Report, PNL-8142, September 1992 for light water reactor target development information. For gas-cooled target development status DOE should refer to two repor Fuel and Target Technical Development Status Report, CEGA-002818, December 1993 and Tritium Recovery Facility Technical Development Status Report, CEGA-002693, Februar

Response: The statement is correct as stated since it refers to operational product experience and the completion of target development. It does not refer to research development experience as is cited in the referenced reports.

13.00.05 Several commentors express support of the "triple play" reactor, citing th following advantages: it is the most practical, proven, and economical option; it i to generate revenue by selling electricity (and providing that electricity to communities that need it); and it may be able to dispose of plutonium, providing mi flexibility. In addition, some commentors indicate support for the ALWR triple play reactor. Some commentors also indicate that there is much support for locating the at SRS because it would address the plutonium problem, produce tritium, provide ine pensive power for the area, and encourage economic development. In fact, one commen points out that some private initiatives in South Carolina are interested in this o and may provide financing.

In addition, some commentors believe that the benefits of electricity production we adequately presented in the PEIS and suggest that DOE should address environmental impacts and cost/benefits for a tritium production reactor and for a reactor that b

produces tritium and burns plutonium. One commentor believes that a single ROD proc should be adopted for both the Tritium Supply and the Fissile Materials Disposition programs to ensure that the multipurpose options are properly taken into account. I commentor's opinion, this single ROD process would permit valid comparisons of cost schedule, production assurance and environmental impact of multipurpose plants vers combinations of other technologies required to satisfy both the Tritium Supply and Materials Disposition missions.

Some commentors also feel the treatment of the multipurpose options in the PEIS is full and fair evaluation, so it is not consistent with the requirements of NEPA. Th commentors also note that the environmental impacts of the multipurpose options are compared only with those of the tritium production options and a full and fair asse would compare the impacts of the multipurpose options with those of the plutonium disposition and tritium production options combined. One commentor refers to page A and notes that evaluations of multipurpose core designs by General Atomics indicate the plutonium disposition rate per reactor module is increased by 50 percent when t reactor is operated in a multipurpose mode versus plutonium disposition only. For t ALWR, the commentor believes the plutonium disposition rate per reactor is decrease to derating and the effects of periodic retargeting. According to the commentor, si MWt MHTGR modules or four 600 MWt gas turbine-modular helium reactor modules could disposition about 60 MT of plutonium over their 40-year reactor life. The commentor suggests that speculation on this matter on page A-100 should be replaced with this information. Another commentor referring to pages 4-447 and 4-467, believes that fo ALWRs for plutonium disposition, at least two small ALWRs would have to be used, to out the same amount of plutonium disposition as the large ALWR. For a large ALWR, t commentor feels that it is not necessary to require a full core refueling, with a m reduction in fuel disposal.

Response: DOE does not expect that the ROD on tritium production would restrict or prejudice decisions of any plutonium options. In fact, DOE's preferred alternative allow for subsequent integration with future plutonium disposition decisions, if de As stated in the description of the NEPA process in section 1.2, any decision made ROD would be followed by a site-specific EIS which would address the technologies a locations on the chosen site. The PEIS for Tritium Supply and Recycling evaluates alternative technologies and sites for long-term, assured tritium supply and recycl Another DOE program office, the Office of Fissile Materials Disposition, is prepari PEIS addressing the issue of how to dispose of plutonium that is excess to the nucl weapons complex.

Of the tritium supply technologies evaluated in the PEIS for Tritium Supply and Rec only the ALWR, MHTGR, and commercial reactor alternative are being considered for plutonium disposition. Therefore, the environmental impacts of plutonium-burning ar analyzed and presented in the PEIS for Tritium Supply and Recycling in section 4.8 the environmental impact sections for each site. Estimates of the amount of plutoni could be consumed by these technologies are included in section A.3.2. It is reason foreseeable that electricity generated by an ALWR, MHTGR or commercial reactor inci the production of tritium would be sold, as allowed by Section 44 of the Atomic Ene Act. Thus, the PEIS includes an analysis of these potential environmental impacts. Because an ALWR, MHTGR or commercial reactor could also be used to "burn" plutonium environmental impacts are also addressed in the PEIS.

13.00.06 The commentor notes that the Draft PEIS states that "the analysis in this based on the requirements of the Nuclear Weapons Stockpile Plan which covers an 11- period, specifies the types and quantities of weapons required, and sets limits on size and nature of the stockpile changes that can be made without additional approv the President." The commentor feels that this document standing alone should not be basis for the proposed action, for the following reasons: the period covered by the Nuclear Weapons Stockpile Plan does not extend through the construction phase and d even begin to address the operational phase (2010 to 2050) of DOE's proposed tritiu supply and recycling capability, and, therefore, it cannot form the basis for asses stockpile tritium requirements and supply/recycling alternatives in the PEIS; an EI tritium supply and recycle capability for the years 2010 to 2050 must take into acc reasonable, indeed likely, alternatives not presently accounted for in the Nuclear

Weapons Stockpile Plan for 1994 (or 1995, assuming the classified appendix in the F PEIS will contain updated stockpile plan information). By definition, the range of "reasonable alternatives" for tritium supply in the first half of the 21st century be narrowed to sole consideration of the tritium "requirement" in an already approv government plan for the period 1995 to 2005. According to the commentor, not only d such a premature narrowing of options make a mockery of NEPA's requirement for anal reasonable alternatives, but the commentor contends that the Nuclear Weapons Stockp Plans themselves historically have been unreliable predictors of actual nuclear wea requirements and force levels. They have, in fact, regularly overestimated future n materials requirements.

Response: As discussed in chapter 2, the need for new tritium supply is based on th Nuclear Weapons Stockpile Plan, which projects a need for tritium to approximately based on a START II level stockpile size of approximately 3,500 accountable weapons 1994 Nuclear Weapons Stockpile Plan represents the latest official guidance for tri requirements. A Nuclear Weapons Stockpile Plan for 1995 was not issued. The PEIS al includes analyses of providing tritium at an earlier date should that become necess For a stockpile size smaller than STARTII, the need for new tritium could be extend beyond approximately 2011. If the need date for new tritium were significantly late 2011, DOE would not have a proposal for new tritium supply, and would not be prepar PEIS for Tritium Supply and Recycling. The potential impacts of future arms control agreements are accounted for in the development of the Nuclear Weapons Stockpile Pl which is not the purpose of this PEIS. This PEIS has the sole purpose of evaluating reasonable alterna- tives for providing the tritium necessary to support the enduri stockpile as defined by the President in the Nuclear Weapons Stockpile Plan. A new has been added to the PEIS (section 4.11) that discusses the differences in environ impacts should tritium be required sooner than currently envisioned.

13.00.07 Commentors express support for having and maintaining capability for nucle materials production, including tritium. The commentors suggest that DOE select a technology that would produce the highest quality tritium as well as minimize waste generation. To further enhance national security, one commentor suggests that the U should have two sources of tritium production for a strategic advantage (for exampl APT at NTS and a facility at SRS). Another commentor feels that to rely on recycled tritium mixed with deuterium in unsuitable concentrations could jeopardize our dete rence capability. One commentor states that if it is decided that tritium productio recycling is necessary to achieve a goal that the public is in agreement with, then least harmful design and method should be selected. Finally, another commentor expr support for reactor production of tritium citing the facts that other nations will nuclear power despite our reluctance, the dependence of the United States on oil im for electric production, and nuclear power's favorable comparison to other energy sources.

Response: The technologies can all produce the high quality tritium needed while minimizing waste. The APT has the least waste of the potential technologies. The pu of this PEIS is to analyze the reasonable alternatives for tritium supply and sites support the enduring stockpile as defined by the President in the Nuclear Weapons Stockpile Plan. The preferred alternative identified in section 3.7 of the PEIS is dual-track strategy to pursue both the use of an existing commercial light water re and the construction of an accelerator to produce tritium.

13.00.08 In reference to the Stockpile Stewardship and Management Program booklet o 4: the commentor quotes, "All of the candidate weapons for the START II stockpile r tritium replenishment." The commentor believes that DOE should not make the assumpt that we will maintain a stockpile of weapons requiring tritium when no tritium faci exists.

Response: All of the candidate weapons for the START II stockpile already exist tod they all require tritium replenishment. The fact that there is currently no tritium supply is the reason that this PEIS is being prepared.

13.00.09 Commentors question why DOE needs 15 years to bring a new tritium producti facility online if construction estimates ranging from 5 years for the APT to 9 yea the MHTGR are accurate. For example, one commentor notes, the APT could begin const in 2006 and be complete in 4 to 5 years. If DOE waits 4 to 5 years beyond 2006 to b construction, the commentor believes that tritium production may not even be requir until well beyond 2010 because of further arms reductions.

Response: Depending on the technology selected, it could take as long as 15 years t a tritium supply facility online to account for facility design and further technic research and development of targets. Considerable design work is required to bring technologies and facilities to the construction phase. The 5 to 9 year construction duration to which the commentor refers does not fully represent all of the activiti are necessary to bring a new tritium supply facility online. Regarding the alternat selected, varying degrees of additional research, development, and design will be required, and a site-specific tiered NEPA document will be prepared. These activiti occur prior to construction. After construction, start-up and test activities will required prior to actual tritium production. In total, the analysis indicates that could take as many as 15 years to bring a new tritium supply facility into operatio Because new tritium is needed by approximately 2011, DOE is proceeding with a triti supply decision now. More detailed analysis of the construction schedules can be fo in the Technical Reference Report available in DOE reading rooms.

13.00.10 In reference to section 3.4.1.4, cooling systems, the commentor states tha PEIS indicates mechanical draft dry cooling towers would be used for the reactors a dry sites, and wet cooling would be used for APT technology at any site. The commen would like to see two additional cooling system technologies considered for use for the technologies at the Pantex "dry" site. Another commentor suggests that DOE cons combination of wet/dry cooling technology at any type of facility selected for NTS.

Response: As discussed in section 3.4.1.4, dry cooling towers would be used for rea at all dry sites, namely Pantex, NTS and INEL. Dry sites and wet cooling would not appropriate based on the lack of abundant water. The specific cooling design would site-specific and considered at that time.

13.00.11 One commentor suggests an alternate site for the Tritium Supply and Recycl facility, located approximately 12 miles from Rogersville, Tennessee, in Hawkins Co The site, according to the commentor, was the former headquarters for the Internati Printing Pressmen's Union and is remote, accessible, and low in population. Another commentor suggests that DOE consider siting the Tritium Supply and Recycling facili outside of the existing Complex sites.

Response: Adding a non-DOE site would be contrary to the goal of downsizing and consolidation. DOE established a Site Evaluation Panel and this panel developed spe selection criteria for determining the suitability of facilities to be considered. factors as safety, security, availability of required resources, availability of wa management facilities, the availability of an existing technically qualified workfo and other factors were determined to be necessary. The addition of a new site would consistent with the overall goal of DOE to consolidate and downsize the Complex.

13.00.12 The commentor states that despite spending $1 billion on technical studies Office of the Assistant Secretary for Defense Programs does not believe reactor technology is the best option for tritium production. The commentor expresses the b that jobs are the real basis for considering HWR, MHTGR, and ALWR.

Response: The PEIS addresses the environmental impacts of all reasonable alternativ identified for the tritium production mission, and includes analysis of socioeconom issues such as job creation and loss. These environmental factors along with costs, technical feasibility, and scheduling will be presented to the decision maker. The decision maker will consider all of these factors and issue a technology and site selection in the ROD. No alternatives were deemed to be reasonable or unreasonable on job creation.

13.00.13 In reference to volume I, page 4-444, fuel receiving, storage, and handlin commentor states that the indirect impacts of coal mining and shipping should be considered along with the impact of operations at the plant site.

Response: A description of the mining and transport of coal and the general impacts associated with this part of the energy cycle has been added to the discussion on f receiving, storage, and handling in section 4.8.2.1.

13.00.14 Commentors state that the PEIS should include a discussion of other uses f tritium and for the chosen technologies. One commentor suggests that information be provided on what the tritium facility would be able to produce/dispose of when or i tritium is no longer needed. The selected technology must be flexible enough to be for other needs without compromising the ability to produce tritium, according to t commentors. One example given is the ability to produce a wide range of isotopes. A commentor notes that there is a commercial market in the United States for tritium should consider using the tritium facility for commercial (non-defense) purposes in addition to its primary mission of producing tritium for weapons enhancement. One commentor suggests that with no tritium supply requirements, the chosen technology be used to make electricity, medical isotopes, etc., cost effectively. The commento believes that under no circumstances should the taxpayers be asked to fund another and another technology if the tritium supply requirements change.

Response: As explained in chapter 2 of the PEIS, DOE is required by law to maintain nuclear weapons stockpile as directed by the President in the Nuclear Weapons Stock Plan. The tritium supply facilities presented in this document are sized to support stockpile. Additional uses, such as those suggested above, should not be included i initial planning but could be accomplished on a space available, non-interference b after DOE's statutory requirements were met.

13.00.15 Commentors state that the PEIS needs to make it clear that the tritium fac analysis is based on new START II levels, reflecting the most recent agreement for weapons reductions. One commentor also notes that it should be made clear that the associated reserve that is needed to maintain the stockpile is also based on START levels. A commentor suggests that the PEIS should also clarify that the tritium res stockpile includes tritium for active weapons (in the stockpile) only, not any that currently inactive or dismantled. Finally, one commentor notes that total reduction the nuclear stockpile are to be completed by 2003 and this fact should be taken int account when planning for the tritium facility.

Response: As stated in chapter 2 of the PEIS, the tritium requirements in this docu are based on the 1994 Nuclear Weapons Stockpile Plan approved by the President on M 7, 1994. These levels are based on START II levels. This plan does take into accoun changing world situation to include ongoing arms control negotiations. More specifi details than that found in the PEIS are included in the classified appendix.

13.00.16 The commentors state that DOE should consider purchasing tritium from fore countries at different times; this would both benefit the United States and bring i revenue to some of the poor countries. For example, suggests one commentor, DOE sho tell Russia to sell all the tritium they can or else we will build a reactor to pro it. By the time the United States has depleted that source, a new and better techno might be available or the existing stockpile might be further reduced.

Response: The option of purchasing tritium from foreign sources was evaluated but dismissed from further consideration for the reasons stated in section 3.1.3.

13.00.17 Commentors suggest additional technologies and approaches for DOE to consi its facility analysis. According to the commentors, other reactor types for conside as alternative technologies should include the molten salt reactor, the commercial

boiler reactor with lithium, the low temperature light water reactor, and the gas turbine-modular helium reactor. Advantages of the low temperature light water react commentor cites, include expensive heavy water would not be required for coolant an moderator, and the waste tritium buildup in the coolant would be drastically reduce that in the HWR. In addition, the commentor states that no heavy water processing f would be required to detritiate the expensive heavy water as would be required for HWR.

Commentors also believe that DOE should consider putting the K-Reactor at SRS back because it could keep up with the tritium needs if started immediately, which would time for new technology development or for decisions about further stockpile reduct as well as save money. According to one commentor, if one or more smaller reactors also upgraded then DOE would have a backup in the event the larger reactor had to b down. The commentor also states that DOE should have continued to use the reactor t last produced the gas, rather than build a new facility. Another commentor suggests DOE consider technology alternatives that reuse spent fuel, making spent fuel a res as other countries are doing. A commentor asserts that DOE should use a phased appr all alternative technologies. Another commentor believes that DOE should also consi fusion facility in the PEIS.

Response: The option of using DOE existing reactors or accelerators was evaluated b dismissed from further consideration for the reasons stated in section 3.1.3. DOE h experience with the operation of many reactor types, and considers that those inclu this PEIS represent a reasonable range of technologies. DOE has not only considered putting the K-Reactor back online but had an extensive and costly effort underway i early 90s to restart the K-Reactor. Unfortunately, the age of this facility and the magnitude of the environmental and safety upgrades required for this task proved to and in 1994, the K-Reactor was placed in a "cold stand-by" status with no provision restart.

13.00.18 One commentor indicates that on page 4-462, the PEIS states that spent lig water reactor mixed-oxide fuel assemblies would have greater decay heat than spent uranium fuel assemblies. It is then assumed that the same is true for the gas-coole reactor, according to the commentor. The commentor charges that this assumption is correct. The commentor states that the decay heat of plutonium spent fuel in the gas-cooled reactor is less than that of the uranium spent fuel from the tritium production-only design. Accordingly, notes the commentor, storage density in the sp fuel storage area is not adversely affected. The commentor also notes that referenc wet storage of the gas-cooled reactor spent fuel should be deleted since MHTGR spen is stored in dry facilities at all times. It should also be recognized, states the commentor, that, in general, the gas-cooled reactor spent fuel volumetric decay hea generation rate is several orders of magnitude less than that for light water react spent fuel which has a much higher power density. Therefore, the commentor states t even though the volume of spent fuel generated by two gas turbine-modular helium re is as much as a factor of 20 larger than that of a Small ALWR, this does not advers affect onsite spent fuel. These parameters are governed by thermal heat load rather by volume of the spent fuel, according to the commentor. The commentor asserts that heat loads allow only about four canisters per acre for light water reactor spent f whereas about 77 canisters per acre are allowed for gas turbine-modular helium reac spent fuel. Thus, the commentor concludes that the geologic repository area require disposal of spent fuel from three MHTGR modules or two gas turbine-modular helium r modules is about half that required for disposal of spent fuel from one Small ALWR.

Another commentor notes that on page A-100 the cyclic tritium production campaigns affect the light water reactor fuel cycle such that the level of destruction of plu in the multipurpose application would be reduced. Thus, the discharged fuel would n the spent fuel standard. The commentor also notes in the discussion of the MHTGR an turbine-modular helium reactor on page A-101 that the level of plutonium destructio achieved for the multipurpose plant is in excess of the spent fuel standard. Anothe commentor states that discussion of the System 80+ design describes the need to der plant in various modes of operation as if it were a virtue by referring to how it maintains "flexibility" in its power output. The commentor feels that this is, in f limitation of the ALWR as a multipurpose plant - one from which the MHTGR does not

suffer. In addition, the commentor feels that the amount of tritium produced in an when concurrently using MOX fuel should be addressed, as well as the potential safe issues that are associated with that fuel configuration that require derating the p

Response: No technical criteria for disposal of spent fuel have been firmly establi for the Yucca Mountain repository. A key technical criteria that is expected to bea significantly on the ultimate amount of volume that a given technology's spent fuel take up is the repository loading strategy based on areal thermal loading limits. T whether the spent fuel from an MHTGR would take up a greater volume of repository s than the spent fuel from an ALWR or HWR would depend on whether a "hot", "intermedi or "cold" areal thermal limit were established for the repository areal thermal loa limit.

13.00.19 In reference to volume I, page 3-6, use of existing department of energy r or accelerators, one commentor states that it is not reasonable to reject the use o DOE's existing reactors because none of the operating facilities is large enough to produce the amount of tritium required to support the projected stockpile requireme they are currently committed to existing programs, and are reaching the end of thei design life. First, states the commentor, while none of the reactors alone may be a meet the projected tritium demand, together it may be feasible. In fact, the commen believes it would seem particularly strategic from a defense standpoint to have sev small producers, at widely scattered locations, rather than a single, large produce Second, states the commentor, since these reactors are reaching the end of their de life, one can assume that their commitment to existing programs is also coming to a The commentor states that for that reason, modifying and upgrading these reactors f new mission as tritium producers sounds like a reasonable alternative. Not only wou be reusing existing facilities rather than adding them to a growing D&D stockpile, would be possible to delay the development and expense of an entirely new facility, according to the commentor. Such an option may be desirable given the uncertainties regarding how much tritium will be needed. Also, given the changing international s with respect to nonproliferation, this alternative may be attractive because it doe send the message that the United States is building new nuclear defense capabilitie according to the commentor.

Another commentor asks what fraction of the goal quantity discussed on page S-9, pa 4, could all four of the existing DOE reactors together produce. The commentor additionally asks: how long their commitments to existing programs are; and, if the flux test facility were modified, what its life expectancy would be. Another commen also references the fast flux test facility and suggests that the Draft PEIS is in when it states that no source of a new tritium supply is available.

Response: The option of using DOE existing reactors or accelerators was evaluated b dismissed from further consideration for the reasons stated in section 3.1.3. DOE h experience with the operation of many reactor types, and considers that those inclu this PEIS represent a reasonable range of technologies.

13.00.20 Commentors suggest that DOE consider in the PEIS a no-weapons or fewer-wea alternative and the consequences this would have on tritium needs. In addition, som commentors believe that tritium is not necessary for the functioning of nuclear wea and suggest that DOE analyze weapons that do not use tritium. The commentors believ tritium could be phased out and weapons made from other materials such as the pluto stockpile.

Response: The alternative of redesigning weapons to require less or no tritium was considered but eliminated from detailed study. This is explained in section 3.1.3 o PEIS. Also, as discussed in chapter 2, the need for new tritium supply is based on 1994 Nuclear Weapons Stockpile Plan, which projects a need for tritium by approxima 2011 based on a START II level stockpile size of approximately 3,500 accountable we A smaller than START II stockpile size would extend the need date for new tritium b approximately 2011. If the need date for new tritium were significantly later than DOE would not have a proposal for a new tritium supply, and would not be preparing for Tritium Supply and Recycling.

13.00.21 The commentor notes that several of the reactor alternatives for which acc analyses are presented in appendix F of the PEIS are under review by NRC for design certification under 10 CFR Part 52. The commentor adds that this fact gives NRC bot "special expertise" in the safety aspects of the technology presented in the PEIS a jurisdiction over outside analyses that could impact the course of current delibera on certification. The commentor suggests that NRC be asked to review the adequacy o material presented characterizing the environmental impacts (PEIS volume II, append E, and F) of reactors currently being reviewed for licensing actions to assure consistency. The commentor notes that NRC also has "special expertise" in the safet review of gas-cooled reactors. NRC review of the accident analysis methodology used DOE is also appropriate because of the NRC's "special expertise" in reviewing vendo methodologies and because NRC's independence can assist DOE in satisfying the above regulatory requirement for ensuring "professional integrity." The commentor adds th NRC's expertise and recent experience in looking at different types of advanced rea can also aid DOE in identifying and assessing the legitimacy of "safety issues" for APT. Another commentor feels that the licensing of the APT by NRC should be assumed basis for the PEIS and discussions held with NRC to establish a licensing design-ba the APT.

Response: NRC has been provided with copies of this document for review as suggeste Meetings were held with NRC to discuss the potential uses of commercial reactors, licensing implications, potential external oversight and nuclear safety related iss

13.00.22 According to one commentor, the discussion of decreasing tritium productio efficiency of the MHTGR in the multipurpose mode neglects the fact that the tritium production efficiency of the gas-cooled reactor is far better than that of other candidate reactor technologies. The commentor notes that in the PEIS, the MHTGR has lowest overall environmental impacts of any of the production reactor options under consideration. The commentor is of the opinion that the MHTGR is the most efficient tritium production reactor under consideration. The commentor notes that in the mul pose application, the total installed thermal capacity required to produce tritium goal while dispositioning plutonium is 3,000 to 4,800 MWt, which is comparable to t installed capacity required for the ALWR options. If one compares the multipurpose options with the combined impacts of the tritium production and plutonium dispositi plants, it is clear that the total installed capacity required for the multipurpose is lower for the MHTGR and is about equal for the ALWR, states the commentor.

The commentor notes that the environmental impacts presented on page 4-460 for the multipurpose gas-cooled reactor should be compared with those for other multipurpos reactor technologies and with those for the combined individual tritium production plutonium disposition missions. Instead, the commentor feels that the presentation provided in the PEIS limits its focus to the relative number of modules required fo tritium production only versus multipurpose while providing no perspective as to wh these environmental impacts are large or small compared to other options. One comme states that DOE must plan in the design of its tritium production reactor the capab to burn cores fueled by both uranium and plutonium. Another commentor states that plutonium should not be considered a resource, as it is in the PEIS, since its disp in question. Another commentor inquires whether plutonium burning cycles have been explored as alternatives (as in France and Japan).

Response: The decision on the tritium supply technology will not be identified unti ROD has been published after this PEIS, although section 3.7 identifies the preferr alternative. Three of the technologies analyzed for tritium production in the PEIS the capability to burn plutonium (ALWR, MHTGR and commercial reactors). The potenti of these technologies for plutonium disposition has been analyzed in the PEIS. The does not judge large or small impacts. None-the-less, the number of modules does ha impacts and the analysis focused on those impacts.

13.00.23 The commentor feels that DOE should reconsider having the current schemati drawings in the PEIS reflect New Production Reactor designs.

Response: The most current available data are being used for the tritium supply and recycling facilities. The specific design-basis for each technology is listed in section A.2.

13.00.24 The commentor notes that page 4-447 of the PEIS states, "In fact, the gas-reactor technology developer believes that it may not be feasible to use the 350 MW MHTGR design as a multipurpose reactor." According to the commentor, this statement absolutely false and must be deleted. The commentor states that the gas-cooled reac developer has never said that the 350 MWt plant could not be used in a multipurpose application. The gas-cooled reactor developer has not evaluated the 350 MWt plant f multipurpose use, but believes that the machine could perform in this capacity. How the commentor notes that the gas-cooled reactor developer believes that the 600 MWt turbine-modular helium reactor is the most cost-effective multipurpose gas-cooled r design and has the best environmental impact characteristics of potential multipurp options.

Response: The statement in question has been deleted in the Final PEIS.

13.00.25 One commentor opposes allowing the tritium production facility to be priva owned. However, if that is the decision, the commentor proposes that DOE consider building a second tritium facility to serve as a backup and ensure national defense event the privately operated facility could not be maintained. Either a light water reactor, which could generate power, or an accelerator, which could perform basic research, should be chosen as a secondary government-owned tritium production sourc according to the commentor.

Response: DOE considered private ownership and operation of a tritium supply facili potential alternative in the PEIS. This would be considered by the decision maker i same manner as the other alternatives taking into account cost, technical, and environmental issues. The cost associated with private ownership is considered in t Technical Reference Report. As indicated in section 3.1.1 of the PEIS, the envision impacts would be the same regardless of ownership. The preferred alternative identi in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an ex commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to se the primary source of tritium. The other alternative, if feasible, would be develop back-up tritium source.

13.00.26 The commentor states that the baseline tritium requirements are presented misleading manner. The discussion in chapter 3 of tritium supply and recycling alternatives is inadequate and potentially misleading to those without a detailed p knowledge of what is being discussed. The commentor believes that it is bizarre and misleading to define the "baseline requirement" as being composed of a "steady-stat requirement (for an unknown number of weapons) to make up for the tritium lost thro natural decay and a "surge requirement" to replenish within 5 years the loss of a t reserve stockpile to some unspecified "emergency" or "contingency." According to th commentor, this definition stands logic on its head. The "baseline" requirement sho defined as that quantity of tritium needed to offset tritium decay in a given stock and any "surge requirements" should be considered as excursions above this "baselin requirement.

In addition, the commentor notes that the current explanation of the "surge require begs the question of how and why this reserve would be depleted, and why it was established in the first place. The commentor feels that without a comprehensive justification of why an actual "reserve" - rather than a reliable contingency produ option - makes sense for an inherently decaying asset such as tritium, and of the s contingencies under which such a reserve might be used in weapons - there can be no for the so-called "50 percent of baseline" requirement to replenish this reserve wi years. This whole analysis is "built on intellectual quicksand," and requires a maj rework, according to the commentor.

Response: The baseline requirement is clearly defined in section 3.1 as the sum of steady-state requirement necessary to offset decay in the projected START II level weapons stockpile and the surge requirement necessary to replenish the strategic re of tritium. These requirements come from the Nuclear Weapons Stockpile Memorandum a described in section 1.4.1. As described in chapter 2, the strategic reserve is bas the tritium needed to support the stockpile for 5 years in the event of lack of production. The fact that this amount is 50 percent of the baseline for this stockp level is coincidental. The PEIS evaluates the environmental impacts of producing th steady-state requirement and the steady-state plus strategic reserve requirement. H why the strategic reserve might be depleted is beyond the scope of the PEIS.

13.00.27 The commentor believes that the PEIS should address and evaluate the environmental impact associated with energy requirements of each technology and the respective energy output of each technology. The selected technology should be flex in terms of its ability to produce a wide range of radioisotopes, according to the commentor. The commentor also supports the proven technology of nuclear fission as to an accelerator that may or may not produce incidental tritium.

Response: Energy output and the needs of each technology at the candidate sites are evaluated in the PEIS. Sections 4.2.2.2, 4.2.3.2; 4.3.2.2, 4.3.3.2; 4.4.2.2, 4.4.3. 4.5.2.2, 4.5.3.2; and 4.6.2.2, 4.6.3.2 address those issues for INEL, NTS, ORR, Pan and SRS respectively.

13.00.28 The commentor believes that the current draft mis-states, or over-states, proliferation significance of the United States control rod production of tritium i civil reactors. The commentor feels that two points are relevant here. First, from proliferation perspective, the commentor states that only those countries that alre have nuclear weapons, and are seeking to advance to deuterium-tritium boosted and two-stage thermonuclear weapons, would be in a position to point to the DOE's actio possibly seek to take advantage of it to justify a similar program. For the last tw decades, the commentor suggests that these countries have been India, Pakistan and - i.e., countries outside of the Non-Proliferation Treaty with significant nuclear capabilities. But Israel and Pakistan have no "civil" nuclear program to speak of, India already uses its "civil" reactor to produce unsafeguarded plutonium for weapo Second, the commentor notes that should they so desire, any non-weapons state party Non-Proliferation Treaty could legally produce tritium in safeguarded civil reactor in unsafeguarded accelerators, as long as no fissionable materials were present.

The commentor notes that today for example, there is no legal or other barrier to J or German production of tritium in safeguarded civil reactors for their fusion ener research programs, should they choose to do so. Since Japan is already producing an separating tons of weapon-usable plutonium in its safeguarded civil nuclear facilit including weapon-grade plutonium from breeder reactor blankets - the production of in safeguarded civil nuclear facilities alters the proliferation picture very littl at all. At most, one could logically argue that any tritium production, extraction, purification, or utilization in non-weapon states should occur under safeguards. Un one is willing to bar the production of plutonium in "civil" facilities, it makes n to arbitrarily apply a higher nonproliferation standard to production of tritium - strategically significant material - in "civil" reactors, particularly when the pen for doing so could well amount to several billion dollars in additional spending on nuclear weapons - a fact that is, itself, not devoid of political significance for nonproliferation.

Response: A more detailed and comprehensive analysis of the use of an existing ligh reactor has been added to the PEIS. Among other issues, the report addresses potent nonproliferation issues, and is available in DOE reading rooms. The purchase of irradiation services from commercial reactors has been added as an alternative to t PEIS. Indeed, the preferred alternative in section 3.7 includes better investigatio the use of commercial reactors.

13.00.29 The commentor states that the triple play reactor, while sounding interest causes extra complications because of plutonium fuel fabrication and multiple objectives. If commercial power implementation of advanced light water reactors see imminent, this conclusion could be reversed.

Response: The PEIS assesses the environmental impacts of the multipurpose reactor, does not make technical judgements.

13.00.30 The commentor states that the draft DOE report to Congress on multipurpose water reactors, dated January 31, 1995, makes it clear that the degree of plutonium destruction and rate of material processing achieved by the multipurpose light wate reactor are lower than those of the mixed-oxide plutonium burning version of the li water reactor, unless the tritium targets are designed and tested to higher levels exposure than have been achieved to date, or the lithium content of the target rods reduced to limit the internal pressure in the target rods to that tested to date. I latter case, the commentor notes that the rate of tritium production per target rod reduced, and the installed thermal capacity required to reach 3/8 goal quantity inc This information should be included in the PEIS, according to the commentor.

Response: Consistent with the National Academy of Sciences' recommendation, the Off Fissile Materials Disposition has determined that there is no advantage to burning plutonium beyond the spent fuel standard. The Office of Fissile Materials Dispositi not intend to evaluate options for the destruction of plutonium beyond the spent fu standard. Thus, this PEIS only addresses alternatives which achieve the spent fuel standard. The Office of Fissile Materials Disposition is preparing a PEIS which wil address the issue of how to dispose of plutonium that is excess to nuclear weapons.

13.00.31 One commentor states that, regardless of large DOE outlays over the past 1 ($650 million for MHTGR and $425 million for ALWR), no company is willing to move a with either technology without sizable government subsidy. A privately financed multipurpose reactor should be considered, according to another commentor, since it would require minimum government funding, with charges against the United States on tritium was produced. The commentor adds that APT construction, however, would requ $2.5 to $3 billion from the United States treasury at a time of budget austerity.

Response: The PEIS discusses the environmental impacts of constructing and operatin alternatives for tritium supply, whether DOE-owned or privately financed. Costs ana are included in the Technical Reference Reports available in DOE reading rooms.

13.00.32 The commentor states that the MHTGR should not be considered due to the am spent fuel it generates, the APT is too unreliable to be considered, and the HWR pr too much low-level waste.

Response: The reliability of each of the technologies is evaluated in a separate Te Reference Report which is available in DOE reading rooms. The impact of spent fuel radioactive waste is given in the PEIS and is addressed in the Technical Reference with costs and technical reports. The impacts will be included in the decision maki process.

13.00.33 The commentors state that some comments in the PEIS are biased towards cer technologies and sites. DOE must examine all options with equal scrutiny, asserts o commentor. Another commentor states that the treatment of the alternative concepts obviously imbalanced, as revealed by the selection of a "low-to-moderate" consequen radiological accident for the MHTGR that includes multiple failures, whereas single failures were considered for the other reactor concepts, and an administrative viol is presented for the accelerators. A more balanced treatment of all concepts should presented, states the commentor, where single equipment failures are considered for concepts.

Response: The assumptions and analysis used to predict the impacts due to design an

beyond design (severe) accidents of the tritium supply technologies has been recons and re-analyzed as appropriate based on public review comments on the Draft PEIS. T results reported in appendix F and in sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, 4.6.3.9 are based on revised assumptions, new methodology for accident spectrum ana and new data, and present a more balanced treatment of all potential technologies.

13.00.34 One commentor indicates concern about how the technical evaluations will b conducted in terms of selecting the particular technology for the tritium supply production facilities, and particular concern about how new technology will be eval versus proven technology, and if weighting factors will be applied. Another comment refers to page 3-10, section 3.2.3, and notes that if the ROD will be based on the possibility of electricity production and/or plutonium burning, then this document explain the relative importance of these items and the weighing factors that will b to reach the final decision.

Response: Many of the technical, cost, and schedule issues which will be evaluated decision maker are included in the Technical Reference Report available in DOE read rooms. Such issues will be explained in the ROD.

13.00.35 In reference to volume II, page A-99, one commentor states that National A of Sciences' comments about combining the plutonium disposition and tritium product missions were taken out of context and not adequately explained. The commentor note the Draft PEIS refers to statements in the National Academy of Sciences' report whi questions the desirability of combining the disposition of excess weapons plutonium tritium production in the same reactor facility. However, according to the commento National Academy of Sciences' report qualified its views by noting that "tritium production was not part of the committee's charge, and it has not examined alternat for this purpose in detail." The commentor states that it also assumed that "tritiu production capacity will be easier to provide than plutonium disposition capacity." the commentor asserts that DOE is known to be leaning toward a tritium production technology that will cost taxpayers $20 billion over its lifetime. The commentor st that this would appear to negate the National Academy of Sciences' committee assump that tritium production will be easier than plutonium disposition. Another commento states that the National Academy of Sciences' comment relative to cost savings stem from a concern about quickly initiating the plutonium mission. According to the com the assumption of significant savings from combining the missions is proving to be incorrect.

In fact, another commentor suggests that National Academy of Sciences' conclusions linkage between tritium production and plutonium disposition should be deleted. The commentor states that the National Academy of Sciences reached its conclusions with regard to the limitations that are faced today in setting the Federal budget. In ad the commentor further notes that the National Academy of Sciences also made stateme regarding the relative costs of multipurpose versus single purpose options without conducting detailed financial analyses to support those statements. The commentor c that detailed evaluations have shown the National Academy of Sciences' conclusions regarding economics to be incorrect, both with regard to the merits of multipurpose options and with regard to the merits of exceeding the spent fuel standard for plut dispositions.

Response: The National Academy of Sciences' report reference was provided for reade information and was not intended to subvert the National Academy of Sciences' conclusion and findings. The statement does not affect the impacts presented in the

13.00.36 The commentor states that the PEIS should include analysis of reasonable alternatives which may conflict or differ from current Federal policies.

Response: A range of reasonable alternatives has been evaluated in the PEIS. In add the purchase of irradiation services from a commercial reactor is now being conside a reasonable alternative in the Final PEIS. A range of reasonable alternatives was considered. Those not considered are explained in section 3.1.3 of the PEIS.

13.00.37 One commentor favors any of the reactor options over the accelerator at SR because of its unproven technology; belief that the risk that an accelerator may no after it is built outweighs other considerations and could drastically affect the Nation's nuclear deterrence. The commentor also believes the environmental track re the Nation's reactors has been stellar and understands that a primary reason for pu the APT over a reactor technology is its perceived environmental advantage. In addi the commentor also states that the United States should refuse to continue taking seriously the minority of extremists who value environmental purity above this Nati peace and security. Another commentor states that the reactor technology is proven the APT is not. In addition, one commentor believes that there is no reason to cont research and development on the APT when reactors are proven to be reliable. Anothe commentor cites the advantage of the knowledgeable labor force associated with reac technologies. One commentor suggests that the APT be studied on the side and a reac should be used for tritium production.

Response: All technologies have been evaluated equally in the PEIS. All relevant fa will be considered in the decision making process. The preferred alternative identi in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an ex commercial light water reactor and the construction of an accelerator to produce tr Within a three year period, DOE would select one of the alternatives to serve as th primary source of tritium. The other alternative, if feasible, would be developed a back-up tritium source. SRS has been selected as the preferred site, if an accelera ultimately selected as the primary production option.

13.00.38 Commentors believe that each of the reactor technologies is sound, can be environmentally safe, and would bring a strong power supply to the area. In additio commentors believe that the APT will be environmentally safe. The commentors also f that DOE should look at the environmental effects resulting from the reactors' radioactive cooling mechanism.

Response: DOE agrees with the commentors statement that all proposed tritium supply technologies can be designed, constructed, and operated in an environmentally safe manner. DOE is committed to see that the selected technology would meet all applica safety and environmental regulations and to obtain all necessary permits for constr and operation. Before a selected technology is constructed, further NEPA review is required which will identify the site-specific impacts of the project in much more

The effects of thermal release into the atmosphere from a large power plant have no accurately defined or studied. The NRC, in the Three Mile Island Nuclear Power Plan (NUREG-0112), concluded that major weather modifications were not expected from the releases from the plant's cooling tower. The NRC, also in the Sequoia Nuclear Power EIS (Docket 50-327), predicted that a dry cooling tower (without evaporation) would potential environmental advantages over the evaporative (wet) cooling tower because dry cooling tower has no evaporation of water, no vapor plumes, no drift, and there fogging and icing that normally may occur with a wet tower. However, more heat ener would be ejected to the atmosphere from a dry cooling tower. The impact of waste he the atmosphere would be a function of the heat flux density of the particular tower the area over which the heat is discharged. An analysis of the effects of thermal r into the atmosphere from the proposed tritium supply technologies was not performed because of the technologies' non site-specific designs and unknown cooling system d In addition, no literature related to this topic was found in the National Technica Information Service and other open publications. The 1974 NRC document (NUREG-0112) mention that Pacific Northwest Laboratory was conducting a general study at that ti addressing possible weather modifications resulting from the operation of power pla information on the study or possible conclusions was found in the follow-up search.

13.00.39 In reference to tritium recycling, the commentors state that tritium recyc any facility other than SRS will require construction of new facilities. At SRS the current facilities would require upgrading but would impact no additional acreage. commentors therefore conclude that pollution prevention and cost considerations wou

presumably, be substantially reduced by the use of this facility for recycling.

Response: The reduced environmental impacts of utilizing the existing recycling fac at SRS versus building new recycling facilities at the other sites is taken into ac in the PEIS and will be considered in the final decision. The preferred alternative identified in section 3.7 indicates that the "recycling" will remain at SRS.

13.00.40 The commentors cite page 2-2 and request an explanation for the decline in tritium requirements until approximately 2011, as shown in figure 2.1-1. In additio commentor notes that the amount in the reserve, as a percent of the total supply, s be increasing over time and suggests the reasons for this be explained.

Response: The decline in the tritium requirements is a result of the declining nucl weapons stockpile. The reserve amount is based on the refill requirements of the weapons in the stockpile and not on a percentage of the total supply. The commentor correct, however, the graph shown is schematic and not drawn to scale. The reserve direct proportion to the number of weapons in the stockpile.

13.00.41 The commentor states that all reactor technologies, except the APT, will g spent nuclear fuel, which is not accounted for in DOE's current inventory projectio addition, DOE is in the process of deciding where and how its current and projected inventory will be stored. The commentor states that this tritium PEIS must: acknowl that the proposed action will increase DOE's inventory of spent nuclear fuel above amounts estimated in the Spent Nuclear Fuel and INEL Environmental Restoration and Management Program PEIS; explain that the spent nuclear fuel from tritium productio not be stored at the reactor site; and take into account impacts associated with transporting the spent nuclear fuel to the designated storage site.

Response: Spent nuclear fuel would be stored at the reactor site for the life of th project until a repository is available. The ROD for the Spent Nuclear Fuel and INE Environmental Restoration and Waste Management Program PEIS only determined what th interim storage location for existing spent nuclear fuel would be until a repositor available for ultimate disposition. DOE does not believe it is equitable or reasona move tritium supply program spent nuclear fuel on an interim basis.

13.00.42 The commentor believes that DOE should consider using the coolant (water) the tritium supply and recycling facility in the steam generation plant at Pantex. could potentially save fuel, according to the commentor.

Response: This analysis would be appropriately covered in a site-specific tiered NE if Pantex were chosen as the tritium supply and recycling site.

13.00.43 In reference to page 1-3, section 1.4.2, the commentor requests that the P discuss why the Mound Plant would not be suitable for the tritium recycling work. M was the best tritium site in all of the DOE, according to the commentor, and the ca of the weapons production and recycling facilities is very close to that needed now

Response: Termination of the Defense Programs weapons production missions at the Mo Plant was the result of decisions following the Nonnuclear Consolidation Environmen Assessment (DOE/EA-0792, June 1993). It was not considered as a site for the tritiu supply mission, and, as such, would not be a candidate for tritium recycling since recycling would either be collocated with the new tritium supply facility or would at the current facilities at SRS.

13.00.44 The commentor refers to the following statement in volume I of the PEIS, p 4-448, second column, first paragraph, next to last sentence: "For a multipurpose reactor, the fuel fabrication portion would also be required." According to the com the statement is not correct. The commentor observes that it applies to any "reacto disposition technology, not just the multipurpose reactor."

Response: This statement indicates that the multipurpose reactor has the same requi as any reactor-based technology for a fuel fabrication facility. The difference bet multipurpose reactor and the other uranium-fueled reactors considered is that the f fabrication facility for a multipurpose reactor would be newly built and collocated the reactor, whereas, the fuel fabrication facility for a light water reactor, whic does not burn plutonium, could be an existing commercial facility.

13.00.45 The commentor states that in volume I, page 4-466, first column, first par pressurized water reactors are implied as more adaptable than boiling water reactor tritium production. This appears to the commentor to be a bias. In addition, this statement needs to be fully supported with more and complete information. Otherwise should be deleted. The commentor feels that boiling water reactor/advanced boiling reactors, compared to ALWR, can compete in many different areas such as performance

Response: While both pressurized water reactors and boiling water reactors could theoretically be modified to produce tritium, pressurized water reactors use burnab poison rods which can be replaced by target rods matching in form, fit, and functio which facilitates their adaptation to the tritium production mission. In addition, prototype tritium target rods were designed and qualified for pressurized water rea operating environments. The boiling water reactor design uses a distributed burnabl poison, Gadolinium, to shape the axial and radial neutron flux distributions. Consequently, there are no burnable poison rod locations in the boiling water react design. For these reasons, it was concluded in feasibility studies that pressurized reactors are more readily adaptable than boiling water reactors to the requirements tritium production by DOE tritium target rod irradiation.

13.00.46 The commentor states that reactor selection should be based on a compariso all relevant considerations not on just one criterion such as adaptability. Accordi to the commentor such items as performance-meeting mission goals; impact on seconda goals; system/plant changes; operational changes; safety issues-accident behavior a ability to obtain a license; environmental impact; schedule; and cost should also b considered.

Response: The tritium supply technology decision will be based on potential environ impacts discussed in this PEIS and other information developed for the program on c technical risks, and schedule risks presented in separate reports, and policy considerations. Section 3.7 of the PEIS identifies DOE's preferred alternative, and selected on numerous criteria, not adaptability alone. The analyses on cost, techni risk, and schedule risks are included in the Technical Reference Report available i reading rooms.

13.00.47 In reference to volume I, summary, page S-5, the commentor requests DOE to provide information on the source and amounts of plutonium that would be processed reactor fuel and how criticality and transportation issues would affect such an ope

Response: Appentix section A.3.2 discusses how much plutonium can be processed. Sec 4.8.3.1 discusses the intersite transportation of plutonium for the multipurpose re

13.00.48 In reference to volume II, summary, page S-8, the commentor requests that provide in "alternatives considered but eliminated from detailed study" an analysis using reactors of United States naval vessels to produce the required tritium. The commentor asks how much tritium could be produced without modifying refueling sched and/or increasing spent fuel production.

Response: Over the years, the Naval Reactor Program has developed a sophisticated n propulsion system specifically designed for the demanding requirements of the subma environment. This system involves a number of geographically dispersed support faci specifically designed to support this unique system. The entire system, however, is small in comparison to the type of facility necessary to supply the tritium require

the Nation's nuclear weapons. Specifics as to the size, capabilities, and other tec information associated with the Naval Reactor Program is extremely sensitive and ca released for public review. At the same time, it would be unwise to place additiona missions on a system specifically designed for such an important national security as that of the Naval Propulsion Program.

13.00.49 The commentor feels that the effect of tritium's decay on United States nu deterrent capability is exaggerated. The commentor notes that page 2-2 of the Draft states that once the "strategic tritium reserve" is used up - in "approximately 201 according to figure 2.2-1 - the "nuclear deterrent capability would degrade because weapons in the stockpile would not be capable of functioning as designed. Eventuall nuclear deterrent would be lost." The commentor feels that this statement is open t serious misinterpretation. It wrongly appears to equate the number of deuterium-tri boosted weapons in the United States stockpile with the existence of a United State "nuclear deterrent capability," which would clearly persist even without boosted we in the stockpile. Without additional tritium production, the performance of some (n all) weapons would begin to degrade in subsequent years and they would have to be r from the operational stockpile - which weapons are removed would be a matter of cho and a sizable number (e.g., 500 to 1,000) of high priority deuterium-tritium booste weapons could be retained in the stockpile for several more decades using tritium r from retired weapons.

The commentor believes that during this period, which would last for several decade United States could, if required, produce conservatively designed, unboosted gun-ty implosion-type pure fission weapons that would assure the persistence of a "nuclear deterrent capability" with or without testing for an indefinite period. Even two-st thermonuclear weapons could be manufactured using unboosted primary stages, and a smaller number of the resulting heavier warheads could still be carried by bombers ballistic missiles, originally designed to carry 8 to 24 of the more efficient boos weapons. The commentor is not aware of any technical experts who would dispute the technical feasibility of this course of action.

Response: The statement in the PEIS that, "Once the strategic tritium reserve was depleted, the nuclear deterrent capability would degrade because the weapons in the stockpile would not be capable of functioning as designed," is true. First, all wea the stockpile require the proper amount of tritium in order to function as designed Second, the nuclear deterrent is based upon maintaining the stockpile as directed b President in the Nuclear Weapons Stockpile Memorandum and the Nuclear Weapons Stock Plan. Thus, without the proper amount of tritium, all weapons in the stockpile woul be capable of functioning as designed, the Nuclear Weapons Stockpile Memorandum and Nuclear Weapons Stockpile Plan requirements would not be met, and the nuclear deter would degrade. As further stated in the PEIS, eventually the nuclear deterrent woul lost. The commentor's suggestion that unilateral stockpile reductions could still m an adequate nuclear deterrent is beyond the scope of the PEIS analysis. However, DO considers such a course unreasonable because it would not satisfy the DOE's require under the Atomic Energy Act, and would not satisfy the purpose of the proposed acti alternative of redesigning weapons to require less or no tritium was evaluated but dismissed from further consideration for the reasons stated in section 3.1.3.

13.00.50 In reference to volume I, chapter 4, section 4.10.1, page 4-469, 2nd colum paragraph, the commentor requests an explanation for the reason for the increase in nuclear fuel production. The commentor also asks can reactors that produce 245 perc spent nuclear fuel be reconfigured or engineered to produce tritium which maintains (100 percent) spent nuclear fuel production.

Response: Section 4.10.3.2 explains the reason for the increase in spent nuclear fu production: more frequent refueling operations and the segmenting of fuel assemblie could result in an increase in spent nuclear fuel volume. The goal is to produce tr not reduce spent nuclear fuel. Producing tritium results in increased generation of nuclear fuel due to more frequent refueling. In order to produce required amounts w current designs, the refueling indicated is required. Further analyses would be con in site-specific tiered NEPA documents to determine the measures which can be used

reduce spent nuclear fuel, maximizing tritium production, and minimizing costs.

13.00.51 The commentor asks why, based on the information in the environmental impa section on page S-11, the calculated electric power consumption for the APT at the various sites is lowest at SRS.

Response: The power requirement for the APT is the same at all sites. The discussio question does not state what the power requirements of the various technologies are how much the current power requirement of the site would be exceeded.

13.00.52 The commentor refers to volume I, page 3-2, column 2, paragraph 1, and rem that the document "Tritium Supply and Recycling Plants Technical Reference Report" identified in the same manner as other references. The commentor asks if the docume reference FDI 1995a.

Response: The commentor is correct, the document is reference FDI 1995a and it is n available in DOE reading rooms.

13.00.53 One commentor referring to volume I, page 3-12, column 1, paragraph 3, ask the Hanford Site was dropped as a candidate site for future Complex missions. The commentor notes that page 1-10 explains that Hanford was eliminated because nuclear weapons functions at that site have been terminated, while page 3-12 states that Ha is now dedicated to environmental and waste management activities. When and why was decided, the commentor asks, and who made the decision. Another commentor asks if N compliance was ever completed for this policy action and then cites that INEL curre has an environmental and waste management mission. The commentor adds that it is no of the Complex (page 1-4). If this PEIS will provide NEPA compliance to locate defense-related activities at INEL, then the commentor believes it should also eval the suitability of Hanford. The commentor states that it is not appropriate to elim a reasonable alternative from an EIS simply because it does not fit with current ag policy. The commentor believes consideration of all reasonable alternatives is particularly important at the programmatic level.

Response: Section 3.3.1 discusses why Hanford was eliminated. The Hanford site is dedicated to environmental restoration and all other missions have been removed. IN some restoration activities like all other sites; however, the INEL site has missio other than environmental management. This decision was announced by the Secretary o Energy in the Federal Register at 58 FR 39528 on July 23, 1993.

13.00.54 The commentor states that all isotopes of hydrogen, including tritium, are diffusive. The diffusitivity of hydrogen increases dramatically as the temperature increases. At room temperature, tritium diffuses far into the stainless steel wall tank or pressure vessel. Therefore, it is very difficult to envision how a target c clad with a material that would contain the tritium within the target. Any tritium diffuses through the target cladding and into the coolant, goes from being product being radioactive waste. The commentor concludes that the PEIS should address this before it concludes that power generation by a tritium production reactor is feasib

Response: The commentor is correct in that all isotopes of hydrogen are very diffus that this varies directly with temperature. However, there are methods to reduce th losses of tritium in the target rods such as coating the interior of the rod with a "getter" material which adsorbs and retains the tritium. DOE has extensive experien this technology for the HWR temperatures and is currently involved in a research pr to develop suitable target rods that would retain tritium at the higher temperature would be present in the ALWR technology. In any event, some tritium would still esc under normal operations and these releases are addressed in the PEIS.

13.00.55 Commentors express opposition to the construction of a multipurpose or "tr play" reactor, capable of producing tritium, burning plutonium, and generating reve

through the sale of electric power. According to the commentor, such a reactor woul counterproductive in at least two ways: it would violate United States policy that commercial reactors not be utilized for military purposes including tritium product and using plutonium as fuel is more dangerous and expensive than using uranium for Another commentor feels that the HWR technology is better than the proposed "triple reactor. Other commentors believe that the "triple play" is risky because the focus not be on tritium production and the additional complexity of combining tritium pro duction with plutonium disposition activities would lead to operational tradeoffs. tradeoffs could decrease the efficiency of the reactor in performing its functions. commentor also notes that electricity currently does not need to be generated in gr capacity because of increases in conservation and alternative energy sources. Final another commentor suggests the report Multi-Fallacy reactors be considered in the P

Response: The Atomic Energy Act of 1954 (as amended) provides for the generation an of electrical power incident to the operation of a production facility. It is reaso foreseeable that electricity generated by an ALWR, MHTGR or commercial reactor inci the production of tritium would be sold, as allowed by Section 44 of the Atomic Ene Act. Thus, the PEIS includes an analysis of these potential environmental impacts. an ALWR or MHTGR could also be used to "burn" plutonium, these environmental impact also addressed in the PEIS. Regarding the policy of the United States to maintain s military and commercial nuclear missions, such issues will be further evaluated if preferred alternative identified in section 3.7 is selected in the ROD.

13.00.56 The commentor feels that the DOE should seriously consider the private con proposal as a viable alternative in the PEIS.

Response: Section 3.1.1 of the PEIS acknowledges that a private consortium could pr new tritium facility, but that the associated environmental impacts are independent this. DOE has prepared a Technical Reference Report which contains cost and technic analyses that consider that proposal. The Technical Reference Report is available i reading rooms.

13.00.57 The commentor feels that the phased approach for APT should be deleted and the technology options based on a single capacity requirement. Alternatively, the commentor remarks that the phased approach for tritium production should be explain the executive summary, and it should be applied for all technologies that are capab achieving it, including the MHTGR, the gas turbine-modular helium reactor and, pres the Small ALWR.

Response: The phased approach for the APT is contained on page ES-16 of the executi summary. The phased approach for all of the other technologies was also evaluated, dismissed for the ALWR and the HWR since these reactors couldn't be built smaller a expanded. For the MHTGR, it was determined that although two modules would suffice steady state requirement, three would be needed for the full baseline requirement a could not be built and brought online in the requisite 5 year timeframe.

13.00.58 In reference to page 3-1, the commentor states that it seems inconsistent PEIS to confuse its evaluation by considering 3/16 of 1988 goal (nominal) and then that 3/8 of the 1988 goal is the basis for the PEIS. According to the commentor, th nominal goal seems to only benefit the APT.

Response: As explicitly explained in section 3.1, the baseline requirement is compo two parts, the steady state which is equivalent to 3/16 goal and the surge, which w added to the steady-state results in the 3/8 goal. The analysis of the APT in the P covers the environmental impacts of the construction of the full APT since all of t "civil" construction would be done at one time. This is a potential advantage for t over the other new technologies. The operational impacts of running all of the trit supply facilities at 3/8 goal are given in the PEIS since this bounds the problem environmentally. However, the APT is the only technology that allows for a phased a to meet the 3/16 goal more rapidly than would be required to meet the 3/8 goal. Oth benefits from operation at less than 3/8 goal will be covered in cost, technology,

schedule analyses being done by others.

13.00.59 Several commentors suggest that the PEIS does not provide a fair and consi treatment of candidate technologies, specifically the 600 MWt gas turbine-modular h reactor technology. In reference to the PEIS statement on page 4-448 that impacts o 600 MWt gas turbine-modular helium reactor are not addressed because the available information is not comparable to that of the 350 MWt MHTGR design, one commentor no that there is even less design information available for the HWR evaluated in the P The HWR is stated to be a preconceptual design on which almost no work has been don this information is presented in the PEIS. According to the commentors, the gas-coo reactor developer provided ample information on the 600 MWt gas turbine-modular hel reactor for use in this PEIS, and DOE has chosen to use none of it. The 600 MWt gas turbine-modular helium reactor has environmental impact characteristics that are co erably more favorable than those of the 350 MWt design and the commentors feel thes should be given full and fair presentation in the PEIS. Commentors suggest that the for plutonium disposition consider the impacts of the multipurpose and plutonium disposition plant configurations shown in table 1 (see document # - TSR-M-112), whi include plutonium disposition plants that accommodate processing of the plutonium inventory over the design life of the reactors, as well as an accelerated dispositi schedule.

In reference to page A-101, another commentor notes that the PEIS indicates that th turbine-modular helium reactor presents a substantial increase in the technical, schedule, and cost risks of bringing the concept to maturity. In fact, the commento that the gas turbine-modular helium reactor technology is the same as the MHTGR rea technology, and has been substantially successfully demonstrated in German and Unit States reactors. Given adequate funding, a fully tested turbomachine could be deliv the site in less than 7 years, according to the commentor. This would allow the des testing and construction of the complete gas turbine-modular helium reactor to be accomplished in 10 years. The commentor further states that the PEISs for both prog if kept separate, should include multipurpose plants (e.g., gas turbine-modular hel reactor and ALWR) as explicit technology alternatives including full environmental characterizations. This will ensure that if a ROD is made adopting a multipurpose alternative, the PEIS will support this decision.

Response: The 350 MW (thermal) MHTGR is the gas reactor technology evaluated in the and is based on the significant work done by the New Production Reactor Program. Significant monies were spent developing the data for this alternative, this techno was thoroughly reviewed as part of the New Production Reactor effort, and, in DOE's judgement, represents the best available information for a gas reactor. In August 1 DOE received a July 1994 report from CEGA Corporation regarding the 600 MW (thermal turbine-modular helium reactor. The CEGA Corporation Report describes the gas turbine-modular helium reactor concept and provides information that can be used to compare the gas turbine-modular helium reactor against the MHTGR. Appendix section of the PEIS discusses this.

The most significant difference between the MHTGR and the gas turbine-modular heliu reactor is in the area of costs/revenues. This is due to the fact that the gas turbine-modular helium reactor is a much more efficient electricity producer than t MHTGR (plant efficiency increases from 38 percent for the MHTGR to 47 percent for t turbine-modular helium reactor). The cost reports included in the Technical Referen Report available in DOE reading rooms present these differences.

There are not significant environmental differences between the 2-module gas turbine-modular helium reactor and the 3-module MHTGR and even CEGA Corporation, in report, acknowledges that the environmental impacts are only "slightly less" for th turbine-modular helium reactor compared to the MHTGR. In reality, the gas turbine-m helium reactor would have slightly more environmental impact in some resource areas slightly less environmental impact in other resource areas than the MHTGR. Thus, it depends on one's perspective to conclude, overall, that the gas turbine-modular hel reactor has slightly less environmental impact than the MHTGR. To one whose overrid concerns are the amount of spent fuel generated, or the radiation doses from normal operations or accidents, the gas turbine-modular helium reactor has slightly more i

than the MHTGR. To one whose overriding concerns are the amount of water used or th number of workers required to operate the facility, the gas turbine-modular helium has slightly less impact than the MHTGR. The most accurate thing that can be said a the gas turbine-modular helium reactor versus the MHTGR is this: from a PEIS enviro impact perspective, the issue of MHTGR versus gas turbine-modular helium reactor is a significant issue.

In summary, the PEIS presents a discussion of the environmental impact differences the MHTGR (which is evaluated in detail in the PEIS) and the gas turbine-modular he reactor (see appencix section A.3.1.1). The MHTGR was evaluated in detail in the PE because it represents the best available information for a gas-cooled reactor at th when the PEIS was being prepared. The data received from CEGA for the gas turbine-m helium reactor do not provide any significant new environmental data for the gas turbine-modular helium reactor. Moreover, as acknowledged by CEGA Corporation, the environmental impact differences between the gas turbine-modular helium reactor and are only "slight" in any event.

13.00.60 The commentor suggests that the current approach taken in the PEIS for eva multipurpose options is distorted for the gas-cooled reactor in that it focuses sol the relative number of reactor modules required for a multipurpose plant versus tho required for a tritium production plant without providing any perspective on the me of these numbers. According to the commentor, the steam cycle MHTGR is capable of producing tritium at 3/8 goal quantity with a total installed thermal capacity of o 1050 MWt. Other reactor options, the commentor adds, require installed capacities o MWt (if, in fact, only one Small ALWR can produce tritium at 3/8 goal quantity) to 3,400 MWt to achieve the same level of tritium production. The commentor contends t multipurpose gas-cooled reactor options discussed in the Draft PEIS are limited to that are fueled with pure weapons-grade plutonium oxide and have no fertile fuel material. For these options, lithium targets are, due to reactor physics considerat placed only in the core reflectors, resulting in decreased tritium production per r module relative to the highly enriched uranium-fueled tritium production MHR. The i of these options has been to produce tritium while achieving a degree of plutonium destruction that exceeds the spent fuel standard, according to the commentor. The commentor believes that another option can be considered in which the degree of plu destruction achieved is only equal to that achieved by the ALWR. With this option, commentor notes that natural uranium replaces the erbium poison, allowing lithium t to be placed in the active plutonium-fueled core regions and significantly increasi tritium production per reactor module. This option is being quantified by the gas-c reactor developer at this time.

The commentor states that in the multipurpose application, the flexibility of the M results in several options for producing tritium at 3/8 goal while dispositioning plutonium. Each individual module, with no changes in the plant design, can be dedi separately to disposition plutonium, to produce tritium, or to achieve a combinatio these two purposes. The commentor notes that the PEIS describes an option where the installed thermal capacity is 2,100 MWt, which is small compared to the installed c required for the Large ALWR options. Therefore, it is only because the MHTGR and ga turbine-modular helium reactor are exceptionally efficient as tritium producers tha impact of changing to a multipurpose reactor appears to be so significant. However, compares the multipurpose MHTGR and gas turbine-modular helium reactor with the multipurpose ALWR, it is clear that the environmental impacts of the multipurpose M are generally lower, and the environmental impacts of the gas turbine-modular heliu reactor are significantly lower, according to the commentor. If one compares the multipurpose reactor options with the combined impacts of separate tritium producti plutonium disposition plants, the commentor states that it is clear that the total installed capacity required for the multipurpose plant is lower for the MHTGR and i equal for the ALWR. The commentor believes that all of these points need to be expl stated and clarified in the PEIS

Response: Section 4.8.3 of the PEIS evaluates multipurpose reactors. The basis of t evaluation is the environmental impact of their construction and operation. The mea suggested in the comment is to evaluate the impact based on the installed thermal capacity. The environmental impact analysis presented in the PEIS is directly propo

to the installed and operated thermal capacity.

The options evaluated for the multipurpose MHTGR reactor in the PEIS were those for data were reasonably available at the time. The modification of the design to optim both tritium production and plutonium production was not attempted in this document Future design refinements, such as replacing the erbium poison with natural uranium core as suggested in the comment, would be done in the future refinement of this co and would be considered in site-specific tiered NEPA documents, as appropriate.

The use of individual modules in the tritium-only producing mode using uranium fuel fact considered in this document. The rationale in arriving at six 350 MWt reactor modules was based on the steady state (3/16 goal) tritium requirement. The assumpti made that if the full baseline (3/8 goal) quantity were required then one or more o reactor modules could be run in the tritium-only production mode using uranium fuel this were not the case, then twice as many reactor modules (12) would have been req to produce the baseline quantity of tritium.

The facility accident scenarios for the MHTGR include only one of the modules which the commentor noted, is considerably smaller than the other reactors. Thus, the imp from MHTGR accident analysis are considerably less pervasive than those from the ot technologies, which is evident in the facility accident analysis as presented in ap F.

13.00.61 In reference to page 4-13, the commentor believes that the paragraph on uncertainties is misleading on maturity of design. The inference is that the source being different presents an uncertainty and the issue of the maturity of the APT de ignored.

Response: The discussion in section 4.1.9 included the sources of the information u the risk analysis. It indicates that information on the technologies for the HWR an MHTGR was largely based on documentation from the New Production Reactor Program, t ALWR information was prepared by vendors, and that the APT information was prepared laboratories and private contractors. Issues regarding the respective maturity of t designs are included in the Technical Reference Report available in DOE reading roo

13.00.62 In reference to pages I-40 and I-41, the commentor states that these are typographical errors under No Action - INEL should be NTS and ORR and Pantex should SRS.

Response: The text has been revised to reflect the correct site in each column in a I of the Final PEIS.

13.00.63 In reference to page S-1, top of second column, the commentor asks if "surveillance" should be included as one of the functions of the Complex.

Response: Surveillance is included within the maintenance activities of the site.

13.00.64 In reference to page S-1, top of second column, the commentor notes that t exist other sources of recyclable tritium, such as research, development, and testi scrap and tritium caught in effluent capture systems.

Response: The statement in question was not meant to identify all possible sources recyclable tritium but to define what tritium recycling meant in this document.

13.00.65 Another commentor indicates that in the technologies section on page S-5, information should be included on the amount of electricity that could be produced the amount of plutonium that could be burned for each supply technology.

Response: Since both the MHTGR and the ALWR were developed originally to produce

electricity and, as such, have steam turbines as an integral part of their designs, PEIS evaluates the environmental effects of both of these technologies with electri generating turbines included. However, the actual sale of steam or generation of electricity by DOE would be covered in the site-specific tiered NEPA documents if e of these technologies were chosen and if DOE developed a proposal to sell steam or electricity. The generic impacts of the sale of steam or electricity, including construction of electric transmission lines, are analyzed in section 4.8.1. Nominal ating capacities are 1,100 to 1,300 MWe for the Large ALWR, 600 MWe for the Small A and 400 MWe for the three-module MHTGR. The actual estimates of electrical producti covered in the cost estimate included in the Technical Reference Report available i reading rooms.

The PEIS evaluates alternative technologies and sites for long-term, assured tritiu supply and recycling. Another DOE program office, the Office of Fissile Materials Disposition, is preparing a PEIS addressing the issue of how to dispose of plutoniu is excess to the nuclear weapons complex. Information on the amount of plutonium th could be burned for each supply technology would be included in the PEIS being prep the Office of Fissile Materials Disposition. Of the four tritium supply technologie evaluated in the PEIS, only the ALWR, MHTGR and commercial reactors are being consi for plutonium disposition. Therefore, the environmental impacts of a plutonium-burn ALWR and MHTGR are analyzed and presented in the PEIS. Estimates of the amount of plutonium that could be consumed by the ALWR and MHTGR technologies are included in appendix section A.3.2.

13.00.66 The commentor states that the current PEIS analysis would have us believe on the one hand, DOE's purchase/completion of an existing light water reactor, such WNP Unit 1 (65 percent complete), TVA's Bellefonte Unit 1 (88 percent) or Unit 2 (5 percent), or Watts Bar Unit 1 (99 percent) or Unit 2 (61 percent), is not worthy of detailed analysis due to lofty consideration of nonproliferation policy, but, on th other hand, that building the prototype of the next generation standardized civil r expressly for military production at a DOE weapons program site, and subsidizing su production with the commercial sale of electricity, is somehow entirely consistent this alleged "policy." The commentor suggests that the current PEIS analysis thus a grounded on an untenable double standard. In the commentor's opinion the apparent m is to tilt the PEIS analysis in the direction of supporting the maximum expenditure public funds at current DOE sites and gaining the maximum public subsidy for the ne generation of commercial nuclear power development.

The commentor charges that the evaluation of ALWR supply options is uneven, biased, fraught with contradictions. Construction of an ALWR under DOE ownership is assesse detail for its potential impact on five individual DOE sites, yet the commentor fee an analysis of DOE's potential purchase of an existing operational or partially com light water reactor is given a once-over-lightly "generic analysis" under the headi "Commercial Light Water Reactor Contingency." Why is an option that could save taxp billions of dollars relegated to second-class "generic" treatment, while a similar water reactor option costing billions more receives detailed site-by-site analysis. Moreover, this generic approach effectively equates the impacts of control rod prod of tritium in eight utility-owned, commercial light water reactors under contract t with DOE's purchase or long-term lease of a single existing or partially completed water reactor for production of tritium in fuel-target assemblies. The environmenta technical, institutional, and political impacts of these proposals are sufficiently different to warrant separate analyses as distinct tritium supply alternatives.

Response: As discussed in section 4.10, DOE considers the purchase of an existing o incomplete reactor a reasonable alternative to meet the stockpile tritium requireme mission. In the Final PEIS, the analysis of this option has been expanded to resolv apparent inconsistency noted by the commentor. A more detailed and comprehensive an of the purchase of an existing light water reactor has been added to the PEIS. Base public comments and a reevaluation of irradiation services, DOE decided to include irradiation services as a reasonable alternative in the Final PEIS. DOE also invite public comments on this specific issue, including comments on the potential environ impacts described in section 4.10 of the Draft PEIS, in a special 21 day comment pe Results of that additional comment period are included in this Comment Response Doc

Furthermore, as identified in section 3.7, the preferred alternative involves the f investigation of commercial reactors to determine whether the policy and regulatory for this alternative can be resolved.

13.01 Heavy Water Reactor Technology

13.01.01 The commentors express support for selecting the HWR technology as the tri source for several reasons. One commentor suggests that the other technologies, ALW MHTGR, can create unexpected problems that could cause long shutdowns and large ope expenses because they are newer, less-tested technologies. According to the comment HWR requires less-complex safety systems and it also has a cooling system that is " to that used in commercial light water reactor nuclear power technology." The comme believes that radioactive releases from HWRs would be fewer than those of other technologies. Because of its greater reliability than the other technologies, the commentor also notes that it will have fewer environmental impacts. Another comment prefers that the HWR be located at SRS because its low operating temperature eases concerns and SRS's experience with reactors of similar type and scale should facili success.

Response: The advantages of the HWR technology have been noted in the PEIS or the associated studies on cost, technical feasibility, and schedule. The Technical Refe Report compares those criteria for the technologies and is available in DOE reading

13.01.02 The commentor expresses concern that the HWR alternative is an extremely expensive endeavor. As a result, the commentor states that DOE must be reasonably c that the technology will work.

Response: The Technical Reference Report is available in DOE reading rooms and cons the technical and cost uncertainties of each technology.

13.01.03 The commentor questions whether the use of a HWR to generate electricity a dispose of plutonium can be explored as an alternative.

Response: The design which was evaluated does not produce electricity and does not the screening criteria for the multipurpose reactor.

13.01.04 The commentor proposes a new alternative technology - a new HWR with a pat pending from DOE. The commentor contends that the unit is as safe or safer than the since it eliminates design-basis accidents. In addition, the commentor states that be built for about one-third to one-half the cost of other production reactors unde consideration in 1992 and considerably less than an accelerator. In the commentor's opinion, the HWR doesn't need as large an external power source as the APT, and the reactor is low cost, efficient, and proven. The commentor further notes that it is compatible with other proven and available SRS operations.

Response: The HWR was developed as a result of the New Production Reactor Program, was later downsized and modified to meet the new tritium supply goal. Site-specific analysis would consider these types of improvements.

13.02 Modular High Temperature Gas-Cooled Reactor Technology

13.02.01 Several commentors feel that the MHTGR has a bad track record in both the States and Europe; therefore, unless a thorough study and evaluation of the technic

uncertainties associated with the MHTGR alternative is done prior to selecting this option, its use for the critical function of tritium production involves an unwarra risk. The commentor cites the poor performance of General Atomics' demonstration pl Ft. Vrain Colorado and Great Britain's change of mind in using the GASCO reactors a examples of such risk. The commentors also believe that there is limited technical expertise for the production of MHTGR fuel and this will most likely drive up the c producing this type of fuel.

Response: DOE has prepared a Technical Reference Report comparing cost, technical feasibilities, and schedules for the technologies. This Technical Reference Report available in DOE reading rooms.

13.02.02 The commentor references pages B-28 through B-32 and states that according tables A.2.1.1-2 and A.2.1.2-2, the HWR consumes significantly more fossil fuel ann than the MHTGR. So, the commentor questions how can the MHTGR emit the most criteri pollutants.

Response: The HWR and MHTGR reactors have different processes, facilities, and requirements which result in different air emissions. Criteria pollutants are not directly attributable to fossil fuel use, many other factors are involved.

13.02.03 The commentor states that a chemical that should be added to table A.2.1.2 page A-50 is graphite. According to information provided to DOE in the CEGA-94-0011 letter, enclosure 2, table 4-5, 122 tons of graphite are required per year.

Response: Graphite has been added to table A.2.1.2-3 in section A.2.1.2 of the Fina

13.02.04 One commentor felt that the statement that it would require more than 5 ye add capacity for the MHTGR to produce additional tritium is not correct. The commen believes that the MHTGR could bring additional modules online in this time period i proper provisions for plant expansion were made during construction of the initial modules.

Response: The determination that it would take more than 5 years was a programmatic engineering judgement made by DOE after evaluating all relevant criteria.

13.02.05 In reference to page 3-33, one commentor notes that the safety-related ele loads for the MHTGR are small enough that they are supplied by safety-related batte power. While a backup power facility is provided to mitigate unavailability, the co states that it is not a safety feature. The below-grade containment structure is ma steel-lined reinforced concrete. Gravity-drop of the control rods is in the front-l safety-related scram system. Independent shutdown capability is provided by gravity of the reserve shutdown control material, which is in the form of boronated graphit pellets, not safety rods; both of these systems were successfully demonstrated at F Vrain.

Response: The design of the MHTGR was based on modified New Production Reactor desi developed within that program by DOE. This represents the reasonable design for ana in the PEIS.

13.02.06 One commentor, referring to page 3-34, feels that this layout is not consi with the layout developed for the MHTGR during DOE's New Production Reactor Program commentor notes that the most recent and applicable layout is provided in the NP-MH Project Closeout Report, CEGA-002764, 1993.

Response: The layout is only intended to be an artist's rendering and is based on l from the New Production Reactor documentation. The notation (typical) is intended t this fact and does not bear on environmental impacts.

13.02.07 One commentor feels that the basis for the following assertion should be g or that the assertion should be deleted on page 4-447: "Substantial uncertainty exi for the use of a gas-cooled reactor for plutonium disposition." The commentor also that use of plutonium coated particle fuel has been demonstrated in six separate te which were conducted more than 20 years ago in the Dragon and Peach Bottom HTGRs. T the commentor believes that plutonium disposition is not a new mission for the gas reactor.

Response: The statement in question is consistent with the conclusion reached by DO Office of Fissile Materials plutonium disposition working group, which concluded th MHTGR was not a reasonable alternative for plutonium disposition. Nonetheless, the technology was still evaluated in the PEIS.

13.02.08 The commentor states that the discussion of pit disassembly and conversion assumes that the facility for this activity would be collocated with the reactor. I fact, the commentor notes that safeguard considerations may dictate that this activ conducted at the pit storage facility at the Pantex site, and that plutonium be shi the fuel fabrication facility in the form of plutonium oxide. The discussion also r constantly to the fabrication of "mixed-oxide" fuel. In the case of the gas-cooled reactor, mixed-oxide fuel is not used, the fuel is weapons grade plutonium oxide on fertile material is used. The commentor believes that these matters should be ackno and discussed in the PEIS.

Response: For the PEIS, the pit disassembly and conversion was assumed to be locate the tritium supply for the purposes of analyzing a multipurpose reactor. Consistent this, the PEIS addresses the impacts of transportation of pits. More detailed analy pit disassembly and conversion facility, including site locations that may be diffe than those evaluated for tritium supply, can be found in the PEIS being developed f Fissile Materials Disposition Program.

13.02.09 The commentor references the following statement on page 4-461: "The assum can be made and supported that with more reactors the potential for accidents to oc may increase, as well as the radiological impacts to the public and site workforce. commentor feels that it should be noted that even if doubled, the impacts of the gas-cooled reactor are small compared to those of other technologies. However, the commentor notes there is no basis for assuming that the radiological impacts of acc would be larger as a result of having more reactor modules. MHTGR modules are desig operate independently of each other with no common safety-related systems. Accident consequences are determined by events at a single module and are unaffected by the presence of other modules, according to the commentor.

Response: The commentor is correct. The frequency of an accident is based on the nu modules even though the consequences of an accident do not increase due to the numb modules.

13.02.10 On page A-43, the commentor points out that the spent fuel storage facilit not "underwater," rather storage is provided in dry wells, the exterior of which is cooled.

Response: The description of the Interim Spent Fuel Storage Facility in appendix se A.2.1.2 of the Final PEIS has been changed to read as follows: "This facility consi three water-cooled fuel storage basins paired with individual reactors. Fuel elemen containing spent fuel would be stored in dry canisters for up to 3 years in the sto basins. After a 3-year cooling period, the spent fuel elements would be encapsulate then transferred to dry storage vaults capable of storage for the life of the plant

13.02.11 The commentor notes that the reactor is a "moderate" pressure device but o

ES-9 and S-5 it is stated to be a "high" pressure device. The commentor feels that A-42 should be changed to be consistent with the other two pages. Also, the comment notes that the reserve shutdown material of the MHTGR is boronated graphite pellets boron carbide spheres. The commentor states that the electrically driven circulator located above the steam generator, not above the core. A single cross vessel, not m ducts, directs the helium to the (single) steam generator.

Response: The description of the MHTGR in the executive summary and summary has bee revised to indicate that the technology is a high temperature, "moderate" pressure reactor. Appendix section A.2.1.2 has been revised to incorporate the commentor's p changes.

13.03 Advanced Light Water Reactor Technology

13.03.01 Commentors state that the ALWR technology is preferred because it offers m benefits: a proven, safe method for producing tritium; burns excess plutonium from defense and commercial activities, thereby reducing amount of waste plutonium to di of/store minimizing the likelihood that it could end up in the hands of terrorist g and generates electricity ("triple play"). One commentor states that the ALWR alter offers the best engineering option to produce power for operating the tritium facil as well as other site facilities, because it can operate using plutonium fuel eleme without having reductions in tritium or power production. Another commentor suggest only the Large ALWR is capable of satisfying both the tritium production and pluton disposition missions with relatively little added environmental impact. This could extra energy and jobs, according to the commentors. In addition, the commentors poi that it also meets DOE's goals of not only stockpile replenishment but of: encourag technology transfer and economic development in vicinity of DOE sites; partnering w private sector to "test" streamlined commercial licensing process; and reducing lik of nuclear weapons proliferation.

Response: The PEIS evaluates the ALWR technology for the production of tritium. How the PEIS also assesses the impacts of the options available with the ALWR to produc electricity and burn plutonium in addition to producing tritium. DOE does not expec the ROD on tritium production would restrict or prejudice decisions of any plutoniu options. In fact, DOE's preferred alternative would allow for subsequent integratio future plutonium disposition decisions, if desired. As stated in the description of NEPA process in section 1.2, any decision made in the ROD would be followed by a site-specific tiered NEPA document that would address the technologies and location the chosen site.

13.03.02 The commentor notes that the PEIS incorrectly assumes that a single, Small could simultaneously carry out both missions of tritium production and plutonium disposition. A single, Small ALWR would require well over 60 years to consume the 5 megatons of excess plutonium. Therefore, the commentor feels that the PEIS should b corrected to assume at least two Small ALWRs for the combined missions. The comment notes that for completeness, it should be noted that ABB - Combustion Engineering's proposal to DOE for a privatized multipurpose System 80+ reactor, assumed two units be constructed - so that the plutonium disposition mission could be completed in 15 of operation. For comparability, a 15-year plutonium mission would require that the of gas cooled reactors and Small ALWRs also be doubled again, from the previous paragraphs.

Response: The analysis presented for the tritium supply mission did not consider th to burn plutonium to meet any specific time requirement. Rather, the PEIS evaluated multipurpose application of the reactors and attempted to distinguish the differenc technologies by providing information on how much plutonium could be dispositioned still meeting the primary mission of tritium production.

13.03.03 The commentor believes that the limited database available for use in the evaluation of tritium production in ALWRs that was created as an adjunct to the plutonium disposition evaluations is not an in-depth evaluation of these reactor ty the mission. Instead, the commentor notes the evaluations were done as "Go-No-Go." commentor also states that certainly the one, or at best two, conceptual designs fo tritium production were not intended to optimize performance and cannot be used for quantitative comparisons. If the light water reactor option is endorsed in the PEIS further detailed evaluations should be made to establish a specific technology or d according to the commentor.

Response: The best available design information was used for the analysis in the PE analysis was appropriate for the programmatic decision necessary to select the trit supply technology. A more detailed analysis of the selected technology will be done future site-specific tiered NEPA documents.

13.03.04 The commentor suggests that in the PEIS, volume 2, page A-52, first column fourth paragraph, the 1,100 MWe value for ALWRs should be 1,300 MWe.

Response: The commentor is correct. The text has been changed in appendix section A of the Final PEIS to indicate that both large reactors are 1,300 MWe.

13.03.05 Commentors believe that the PEIS should explicitly state how many Small AL needed to produce tritium at the 3/8 goal level, and should do so in a manner consi with other DOE documents. In addition, the commentors believe a discussion should b provided of the effects of tritium production in light water reactors, both large a small, on fuel enrichment, operational constraints, and other safety and technical characteristics of the reactor. One commentor further notes that the discussion sho include the effects of changes in the characteristics, caused by tritium production environmental impacts and the technology base/licensing (certification) basis of th water reactors. In reference to page A-60, another commentor questions how a Small can produce the same quantity of tritium with half the lithium required by a Large assuming all ALWR concepts use the same targets. The commentor states that this PEI explicitly discusses how many Small ALWRs would be needed, but leaves the impressio one would suffice. This leads the commentor to ask whether one Small ALWR can reall produce baseline quantities of tritium. If not, the commentor suggests that all tab throughout the document should be modified to be appropriate for the required numbe Small ALWRs.

Response: DOE agrees that the Small ALWR requires approximately the same quantity o lithium as the Large ALWR to produce tritium at the 3/8 goal level. The appendix ta A.2.1.3-3 has been changed to reflect this fact in the Final PEIS. The number of Sm ALWRs required to produce tritium at the 3/8 goal level is one. This number is stat throughout the Final PEIS, i.e., "a Small ALWR (600 MWe)" in the volume I summary a section 3.4.2.3.

13.03.06 The commentor states that the information given in tables 4.8.3.1-4, page appears to be based on assumptions appropriate for a light water reactor mixed-oxid assembly facility. For example, the building footprint is shown to be 115,000 ft2, reference GA 1994b cited in the PEIS, it is shown that the footprint of this facili only about 75,000 ft2. The commentor suggests that appropriate information for the gas-cooled reactor fuel fabrication facility should be given.

Response: The MHTGR technology conceptual design for tritium supply includes a fuel fabrication facility and therefore is analyzed in the PEIS. The ALWR technology for tritium supply would use reactor fuel from existing commercial sources, therefore t no onsite fuel fabrication facility. For the multipurpose reactor option discussed section 4.8.3 of the PEIS, a Pit Disassembly/Conversion/Mixed-Oxide Fuel Fabricatio Facility was described which would be necessary to support the multipurpose ALWR. T multipurpose MHTGR analyzed in this section, since it was based on the tritium supp machine, would already have the fuel fabrication part of the same facility as part design. Some modification of this facility would be required to accommodate the

fabrication of plutonium fuel but these modifications would be expected to be minor discussion of the "front end" pit disassembly and conversion facility has been adde section 4.8.3 for the MHTGR. However, as noted in the PEIS, the impacts of this add facility would be minor in comparison to the construction and operation of three mo reactor modules.

13.03.07 One commentor refers to page A-52 and suggests that more detail should be provided regarding the need to increase enrichment of the light water reactor triti production core and to derate the plant. The commentor states that the effects of t changes on safety parameters and licensing basis should be discussed. Another comme references page 3-36 and states that the assumption of one 600 MWe ALWR, with no downrating in power output while producing 3/8 goal quantities of tritium, does not credible.

Response: The discussion on appendix page A-52 indicates that modifications to the for tritium production would be minimal. Thus, the effects of any such modification impacts and other analyses presented in the PEIS are expected to be minimal. The discussion in appendix section A.2.1.3 of the PEIS addresses the potential downrati power output. A 600 MWe ALWR could produce the 3/8 goal quantity of tritium without enrichment greater than 5 percent, and without impacting safety parameters. However complete core changeout would be required annually rather than on the typical 18-mo cycle for a commercial reactor.

13.03.08 The commentor notes that it is argued in the PEIS, page 3-36, that "a powe conversions facility (steam turbine) is an integral part of the design for the ALWR because of the high temperature of the exit coolant and will be included in this analysis." The commentor also points out that appendix A states that the "ALWR and MHTGR technologies offer the added benefit of being capable of producing [sic] stea electricity production that could prove to be desirable in offsetting operational a capital costs" (PEIS page A-99), and that "the [ALWR] reactor would be an improved of existing commercial electric power generating reactors and would be operated at rated power...Modifications to the design for tritium production would be minimal.. [PEIS page A-52 (emphasis added)]. Indeed, the commentor suggests that one of the candidate ALWR designs, ABB-Combustion Engineering's System 80+, is essentially the design as the System 80 units already in operation at the "civil" Palo Verde Nuclea Generating Station in Arizona, and as the "civil" KHIC/C-E reactors built under lic South Korea and recently offered to North Korea as an allegedly "proliferation resi inducement to end its plutonium separation program.

Response: Nonproliferation concerns such as these expressed by the commentor will b considered in the decision-making process. The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an exist commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to se the primary source of tritium. The other alternative, if feasible, would be develop back-up tritium source. SRS has been selected as the preferred site, if an accelera is ultimately selected as the primary production option.

13.03.09 In reference to page F-26, the commentor suggests that if data could not b in System 80+ NRC docket, data should have been requested from ABB-Combustion Engineering.

Response: Information on System 80+ has been requested and the best available infor on this reactor has been incorporated into the PEIS.

13.03.10 The commentor states that the process described in section F.1 ignores the that two Large ALWRs have received final safety analysis reports and are proceeding through certification. Another commentor believes that System 80+ has a final safet analysis report and NRC-approved values should be used in F8. The commentor states the System 80+ designer should have been consulted before the PEIS was published.

Response: Technical Data Reports have been prepared which take into account the fac two Large ALWRs have received final safety analysis reports and are proceeding thro certification. DOE acknowledges that the Large ALWR reports are complete and this h factored into the cost, technical feasibility, and schedule analyses. These analyse included in the Technical Reference Report available in DOE reading rooms.

13.03.11 The commentor believes that the 1 to 2 years to check out the reactor, as mentioned on page 3-36 of the PEIS, isn't necessary for System 80+.

Response: The 1 to 2 years for check out is an estimated time included for all the technologies. This check-out period includes the Operational Readiness Review requi for all DOE facilities.

13.03.12 The commentor notes that the electrical load (house load) for a Large ALWR produced by the reactor. A 1,300 MWe produced by the reactor is "net" after this ho load is accommodated.

Response: The house load for the reactors is required for the reactor to produce tr and this is listed for each technology. In all cases, this would need to be supplie the facility. The nominal 1,300 MWe was not used in such a way that this would be affected.

13.04 Accelerator Production of Tritium Technology

13.04.01 Commentors express support for the APT for a variety of reasons: low gener of waste (compared to other technologies); lack of spent fuel production; no genera of high-level radioactive waste; safer for the environment; uses the least amount o water of the technologies considered; disturbs the least amount of land and, becaus does not store energy, has fewer and less severe accidents. Some commentors also ci fact that it would cost less to operate, can be turned off (unlike a reactor), and requires a relatively short time to construct. One commentor states that it is the technology in the interest of national security because it is able to produce triti quickly and continuously. Some commentors also note the low impact to human health this technology. Another commentor believes that the APT generates the lowest risk cancer and cancer fatalities. In addition to expressing support, one commentor sugg that the APT be located at INEL. Another commentor expresses support for the APT to located at NTS because of seismic stability and remote location.

Response: All of these advantages of the APT have been noted in the PEIS or the ass studies on cost, technical feasibility, and schedule in the Technical Reference Rep available in DOE reading rooms, and will be taken into account by the decision make coming to the ROD. The preferred alternative identified in section 3.7 of the PEIS dual-track strategy to pursue both the use of an existing commercial light water re and the construction of an accelerator to produce tritium. The preferred alternativ identifies SRS as the preferred site if an accelerator is selected as the primary production option.

13.04.02 One commentor states that DOE does not consider the use of fissile materia the APT design as a source of neutrons for the eventual bombardment of target mater If DOE does consider a fissile neutron source, the commentor notes that the electri requirements would be much less but this option would also produce radioactive wast commentor suggests that by avoiding an investigation of the trade-off between the p needs and the resulting environmental impacts, DOE appears to have assumed a politi position in avoiding a uranium, fissionable neutron source. Nevertheless, the comme feels that DOE should have a more complete assessment including an APT design with uranium neutron source weighed against potential environmental impacts.

Another commentor suggests that the PEIS needs to address the comparative overall environmental impacts of alternative target/blanket materials for the APT. The PEIS should address the comparative levels of waste generation, radioactive and thermal effluent, and greenhouse gas emissions from electrical generating stations supplyin to an APT using targets fabricated respectively from on-fissioning heavy metals (tu and lead), fissionable material (depleted uranium), and fissile material (such as uranium-235). For the same level of tritium production, the required beam power dro significantly for fissionable and especially fissile targets. After accounting for potential power loads that may be required for alternative targets, the total waste generation and environmental loads from the APT and its supporting power station ma significantly less for a fissile target than for a non-fissioning heavy-metal targe

Response: The APT design is envisioned as an alternative for producing tritium with use of fissile material. The PEIS analyzes the range of reasonable alternatives inc alternatives that use fissile materials, i.e., reactors and alternatives that do no i.e., accelerators. An accelerator that would use uranium as a target material woul generate radioactive waste (comparable to spent fuel) and exacerbate the potential severe accidents and subsequent decontamination and decommissioning considerations. decided to evaluate an alternative that would not have these characteristics and, t the accelerator is based on the use of non-fissile materials. In any event, the imp producing electricity to support a non-fissile material targeted APT are included i PEIS.

13.04.03 Several commentors feel that the APT should not be considered as an option more research and development has been done to demonstrate its reliability and safe One commentor is concerned that the APT will suffer like the supercollider, due to uncertainties. Another commentor is concerned that national security may be jeopard construction of the APT is delayed due to its unreliability. Another commentor feel the APT should not be considered since it has not been proven to work on a commerci level. One commentor notes that there has never been an accelerator that has run on continuous basis, that has ever produced the amount of tritium required by the exis stockpile, or has ever used a high energy beam such as that being considered. Anoth commentor also expresses concern that the proposed APT will need to use high power, the technology has only been researched at low power. The commentor believes that t target will not be feasible.

In another commentor's opinion, the 15-year schedule seems optimistic based on the technical maturity of the concept for this application. One commentor suggests that APT is considered, a weighting factor needs to be assigned to it due to the technol being unproven. One commentor referencing section 3-7 states that the decision not consider non-evaporative cooling towers based on technical uncertainty seems to demonstrate significant technical uncertainties for the APT. Another commentor also out a statement on page 3-40: "the number and arrangements of building and support are illustrative only and can change significantly as design progresses." Such stat the commentor suggests, emphasize that the design may not be mature enough to be in in the PEIS.

Response: Although it is true that the APT as configured to produce tritium has yet demonstrated, most of the component technologies required for this complex facility sufficiently mature to yield sufficient levels of confidence in its ability to gene the required quantities of tritium. Analysis of technical uncertainties of this alternative are presented in the Technical Reference Report available in DOE readin rooms.

13.04.04 The commentor states that discussion of power supply options to support th operation of an APT in section 4.8.2 of the PEIS is unduly limited to an analysis o and natural gas plants. The discussion should be expanded to include the options of obtaining the necessary electric power for the initial phase (100 milliamperes) APT full size (200 milliamperes) APT by investing equivalent sums in conservation and efficiency improvements and/or renewable energy sources for the regional grid that supply the APT.

Response: The PEIS evaluates the impacts of a dedicated power plant to support the each site. Alternatively, the regional power pool could provide the necessary power support the APT. Therefore the PEIS identifies the percentage of regional capacity for each of the alternatives. Section 4.8.2 of the PEIS provides a discussion of th general impacts of a 500 to 600 MWe power plant.

13.04.05 Several commentors give suggestions on the operation of the APT, if it is According to the commentors, DOE should consider using solar power as a potential p source; should consider using hydroelectric generators to support the capacity marg the power pool; should locate the power source onsite with the APT to support its electricity requirements; and should operate at night and other off-peak hours to r the APT's operating costs.

Response: Analysis of dedicated power plants at each of the sites to supply the ele requirements of the APT have been added to the PEIS. The evaluation of utilizing po from a solar powered demonstration project at NTS has also been added. Any further evaluation of methods to reduce electricity costs will be done in the site-specific NEPA documentation as appropriate.

13.04.06 The commentor asks as of what date the APT will utilize 4 to 13 percent of regional power pool margin, as described on pages I-10 and I-11. In addition, the commentor asks is there any consideration given to other growth in the region that reduce (or increase) that margin over the 40-year life of the tritium supply facili Another commentor suggests that the cost of disposing of plutonium needs to be incl the cost of the APT.

Response: All analysis is accomplished as of the No Action date, which in this case 2010. The estimate of the margin is based on National Electric Reliability Council which take into account projected regional growth or decline in its projections. Be the decision on plutonium disposition has not yet been made, it would be speculativ attribute any plutonium disposition costs to the APT.

13.04.07 Commentors suggest that the PEIS is biased toward the APT in several place throughout the document. One commentor remarked that the APT is touted to have a sh construction schedule than a reactor, because it can be built in phases (i.e., the accelerator could operate at a reduced level at first). However, this is questionab given the preconceptual design status of the APT. Furthermore, the environmental im during construction are a function of the APT design and, until it is more well def impacts cannot be properly assessed.

On the other hand, the Large ALWRs are based on a strong experience base and throug industry/DOE programs have been designed to even further improve constructability. ALWR has been treated very conservatively in the Draft PEIS, despite its maturity, the APT has been treated optimistically, despite its immaturity. One commentor beli that DOE has already decided to support the APT for political reasons and because t Administration is opposed to reactors. Another commentor, referencing page A-102, s that this reference to the paper-study status of the accelerator-based disposition plutonium seems to apply generally to the APT and reflects authors' bias with state on the great potential of this option.

Response: The technical feasibility of each of the technologies is evaluated and co in the Technical Reference Report available in DOE reading rooms. The environmental impacts of constructing the Phased APT are the same as the Full APT, since the same construction would take place in the beginning. Only additional equipment would be to reach the Full APT stage.

13.04.08 The commentor states that APT is more likely to receive public support bec the public perceives reactors to have a "bad record" concerning safety/accidents.

Response: The purpose of the PEIS is to analyze environmental impacts of the propos tritium supply technologies. Public support for or against each technology does not on environmental impacts. Any of the tritium supply technologies could be construct operated safely.

13.04.09 Several commentors raised specific uncertainties about the APT technology require further environmental impact evaluation, including the effects of evaporati cooling on the environment and whether activation products from spallation will contaminate part of the APT tunnel. One commentor states that if the tunnel is contaminated then the PEIS should include an analysis on the uncertainties with res the amount of contamination to the tunnel, whether or not the contamination will interfere with maintenance of the tunnel, or whether tunnel components will need to decommissioned, and, finally, make it clear if the contaminated tunnel is included waste sections of the PEIS.

Response: The APT design evaporates water to dissipate waste heat produced by opera the APT. This process results in water vapor being released into the atmosphere in immediate vicinity of the APT. The amount of water vapor released into the environm not large enough to cause climatic change in the surrounding region. Other effects evaporative cooling on the environment, including use of land and water resources, addressed in more detail in chapter 4 of the PEIS. The activation products of spall are retained within the envelope of the target/blanket assembly and will not be rel to the accelerator tunnel during normal operation of the APT. The design provides t these materials are removed from the machine in a special hot cell adjacent to the where provision is made for their safe handling and disposition as radioactive wast

13.04.10 The commentor notes that the numbers for APT facility construction and ope workers are the lowest for all the technologies. However, the commentor believes th costs related to these workers may be on the low side.

Response: The numbers for the APT facility construction have been adjusted upward a analysis redone as appropriate. The Technical Reference Report includes cost evalua and is available in DOE reading rooms.

13.04.11 The commentor states that it is important to understand the maturity of th accelerator technology, and asks how much tritium has been made with this technolog the amount is little or none, the commentor asks does DOE have backup plans if the chosen. The commentor wants to prevent a situation in 2011 when the United States c have no tritium production capacity if the accelerator cannot generate the material required.

Response: The technological risks which take into account the maturity of design ar evaluated in the Technical Reference Report available in DOE reading rooms. DOE wil provide rationale for its decision in the ROD. The preferred alternative identified section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an exist commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to se the primary source of tritium. The other alternative, if feasible, would be develop back-up tritium source.

13.04.12 The commentor states that the Final PEIS accident analysis should include accidents for the APT that the NRC would be likely to impose as part of a licensing review of both the deterministic and probabilistic safety case. For example, the co notes it is likely that the NRC would require assuming that the beams would not be when a loss of target cooling occurs given the absence of inherent feedbacks short target relocation due to melting or vaporization. According to the commentor, this be analogous to the Anticipated Transient without Scram event imposed by NRC for li of commercial reactors, which do have inherent feedback mechanisms to mitigate such transients. Similarly, considering that the proposed APT lacks a strong containment building, the commentor believes the NRC would also likely require assessing the

probability and consequences of a steam explosion occurring, if cooling flow can be restored after major melting of the target and blanket occurs, or if the melted tar drop into water such as in the case of passive building flooding described in secti F.2.1.4.3, page F-20 of the PEIS.

Response: The design of the APT is at a preconceptual level of detail. Appropriatel safety assessments have been concerned with identifying hazards and quantifying the approximate magnitude. Comprehensive accident analyses, as would be presented in a preliminary safety analysis report, have not been done for the APT. These would nor be done during the design process for the facility. The potential for serious offsi radiological consequences is much smaller for APT than for any of the reactors bein considered because of the much smaller inventory of radioactive material in the APT facility compared with the quantity of fission products in the core of any of the reactors, and because an APT generates no significant decay heat like that of react The Final PEIS has added an accident scenario that involves a complete loss of confinement which is expected to bound any accidents with the APT.

13.04.13 The commentor believes that the APT would be able to produce weapon-usable fissile material from source material if the latter were substituted for either hel or lithium in the production targets. Since accelerators are not addressed in eithe Atomic Energy Act of 1954, as amended, or the Nuclear Non-Proliferation Act of 1978 commentor states that existing export controls given in NRC regulations at 10 CFR P and DOE regulations at 10 CFR Part 810 do not address controls on accelerator equip that is used worldwide for research, development, and medical diagnosis and treatme According to the commentor, DOE should describe how key technology developed to dep APT, which is much more powerful than existing accelerators, will be controlled to assure no threat of proliferation.

Response: The APT design features required to produce these neutrons do not require technologies. The technologies employed are well known in the international acceler community. The APT is simply a larger and more powerful version than previous desig Because of its size and its requirement for large amounts of electrical power for operation, its replication elsewhere could be easily detected.

13.04.14 The commentor states that the APT option would suffer in an assessment of much technology change would be required to scale-up for tritium production. If the were chosen, the commentor states that quick demonstrations of portions of the desi would be required and the commentor is not sure how that would be done. The comment notes that APT would score high on opening future options for use of spallation sou and on being safe against accidents that would affect offsite populations. In addit the commentor suggests that lithium could be involved in an efficient design for APT-generated tritium.

Response: The technical risks involved in all of the technologies are evaluated in Technical Reference Report available in DOE reading rooms. In addition, there is an ongoing APT program to resolve remaining technical uncertainties regarding this technology.

13.04.15 The commentor suggests that in volume I, summary, pages S-7 and S-8 a comp between currently operating accelerator technology and the projections for the APT terms of amperage, downtime, waste, spent target production, and potential radiolog impacts to the public be provided. In addition, the commentor refers to volume I, c 3, section 3.6, table 3.6-1 and suggests that other analyses on the efficiencies wh compare acreage and power requirements for the APT be provided.

Response: The kind of comparison suggested by the commentor is inappropriate for th summary section identified. In addition, the comparison between existing accelerato the accelerator technology proposed for tritium supply would be very difficult to c and noninformative. The principal reason is that existing accelerators are of the p power type, of a lower power, and do not irradiate the type of targets evaluated in PEIS. The design proposed for tritium production is a new continuous power machine

use targets designed specifically for the tritium mission. Typical accelerators are usually operated for only short periods of time whereas the accelerator proposed in PEIS would operate for extended periods of time. Any comparison of the type suggest the commentor would therefore be like comparing one type of apple to a different ty apple (similar but not the same).

13.04.16 The commentor states that the PEIS should include any information gained f New Production Reactor analysis that has been helpful with the APT alternative. The relationship between the APT technology and the New Production Reactor study should addressed, if any exists.

Response: The APT was previously considered by the New Production Reactor Program b dismissed due to the quantity of tritium required and time required to complete the The APT analyzed in the PEIS has been developed based on preconceptual designs.

13.04.17 Commentors note that in addition to producing tritium, the APT design shou used for other purposes such as civilian/commercial research, transmutation, and short-lived medical isotope production. Possible design factors to enable secondary research uses are to make the APT modular, to leave enough space for expansion of t and closed-loop cooling. Another commentor suggests that tritium be produced for commercial purposes in addition to the prime NTS mission of tritium production for weapons program. One commentor believes that the PEIS needs to include any advantag using the APT.

Response: The PEIS identifies any environmental benefits and/or drawbacks associate the technologies evaluated. The advantages (options) of some of the reactor technol as they relate to other DOE programs as a side benefit to tritium production are di in the PEIS. Although there are potential research and development advantages to th accelerator technology, the use of such a machine during the production of tritium such activities would probably not be feasible or appropriate. The mission of this is to provide the tritium necessary for the enduring nuclear weapons stockpile. As occurred in the past, once this requirement is met, there would be no reason that e capacity could not be used to supply commercial users.

13.04.18 The commentor counsels against the dedicated power plant option for APT technology. At the Pantex site, the commentor is confident, there would be no cost savings from construction and utilization of a dedicated plant. Nor does the commen think a dedicated plant would be as reliable as Southwestern Public Service grid su

Response: The costs associated with building a dedicated power plant to support an versus the cost of providing power through the utility servicing the site are some factors included in the cost analysis prepared in support of the Tritium Supply and Recycling Program. The environmental impacts from such a facility were therefore in in the PEIS analysis to give the reader and the decision maker an indication of the potential environmental issues resulting from the option. For the PEIS, these impac identified at each site. The decision to construct and operate a dedicated power pl would be determined in project-specific tiered NEPA documents.

13.04.19 The commentor refers to the second paragraph of section A.3.2.4 and notes states that excess commercial power could not be generated with the accelerator-bas plutonium disposition systems based on the molten salt or particle bed target syste This is correct, but the commentor feels it should also be noted that in August, 19 General Atomics and Los Alamos presented a joint proposal to DOE requesting support develop an accelerator-driven modular helium reactor that could achieve destruction percent of the initially charged plutonium-239 and generate enough electrical energ drive the accelerator and sell excess capacity to the grid.

Response: DOE acknowledges this proposal.

13.04.20 The commentor suggests that volume I, chapter 3 of the PEIS provide comple on the viability of the project, its life, and the operational requirements associa with APT production of tritium. In addition, the commentor also requests that the following information be provided: an analysis of the amount of spallation-induced by-products be provided along with the used target materials special storage and di methods of this mixed waste; a comparison of spent targets to spent fuel in terms o hazards and radiological characteristics; a discussion on the significant annihilat radiation associated with spent targets; the quantity and mass of spent targets tha be produced; an analysis of the cost for repair or replacement of targets that may from a continuous and/or uncontrolled proton beam; and information on special maint and training dealing with worker health and safety in and around the plant area in event of a subsystem failure of the APT, as large amounts of low-level waste may be produced.

Response: Section 3.4.2.4 provides the data necessary for APT constraints and opera analyze for environmental impacts. Sections 4.2.3.10, 4.3.3.10, 4.4.2.10, 4.5.3.10, 4.6.3.10 discuss waste issues. Cost analyses are provided in the Technical Referenc Report available in DOE reading rooms. Health and Safety is addressed in normal ope in sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9 for the five candidate

13.04.21 In reference to pages A-54, A-63, and A-67, the commentor states that the concept for a 3- year transport of spent fuel is not consistent with DOE's Multi-Pu Canister (5 years). The commentor notes that the spallation that occurs in the APT' stop, when it is accepting the full power beam for an unlimited time, could be significant. The spallation and activation products (including mercury 194) have significant half-lives, adds the commentor. The commentor suggests that the high po the beam could result in orders of magnitude increase in waste products compared to existing accelerators. In the commentor's opinion, NRC should be requested to revie design and determine the classification of the waste. Additionally, the commentor s that the PEIS should quantify all wastes generated in the APT.

Response: The comparison table in section 3.6 presents the waste data for each of t various technologies and compares it among sites. The data for the comparison reque by the commentor is available in the table. The data used that describe the fission by-products from reactors and the spallation-induced products from the APT are incl appendix E as tables listing radioactive releases for normal operations for each of technologies and in appendix F as source terms for various accident scenarios.

13.04.22 Commentators suggest that the PEIS consider the availability of helium-3. According to the commentators, DOE must assume that there will be a loss of helium- during the conversion to tritium since it is not 100 percent recoverable or recycla The commentors state that DOE must estimate the amount of helium-3 that will be ava and the percentage that will be recycled; also, a safety factor for lost helium-3 i case of a national emergency.

One commentor believes that the PEIS does not present very much information as to t source of helium-3 for the target for the APT. The commentor notes that appendix fi A.2.1.4-5 shows helium-3 from weapon recycle and from commercial sources. If the on source of helium-3 is the decay of tritium, there would appear to be only three pos sources of substantial quantities of helium-3: the United States weapons program, t former Soviet Union weapons program, and Canada, according to the commentor. The Ca are unlikely to provide helium-3 for the United States weapons program. The comment believes that the only substantial supply is the decay of tritium in weapons. Since recycle of helium-3 from decayed tritium will inevitably involve the losses of some helium-3, the commentor asks if we can be assured that there is ample supply of hel to support a helium-3 target APT for the necessary lifetime of the production facil

Another concern of the commentor is that the PEIS does not address the neutronics o reaction that produces tritium from helium-3. The commentor assumes it is of the fo 3He + 1n --> ?? --> 3H + 1H. However, the commentor states that it would seem that is a nonzero cross section for the reaction: 3He + 1n --> ?? --> 4He. If there is a buildup of helium-4 in the target gas, the commentor notes that it would ultimately

the reaction and reduce the efficiency of the tritium production. Also, the comment how the helium-4 would be removed from the helium-3. Would this require the periodi disposal of all of the target gas, including the helium-3, which would seem to be i limited supply.

Response: Since we have a much larger supply of tritium right now then the eventual steady-state requirement needed in 2011 as shown in figure 2.1-1, the helium-3 resu from the decay of this excessive amount of tritium is being saved and will provide to supply the APT program.

In 2011, a tritium supply technology, in addition to tritium recycling, will be onl ensure the required amount of tritium is produced.

The neutronics of the reaction that produces H-3 (tritium) from He-3 (helium) is as follows: 3He + 1n -----> 4 He -----> 3H + 1H.

The 4He, which is in a highly excited state, exists for only a fraction of a second transforming into tritium and a proton. Therefore, 4He does not poison the reaction not reduce the efficiency of tritium production, and does not have to be removed fr closed-cycle gaseous target loop.

13.04.23 The commentor states that discussion of pulsed versus continuous wave accelerators on pages ES- 21 through ES-22 makes it unclear which is being proposed APT, and hence leaves an unclear impression of the degree of technology development required to support APT.

Response: The discussion referenced by the commentor is referring to the existing r accelerators being of the pulsed, low power design. To be comparable to the type be proposed for tritium production (the APT), these research accelerators would have t modified to provide a continuous wave operation and be increased substantially in p None of the research accelerators is of the proposed APT design or operates in the manner as the proposed APT.

13.04.24 The commentor notes that the fuel requirements for the APT look low on pag and questions whether this amount is sufficient to test the emergency power supplie

Response: The fuel oil requirements listed are adequate for routine weekly 2-hour t of the two 800 kW diesel generators.

13.04.25 In reference to page A-63, the commentor believes that more information sh provided regarding why there are different target designs under consideration for A why a backup is needed. The commentor notes that it appears as though the level of technical maturity of the APT target design is not adequate to define a reference conceptual system. If a phased approach were not adopted, the commentor asks what w the reference target be.

Response: Because of the preconceptual design of the APT, DOE decided to evaluate t different target designs for the Full APT in the PEIS. This was done so that the environmental impacts of the two targets could be evaluated prior to any target down-select. Based on the best available information, the helium-3 target appears t the better of the two targets, and thus was the target evaluated for the Phased APT the APT is selected, a formal target down-select would be made as part of the follo project specific research, development, and testing.

13.04.26 In table A.2.1.4-3, page A-74, the commentor states that it makes no sense the annual chemical requirements would change so drastically (lithium goes to zero? because the APT was constructed in phases instead of being fully constructed initia The commentor believes that there must be an error.

Response: The difference in the chemical requirements between the Full and Phased A

options is due to the fact that they use different target technologies in the analy The Full APT uses the spallation-induced lithium conversion target while the Phased uses the helium-3 target.

13.04.27 The commentor refers to page 4-443 and suggests that a better explanation provided of why building a dedicated plant at a DOE site to support operation of an operation is considered to be a cost saving.

Response: This information is provided in the Technical Reference Report available reading rooms.

13.04.28 The commentor states that while the PEIS does not consider costs, it impli the APT design evaluation is based on assumptions that will lead DOE to an unrealistically low cost estimate for the APT - especially compared against more ma technology, for example, the Large ALWRs that have already been priced for overseas Furthermore, the commentor notes that it should be obvious to all concerned that an electricity-producing ALWR will result in lower cost to the Federal Government than electricity consuming accelerator. Another commentor believes that a cost-benefit r needs to be included with the APT.

Response: This information is provided in the Technical Reference Report available reading rooms. The report details how the analysis was performed, assumptions, and factors that were used to evaluate the different technologies.

13.05 Idaho National Engineering Laboratory

13.05.01 Several commentors feel that INEL is the best site for new weapons program to its proven ability to manage wastes safely and its existing workforce, which is capable of handling the tritium project. Tritium production would also boost the ec of southeastern Idaho. One commentor states that INEL should be preferred for sitin reactor types except for HWR; however it does seem unwise to increase the number of weapons-related sites; the small predicted offsite effects at the most populous sit tiny compared to devastation from a nuclear conflict.

Response: The attributes of INEL as well as each of the other four sites considered siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relat evaluating the environmental impacts of the tritium supply and recycling facility a site. For INEL, waste management activities and facilities and the surrounding loca economies are included in the environmental analysis of impacts. Although the quali experience of the existing site work force and the offsite available work force are factors, they are not considered in the environmental analysis process presented in PEIS. In the final analysis, many factors will be considered in reaching the decisi tritium supply and recycling. The preferred alternative identified in section 3.7 o PEIS identifies SRS as the preferred location if an accelerator is selected as the production option.

13.05.02 Commentors strongly oppose the existence of nuclear material in Idaho. One commentor states that we do not need any more "atomic nonsense" in the state of Ida while another commentor expresses opposition to any waste being sent to idaho. Anot commentor questions whether INEL can accommodate the waste management and disposal activities associated with the proposed action. Another commentor opposes the triti supply facility because it endangers Idaho and is a pork barrel project supported b politicians.

Response: The PEIS addresses the environmental impacts of the proposed action at IN

13.05.03 In reference to page S-19, the commentor suggests that the 64,217 MGY blow for a Large ALWR is inconsistent with table 4.6.3.4-1.

Response: The commentor is correct, and the appropriate changes have been made to t summary of the Final PEIS.

13.05.04 The commentor believes that INEL should be responsible for researching and developing solutions to waste management problems, not storing nuclear waste.

Response: The PEIS addresses the impacts of waste management and waste at INEL in s 4.2.2.10 and 4.2.3.10.

13.06 Nevada Test Site

13.06.01 Commentors believe DOE should select NTS as the site for the tritium facil a variety of reasons: skilled labor force, proximity to and relationship with two national laboratories, remote location, existing infrastructure, an air strip to br tritium, arid climate, low population density, great depth to groundwater, sufficie water and power resources, security buffer zone, strong safety record, in-place contractors, good proximity to a university for collaborative research opportunitie reputation as a worldwide leader in testing and research. The commentors also belie the tritium operations at NTS have wide state/Congressional support, would restore lost since testing stopped, would contribute to the positive growth of the communit economy, and there would be no need to transport wastes to a storage location. Anot commentor contends that locating the tritium supply and recycling facility at NTS w retain talented nuclear testing professionals, ensuring continued professional management of the readiness program. One commentor also notes that numerous undergr testing and drilling projects at NTS have established its geological and hydrologic suitability. In addition, another commentor believes that using NTS as a tritium production facility will preserve important weapons production and testing skills i cost-effective manner at a location not being retired from the weapons complex.

Response: The attributes of NTS as well as each of the other four sites considered siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relat evaluating the environmental impacts of the tritium supply and recycling facility a site. For NTS, the remote location, the amount of available buffer land, depth to groundwater, compliance with environmental regulations and agreements, site waste management activities and facilities, and the characteristics of the surrounding lo economies and communities are all included in the environmental analysis of impacts Although the local and political support reasons mentioned are factors, they are no considered in the environmental analysis process presented in the PEIS. The potenti impacts of additional jobs, the onsite waste infrastructure, and the transportation infrastructure are also considered in the environmental analysis. The preferred alternative identified in section 3.7 of the PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option.

13.06.02 Siting the tritium supply and recycling facility at NTS would create a synergistic relationship between DOE and area educational institutions stimulating University of Nevada at Las Vegas research programs, according to the commentor.

Response: DOE agrees that the indirect educational and research benefits to area educational institutions could occur. However, the potential level of involvement a the nature of the relationship cannot be determined at this time.

13.06.03 Commentors suggest that if the APT technology is chosen to be sited at NTS

research and other alternative use potential of the technology would benefit the NT community. According to one commentor, a benefit to the community would be the sale electricity made possible by the reactor technologies; the commentor also suggests this should be considered an advantage for NTS.

Response: Potential uses of the APT for other than tritium production were not cons in the PEIS. However, the design, construction and operation of such a facility for tritium production would significantly advance the science of accelerator technolog cost benefits of electricity production from the ALWR and the MHTGR reactors are ex in the Technical Reference Report available in DOE reading rooms.

13.06.04 One commentor asserts that none of the tritium supply and recycling altern should be sited at NTS based on two major environmental concerns: (1) limited groun to support either phased or full accelerator application and (2) seismic constraint both reactor-based and accelerator technologies. Another commentor states that the lists no chemicals for NTS in the chemical inventory section of the PEIS, and recom this be checked.

Response: Section 4.3.3.4 of the PEIS discusses the potential groundwater impacts f tritium supply technologies including that for the APT. Although the groundwater us requirement of the APT is large, it is still below the estimated recharge capacity affected aquifer. The potential seismic risks of locating a tritium supply at NTS a discussed in section 4.3.3.5 of the PEIS. Based on the seismic history of the area, moderate seismic risk exists at NTS but should not preclude safe construction and operation of such a facility. All facilities would be designed to potential earth-quake-generated ground acceleration in accordance with DOE Order 5480.28 and approp safety guides.

13.07 Oak Ridge Reservation

13.07.01 Commentors are opposed to siting the tritium facilities at Oak Ridge and o commentor suggests Oak Ridge be removed from the list or placed very low in conside as a site, due to the abundance at Oak Ridge of existing hazardous materials from dismantlement of nuclear weapons components and storage of highly enriched uranium. commentor asserts that Oak Ridge has already become polluted with mercury and that controls were so poor during World War II that many ORR workers died early deaths.

Response: The PEIS evaluates the environmental impacts associated with operating th tritium supply at ORR. The potential impacts from such a new facility would be cons additive to the environmental baseline which takes into account past activities at site. The preferred alternative identified in section 3.7 of the PEIS identifies SR the preferred location, if an accelerator is selected as the primary production opt

13.07.02 The commentor asserts that the PEIS provides no information on the process led to the selection of the undeveloped portion of West Bear Creek Valley and West Chestnut Ridge as the location of proposed tritium supply/recycling facilities. The commentor believes that cost and environmental impacts could be reduced if the faci were located in one of the developed portions of ORR where the new facility could b served by existing infrastructure.

Response: The site analyzed in the PEIS is appropriate for the programmatic analyse Section 3.1.1 discusses the planning assumptions and basis of site selection for th tritium supply and recycling location.

13.07.03 In reference to volume I, summary, pages S-7 and S-8, the commentor sugges provide details of the impact on safety and tritium production if the Watts Bar Nuc Reactor does not come online as anticipated, or if Watts Bar shuts down during acce

operations.

Response: The PEIS evaluates the impact of a dedicated power plant as well as the i on the power pool.

13.08 Pantex Plant

13.08.01 Commentors urge DOE to select Pantex as the site for any new functions dea with the nuclear weapons complex for many reasons: strong local and statewide suppo skilled, lower-cost work-force; existing infrastructure/plant; lower utility costs; environmentally sound operation; no significant adverse impacts to natural resource human health, welfare and the environment; strong safety record; ideal geographical location (equidistant from east and west coasts); easy access to LANL, Sandia Natio Laboratories, and Amarillo National Resource Center for Plutonium; favorable busine community; available land for expansion; suitable year-round climate for constructi operation; ample water supply; no need to transport nuclear materials or wastes; ex living conditions; and educational excellence. Several commentors qualified their support with an insistence that tritium supply and recycling operations must be han a safe and environmentally sound manner. For many of these same reasons, one commen suggests that Pantex should also participate in DOE fissile materials storage and disposition activities. Another commentor believes that the two reactor technologie MHTGR and the ALWR, would provide additional electric power generation capacity for Pantex area and the APT technology would provide the advantage of tritium productio minimum production of nuclear and hazardous waste.

Response: The attributes of Pantex as well as each of the other four sites consider siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relat evaluating the environmental impacts of the tritium supply and recycling facility a site. For Pantex, the amount of available land and water, compliance with environme regulations and agreements, site waste management activities and facilities, and th surrounding local economies are all included in the environmental analysis of impac Although the local and political support reasons mentioned are factors, they are no considered in the environmental analysis process presented in the PEIS. Cost factor addressed in the Technical Reference Report available in DOE reading rooms and will considered in the decision analysis process along with the environmental impact analysis presented in the PEIS. The preferred alternative identified in section 3.7 PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option.

13.08.02 The commentor requests clarification of the energy consumption at Pantex: ES-28, table ES- 1, page 1 of 31: does this statement mean after the year 2010.

Response: The definition of No Action means from 2010 onward in the absence of any as a result of this PEIS.

13.08.03 Commentors state that Pantex should not be selected as the site for tritiu supply and recycling because of insufficient water and adverse impacts on agricultu lands surrounding the site. One commentor suggests that the negative effects of the tritium supply and recycling facility on the (Ogallala) aquifer should be fully acknowledged in the PEIS. Also, given that the Pantex Plant is the smallest of all under consideration, the commentor believes it is much too close to farmland and ad security could not be provided because of its size.

Response: Comments received during the public hearings on the PEIS indicated that O water would not be required for the tritium supply technologies if sited at Pantex. than enough reclaimed advanced treated sanitary wastewater is available from the ci Amarillo's Hollywood Road Wastewater Treatment Plant to meet the need of all tritiu

supply technologies considered, including the APT. Adverse impacts on agricultural are not expected from the proposed project using reclaimed water. The location of P relative to agricultural lands and the city of Amarillo has been considered in the analysis of impacts presented in the PEIS. Security at Pantex is more than adequate protect any new missions the site may receive.

13.08.04 In the hopes that Pantex is selected for tritium supply and recycling, the commentors suggest that DOE in the Final PEIS include a thorough evaluation of the treated wastewater to meet cooling requirements for a tritium production accelerato that the environmental impacts assessed include impacts where the water is currentl discharged.

Response: The PEIS now includes an evaluation of the use of treated wastewater to m cooling requirements for all of the tritium supply options.

13.09 Savannah River Site

13.09.01 Commentors urge DOE to site the tritium supply and recycling facility at S many reasons: existing infrastructure; technology and work force base; existing tri recycling facilities (including the new Replacement Tritium Facility); extensive lo public, business community, and political support; 40 years of safe tritium operati experience; adequate secured land; strong safety record; many trained laborers; rea available water; weather conditions which permit year-round work; the fact that SRS consistently met local, state, and Federal environmental regulations and related Fe requirements; would cause fewer environmental impacts; would benefit the economy; a would be the most cost-effective option. According to one commentor, SRS also proce and stores all waste produced on the site and is developing the most comprehensive bility in the Complex to handle all types of radioactive waste, including burial va consolidated incinerator, and the Defense Waste Processing Facility. The Aiken Comm Board supports a decision to place the tritium supply and recycling facility at SRS Another commentor supports the Tritium Supply and Recycling Program at SRS but reco that DOE get some new management oversight to replace Westinghouse. The commentor's specific recommendation is to look at somebody with credentials of DuPont. Another commentor asserts that collocation of the Nation's new tritium supply source at the could be the determining factor in locating the International Thermal Experimental in the United States. A sufficient power supply and new tritium handling capabiliti would make the SRS site much more attractive than the French or German sites, accor the commentor. According to another commentor, it took 10 years for SRS to establis training program that worked well. Therefore, it would be too costly to develop a t program when one is already in place at SRS.

Response: The preferred alternative identified in section 3.7 of the PEIS identifie as the preferred location, if an accelerator is selected as the primary production option. The attributes of SRS, as well as each of the other four sites considered f siting the tritium supply and recycling facility, would be included as part of the decision process. However, the PEIS considers these site factors only as they relat evaluating the environmental impacts of the tritium supply and recycling facility a site. For SRS, the Replacement Tritium Facility, the amount of available land and w compliance with environmental regulations and agreements, site waste management act and facilities, and the surrounding local economies are all included in the environ analysis of impacts. Although the local and political support reasons mentioned are factors, they are not considered in the environmental analysis process presented in PEIS. Cost factors are included in the Technical Reference Report available in DOE rooms, and will be considered in the decision analysis process along with the environmental impact analysis presented in the PEIS.

13.09.02 The commentor suggests that data on aborted attempts to sell a New Product Reactor for tritium at SRS should be set forth and quantified in the PEIS.

Response: As stated in section 1.4.2, the New Production Reactor Program was folded the then Reconfiguration Program in November 1991 since the urgency to develop a ne tritium supply source was eased due to stockpile reductions. This was reported and explained in a Federal Register Notice on November 29, 1991 (56 FR 60985).

13.09.03 The commentor suggests that the PEIS include an analysis of the relative environmental effects if the tritium mission at SRS is terminated.

Response: The PEIS describes the environmental impacts of phasing out the tritium recycling mission at SRS in section 4.6.3. Under each resource and issue topic with section a discussion of these impacts is found under the italic heading "Tritium Re Phaseout."

13.09.04 Commentors believe that South Carolina does not need another tritium facil According to one commentor, South Carolina already has more than its share of toxic in the groundwater and should clean up sites instead. The commentor urges the Unite States to set an example for other countries. Another commentor states that nuclear weapons production at SRS has severely impacted the land and water around Aiken, So Carolina.

Response: Remediation of contamination due to past operation of DOE facilities is a ongoing program under the direction of the DOE Office of Environmental Management. characterization activities of potential contamination areas or any planned or ongo remediation activities would be considered in the siting of any tritium supply tech at any site. Lessons learned from past DOE production reactors and the incorporatio the latest designs in proposed tritium supply technologies are being used to ensure protection of the environment and minimize the generation of additional waste.

13.09.05 The commentor states that the Defense Waste Processor is not included unde in the table in the executive summary.

Response: Although not explicitly stated in the executive summary, the Defense Wast Processing Facility is assumed to be operating under No Action at SRS. The possible of that facility would be considered in a site-specific tiered NEPA document. The preconceptual designs of the tritium supply and recycling facilities include their waste management infrastructure with the exception of the upgraded recycling facili SRS.

13.09.06 Commentors express the opinion that the cooling tower at SRS be evaluated decision process. One commentor asserts that availability of the newly constructed cooling tower at SRS will yield significant cost savings. According to the commento proposed location of the tritium supply facility (near the N Area) would take advan existing 10 miles of cooling water discharge pipe leading from K-Reactor to the Sav River. Only 4 miles of new piping would be required, according the commentor.

Response: If SRS is chosen as the site for tritium supply, a site-specific tiered N document would be completed prior to construction. If the preferred alternative identified a reactor technology, an evaluation of the possible use of the K-Reactor cooling tower would be appropriate. If the APT is selected consistent with the pref alternative, the K-Reactor cooling tower would probably not be used.

13.09.07 Commentors assert that the PEIS features an invalidated major assumption b assuming that the existing tritium facility will be able to handle a new tritium su when it is at least 17 years old. One commentor suggests that it may need major upg by then, so the PEIS must calculate how much the facility costs, its worth today, a cost to upgrade it by 2010.

Response: Section 3.4.3.2 discusses the upgrades of the existing Replacement Tritiu Facility. Cost and technical analysis reports are included in the Technical Referen Report available in DOE reading rooms.

14 Relationship to other DOE Programs/Activities

14.01 Commentors suggest that DOE should delay the decision on a tritium production facility for several reasons - to allow other EISs to reach the same stage so that decisions made reflect an integrated approach to all EISs pertaining to the Complex see how the PEIS for Tritium Supply and Recycling relates to other PEISs relative t and viability; and to consider the cumulative impacts on the entire Complex. Accord one commentor, DOE should do a thorough evaluation of the impact of the multipurpos reactor versus the separate tritium supply facility and the plutonium facility (one facility versus two) and should also consider other options such as a fusion facili Some commentors express opposition to the combining of tritium production with plut disposition activities. These commentors believe that DOE should address the dispos of plutonium before deciding to produce tritium; this decision may eliminate the ne tritium.

Response: DOE does not expect that the ROD on tritium production would restrict or prejudice decisions of any plutonium options. In fact, DOE's preferred alternative allow for subsequent integration with future plutonium disposition decisions if des Due to the rapid decay of tritium, and the long lead time required to bring a new s on line, even new supplies from retired weapons are not sufficient to postpone the for a tritium supply facility to the point where decisions concerning technology an selection can be deferred to coincide with other DOE decisions. Accordingly, the PE for Tritium Supply and Recycling is a separate action. This is not to say that it i analyzed in the absence of input concerning other, related DOE activities. The anal closely coordinated with the analyses being performed for the Waste Management PEIS Stockpile Stewardship and Management PEIS, the Fissile Materials Disposition PEIS, as the Site-Wide EISs being conducted by those DOE facilities which have a Defense Program Mission. To the extent that programmatic changes are made in one of the pro which affect the others, the appropriate changes in the PEIS for Tritium Supply and Recycling analyses have been made.

DOE has also analyzed a multipurpose reactor in the PEIS for Tritium Supply and Rec This reactor would utilize either a uranium fuel or a fuel blend of plutonium and u (mixed-oxide fuel) to generate tritium while at the same time irradiating surplus quantities of plutonium to the point where it could no longer be utilized in nuclea weapons. DOE is not considering a fusion reactor as an alternative, since this tech is not yet developed to the point of providing the necessary degree of confidence f producing a product so integral to the Nation's defense.

14.02 Several commentors express their dissatisfaction with siting the proposed tri facility at some of the candidate sites because prior activities have left areas of contamination at these sites. Commentors state that DOE should not put a new facili a site that needs environmental cleanup. One commentor states that NTS already has mission as a waste site, and considering the site for another operation is deplorab Another commentor opposes siting another hazardous project in Idaho because in his Idaho has been a home for nuclear waste for too long (United States Naval nuclear w particular). In addition, the commentor fears aquifer contamination. Another commen opposes locating the tritium facility at SRS because of the need to clean up existi radioactive wastes at the site. Another commentor believes that plutonium storage i should be resolved and existing contamination cleaned up at Pantex before the triti production decision is made at Pantex.

Response: All of DOE's facilities require some level of environmental cleanup. Simi other industries, DOE facilities were designed in the 1940s and 1950s, prior to

environmental regulatory requirements when the understanding of waste management principles was not what it is today. Over the past several years, DOE has had a ver aggressive cleanup program and has worked with the Environmental Protection Agency states, stakeholders, and the general public to develop long-range programs and commitments to clean up its facilities to acceptable levels. All of these plans and commitments have been reviewed for the proposed sites to determine if there are any conflicts or restrictions which would inhibit these sites from serving as good loca for the facilities proposed in the PEIS for Tritium Supply and Recycling. Nothing w found which would inhibit the alternative sites from performing the required missio a specific site is selected, additional site-specific tiered NEPA documents will be prepared. This analysis will address specific contamination problems of the specifi proposed DOE facility and, to the extent mitigative measures are required to allow ongoing environmental restoration or to prevent additional contamination, it will b integral part of this site-specific analysis. The preferred alternative identified section 3.7 of the PEIS identifies SRS as the preferred location, if an accelerator selected as the primary production option.

14.03 Commentors state that, because of its efficiency, cost-effectiveness, and exi capital plant, Pantex should be an active participant in fissile material storage a disposition activities.

Response: The storage and disposition of fissile materials are being addressed in a separate PEIS being prepared by the DOE Office of Fissile Materials Disposition. Pa is one of the sites being considered for materials storage.

14.04 Commentors are concerned about the storage of nuclear weapons and fissionable material as described in the Stockpile Stewardship and Management PEIS. DOE should waste where it is until a national policy can be developed.

Response: Storage of nuclear weapons and fissionable materials is beyond the scope PEIS for Tritium Supply and Recycling. Storage and disposition of nuclear weapons fissionable materials are being addressed in the Storage and Disposition of Weapons Fissile Materials PEIS being prepared by the DOE Office of Fissile Materials Dispos The Waste Management Draft PEIS being prepared by the DOE Office of Environmental Management has recently been completed. These two PEISs address the issue of storin nuclear weapons fissionable material and wastes.

14.05 The commentor states that DOE should consider NTS for consolidation and futur DOE/defense program activities.

Response: NTS is included in the Stockpile Stewardship and Management PEIS now bein prepared by the DOE Office of Reconfiguration. The Stockpile Stewardship and Manage Program is evaluating the alternatives for consolidation and future operation of th Complex.

14.06 The commentor notes that it is stated in volume I, page 1-7 that the New Prod Reactor Program was "canceled." The commentor states that the program was, accordin the announcement signed by Secretary Watkins, "deferred."

Response: The commentor is correct and the appropriate changes have been made to th document.

14.07 In reference to page S-2, the commentor questions whether the receiver sites Mound mission are still accurate.

Response: The mission reassignments identified and analyzed in the Nonnuclear Consolidation Environmental Assessment (June 1993) have not changed and are in the process of being implemented.

14.08 The commentor suggests that DOE should consider consequences of selling elect i.e., competition with public market.

Response: The sale of any energy produced incident to the operations of a DOE triti production facility would be governed by Section 44 of the Atomic Energy Act. That section expressly provides that "if energy is produced at production facilities of Commission, such energy may be... sold to publicly, cooperatively, or privately own utilities at reasonable and nondiscriminatory prices. If the energy produced is ele energy, the price shall be subject to regulation by the appropriate agency having jurisdiction. In contracting for the disposal of such energy, the Commission shall preference and priority to public bodies and cooperatives or to privately owned uti providing electric utility services to high cost areas not being served by public b or cooperatives." Thus, by the very terms of the Atomic Energy Act, DOE would not b competing with existing electric energy producers, but rather would be augmenting t production by selling to them. This energy could reduce the burden of ratepayers.

The electric utility industry is structured and regulated such that DOE would never such a position as to compete with electric utilities in the sale of electricity. T generation and sale of electricity is being analyzed for those alternatives in whic electric generation could offset the other programmatic costs. In such a situation, would tie into a regional power grid and be compensated for its input, which would marketed by the electric utilities managing this grid at rates to be determined by utility commissions and the Federal Energy Regulatory Commission. For such alternat DOE is looking at the environmental impacts associated with the generation of elect power, pursuant to the requirements of NEPA.

14.09 Commentors express support for the recent establishment of the Amarillo Natio Resource Center at Pantex and the formation of the Higher Education Consortium by t Texas A&M University System, Texas Tech University, and the University of Texas Sys manage the Amarillo National Resource Center. The commentors believe DOE should fun utilize the Amarillo National Resource Center at Pantex to research critical issues stewardship of nuclear weapons and their by-products.

Response: There is no relationship between the tritium supply and the National Reso Center at Pantex.

15 Public Involvement/Community Relations

15.01 Several commentors commended DOE for holding useful and effective public hear One commentor states that the meetings make a complex subject easy to understand an ensure consideration of public concerns and views. Although most comments on the fo were positive, some commentors offered the following suggestions: have "formal" (traditional format) comment sessions in addition to the new format; present concep estimates of costs of alternatives; hold evening sessions at a later time (7:00 p.m have a troubleshooting system for the phone system; and, hold meetings in all sites Tritium Supply and Recycling Program consideration.

Response: DOE elected to use the interactive meeting format in response to past pub comments. The commentor's suggestions will be taken into consideration in the prepa and planning of future public meetings. Meetings were held at every site considered PEIS.

15.02 The commentor states that the PEIS does not adequately address key policy iss Therefore, states the commentor, it is impossible to conduct meaningful public revi discussions of the alternatives presented. The commentor states that DOE should res to the commentor's and others' concerns in a revised PEIS which is then circulated public comment.

Response: The PEIS was prepared to study the potential environmental impacts of a p major Federal action. National policy issues are factors that will be considered in decision making process but will not be addressed in the PEIS. The mechanism for pu input to the Nation's policies is through contact with Federal, state, and local el representatives.

15.03 Commentors suggest DOE publicize public meetings early and in many different (including Internet, CD-ROM, database) and consider having the PEIS in computer for One commentor adds that DOE should expand its contact with all aspects of the commu including Native American interests, schools, and churches and give the public more to be involved. Another commentor states that impact and oversight money should be provided for public outreach. Scientists and technical experts should be placed in contact with the citizens, perhaps in a round-table approach, according to the comm Another commentor states that the public should be given full disclosure regarding facility including uncertainties involved in the analyses (lack of experience for A MHTGR, future need for tritium, sale of electricity from reactor). Focus should be national and public interest in the proposed action rather than DOE's interest, acc to the commentor.

Response: DOE has utilized several different methods for publicizing public meeting providing program information to the public. In addition to advertising in the traditional media, notices and meeting information have been made available electronically. Various documents can be requested or accessed using the toll-free information line, the electronic bulletin board, and the World Wide Web DOE Home Pa is also possible to access and download the PEIS from a bulletin board service. The been and will continue to be full disclosure of all relevant technical information concurrent with the publication of the final PEIS. Cost, technical and feasibility analyses for each technology are included in the Technical Reference Report, availa DOE reading rooms.

Technical experts were present in each of the discussion groups during the public h to answer questions and provide additional information to the public. A speaker's b has been established with DOE officials available on a limited basis as requested t with interested groups concerning program activities and issues. This can be reques through the toll-free line or the electronic bulletin board services. In addition, the announcement is made to hold public meetings, contact is made with local and Na American officials offering separate briefings prior to the public hearing in that Some meetings were requested and held prior to the PEIS public hearings.

15.04 Commentors state that political influence should not be a factor in the triti supply and recycling decision.

Response: DOE has analyzed environmental, cost, technical and schedule issues assoc with the proposed action. The effects of political influence are beyond the scope o PEIS.

15.05 One commentor suggests that DOE should declassify the number of kilograms in overall tritium inventory, as well as current and projected active and reserve nucl weapons stockpile requirements. The commentor believes that this would allow the pu to draw their own conclusions regarding the reasonableness and urgency of future tr supply and recycling alternatives. Another commentor suggests that chapter 2 of the be expanded because the public has the right to know how much tritium is needed at taxpayer's expense.

Response: There has been an effort in recent months and years by DOE to provide the with as much information as is reasonably possible. However, there are still some d and issues which are matters of national security, and, as such, must remain classi The exact amount of tritium in the inventory is one of these.

15.06 The commentor expressed the desire to know when people from other areas that close proximity to nuclear sites will be compensated like those covered under the 1 Act.

Response: This issue is beyond the scope of the PEIS.

15.07 Commentors ask how DOE will assure the public that their input has been inclu the decision process. The commentors believe that DOE should allow the public to co on the various decision making factors and the ROD.

Response: Comments received during the public comment period are addressed and cons in preparation of the Final PEIS. Section 1.7.4 of the Final PEIS identifies specif changes made in response to public comments. The Comment Response Document availabl the Final PEIS includes copies of all comment documents, summaries of all comments received, and the response by DOE to these comments. Cost and other analyses are in in the Technical Reference Report available in DOE reading rooms. The ROD will expl factors used in DOE's decision making process and will be a publicly available docu

15.08 Commentors state that DOE should allow concerned citizens to speak at public hearings and not have biased entities controlling the sessions. A verbatim record o hearing should be kept, according to the commentors.

Response: The interactive hearing format was used to provide an opportunity for the to have questions answered in order to allow more informed input. All participants given an opportunity to ask questions or comment on the PEIS during sessions which moderated by neutral facilitators. While verbatim transcripts were not made for the hearings, detailed comment summaries were prepared for consideration in this docume Several other methods (mail, fax, electronic bulletin board, toll-free information were available for the submission of written or verbal comments if commentors did n confident that their comments would be recorded correctly at the public meetings. D consider these comments in planning future hearings. All comments, regardless of ho received, are considered equally when preparing the Final PEIS.

15.09 Commentors state that DOE should select the preferred alternative before aski public comment.

Response: Council on Environmental Quality (CEQ) regulations require an agency to i a preferred alternative in the draft only when one or more exists (40 CFR 1502.14(e the time that the Draft PEIS was published, no preferred alternative existed. Studi now been completed and the preferred alternative is now identified in section 3.7 o Final PEIS. Members of the public may submit comments on the Final PEIS, including preferred alternative. A decision on tritium supply and recycling will not be made at least 30 days after issuance of the Final PEIS.

15.10 The commentor states that DOE should stick to its Tritium Supply and Recyclin Program decision to be stated in the ROD and not deviate as it has done in the past Changing the decision wastes money, according to the commentor.

Response: Any actions taken will be in compliance with the requirements of NEPA. Sh DOE determine or need to modify its decision as stated in the ROD, it will either i new ROD or modify the PEIS.

16 NEPA Process

16.01 The commentor states that under the requirements of NEPA, DOE, in the PEIS, s discuss the accountability and responsibility for data gathering; include life cycl

conducted on alternatives and cost analysis of waste disposal; evaluate the alterna explain operating scenarios for the sites; explain differences between tritium and nuclear-type materials such as plutonium; indicate the number of weapons that will constitute START II Protocol levels and the number that constitutes a genuine deter and include an unclassified version of the Nuclear Weapons Stockpile Memorandum and

Response: The PEIS provides a full and fair evaluation of the environmental impacts reasonable alternatives. Data to support the analysis has been gathered from most recent environmental monitoring reports and from engineering analyses of the propos alternatives. The estimated number of weapons (for START II stockpile levels) has b added to chapter 2. This chapter is the unclassified version of the Nuclear Weapons Stockpile Plan and Memorandum. The cost analysis is provided in the Technical Refer Report available in DOE reading rooms.

16.02 One commentor suggests that further stockpile reductions would allow DOE to u tritium from the retired weapons, thereby eliminating the need for a brand new faci The commentor believes that this alternative of further stockpile reduction should considered by DOE and analyzed in the PEIS in accordance with the NEPA process.

Response: Chapter 2 provides the rationale for stockpile size. DOE has to support t Nuclear Weapons Stockpile Plan under the Atomic Energy Act of 1954. These levels ar established to provide an effective nuclear deterrent. DOE cannot unilaterally chan stockpile size. The PEIS also includes an analysis of providing tritium at an earli should that become necessary. For a stockpile size smaller than START II, the need tritium could be extended beyond approximately 2011. If the need date for new triti were significantly later than 2011, DOE would not have a proposal for a new tritium supply, and would not be preparing a PEIS for Tritium Supply and Recycling.

16.03 One commentor is of the opinion that DOE should accelerate the process of tec and site selection to avoid loss of talent of the current workforce. Another commen contends that more time is needed for the public to review the scientific analysis decision making process for a project that will span 50 years. In fact, the comment suggests that the government and DOE should use a scientific timeframe, instead of political one, in the NEPA process. Another commentor advocates more continuous involvement between DOE and contractors in preparing EISs.

Response: Technology and siting decisions will be identified in the ROD at least 30 after the Final PEIS is published. In order to compare the potential environmental impacts of each technology, start dates in the PEIS were established around a peak construction date of 2005. The construction of a tritium supply facility would not before the appropriate site-specific tiered NEPA documents were completed, and deta engineering designs of the facility completed.

16.04 The commentor notes that NEPA imposes a requirement for "sharply defining the and providing a clear basis for choice among options by the decision maker and the public" through the analysis of alternatives in an EIS (40 CFR 1502.14). The commen states that not only does the Draft PEIS fail to identify a preferred alternative, fails even to present a consistent set of criteria by which the preferred alternati could be selected in the future. The summary comparison tables located in the execu summary (page ES-1), in section 3.6 of the Draft PEIS, and appendix I, do not clear reveal which alternative at which site entails the least overall environmental impa public health risk for a given level of investment. The commentor feels that evalua the environmental risks of various proposed alternative technology/site combination relative to their financial costs is impossible because no cost data is presented. According to the commentor, the Draft PEIS fails to present a comparative, qualitat discussion of the environmental impacts of the various alternatives in a manner tha allow the concerned citizen to gain an understanding of which option poses the leas overall environmental burdens and risks. The commentor feels this is a clear defect current draft that must be remedied in the Final PEIS. According to the commentor, strongly implies that the selection of a preferred alternative will be made on the of information not available to the public in the Draft PEIS, an action that would

in plain violation of NEPA. In this case, the PEIS must be reissued as a draft incorporating such information, including comprehensive cost, technical risk, and s risk data. The commentor claims politics, especially pressure from South Carolina a Georgia supporting SRS, should not have an influence on the preferred alternative a ROD.

Response: In addition to the summary comparison table, table 3.6-1, and appendix I, summary and executive summary of the PEIS have been revised to include a concise, reader-friendly presentation of the alternatives. Section 3.7 of the PEIS defines t preferred alternative as the alternative that the DOE believes would fulfill its st mission, giving consideration to environmental, economic, technical, and other fact CEQ regulations require an agency to identify a preferred alternative in the draft when one or more exists (40 CFR 1502.14(e)). At the time that the Draft PEIS was published, no preferred alternative existed. Studies have now been completed and th preferred alternative is now identified in section 3.7 of the Final PEIS. The summa comparison of the environmental impacts of the tritium supply and recycling and the various options presented in table 3.6-1 and in appendix I do not present the relat between costs and the protection of the environment as correctly noted by the comme The cost analyses for the various tritium supply technologies and recycling facilit included in the Technical Reference Report prepared to support the program and deci identified in the ROD prepared after this PEIS. The Technical Reference Report is available in DOE reading rooms.

16.05 One commentor suggests that the PEIS does not, but should, address the enviro impact resulting from resource requirements and waste for each alternative. Another commentor states that DOE should hold each site to equitable standards in the analy environmental compliance while cost factors should be weighted less as far as a dec making factor.

Response: Sections 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3 of the PEIS discuss the re requirements and impacts of construction and operation of each alternative at the f candidate sites. In the comparison of the alternative sites, DOE made every effort each site to consistent and equitable environmental standards. The analysis for the was conducted in accordance with CEQ regulations (40 CFR 1500-1508), and DOE's NEPA Procedures. Furthermore, in the design of the various technology facilities, full compliance with all applicable Federal, state and local environmental requirements considered. DOE has made every effort to utilize the NEPA process early on in the p stages of the tritium supply program and, to the maximum extent practicable, has ta extra steps to include public participation in this decision making process. The we of cost factors is not a PEIS issue but will be explained in the ROD.

16.06 Commentors believe DOE should list the factors, including the weighting facto affecting technology and siting decisions. In fact, one commentor suggests DOE prov a clear description of the weighting factors which will be used in decision making the public hearings. The commentor also states that it would be helpful to know how weight the public hearings have in the decision making process.

Response: The rationale for making tritium supply and recycling decisions will be identified in the ROD. DOE's decision making process will weigh factors such as cos technological feasibility, environmental issues, and policy considerations.

16.07 A commentor notes that the Draft PEIS should have included an economic evalua for the technologies. For example, costs associated with maintenance, operation, an implementation of the technologies should be evaluated and distributed to the publi Without cost estimates, the commentor believes it is not possible to weigh the rele of any differences between the technologies. The commentor further states that the of budget information makes it difficult to provide informed comments and decisions of the tritium supply and recycling technologies and sites. In the commentor's opin the most cost efficient production source of acceptable reliability should be chose all cost factors considered. Another commentor states that the cost analysis and production assurance documents seem to be more important decision making factors th

PEIS. In addition, a commentor suggests that economic evaluations should also consi combining plutonium disposition and tritium production and the impact of privatizin facilities on costs to the government.

Response: Cost and technical feasibility studies are not part of an environmental i statement but are included as a part of the Technical Reference Report available in reading rooms. The analysis for the PEIS is being conducted in accordance with the Regulations (40 CFR 1500- 1508), and DOE's NEPA Procedures.

16.08 Several commentors believe that a cost-benefit analysis should be developed t support a programmatic decision concerning which technology to employ for tritium production.

Response: DOE has developed cost, technical, feasibility, and schedule analyses whi included in the Technical Reference Report available in DOE reading rooms. These fa will be weighed in the decision making process along with environmental considerati

16.09 The commentor believes that DOE should look at cost studies determining transportation of LLW by rail. There may be money to be saved by using the railroad according to the commentor.

Response: Impacts of transporting LLW to NTS from Pantex are analyzed in the PEIS. transportation is the only available method to ship LLW from Pantex to NTS.

16.10 The commentor believes that DOE should consider the advantages of using exist sites' infrastructure in the cost analysis for tritium production and recycling.

Response: Section 3.3 of the PEIS lists the assumptions that were used in selecting reference sites. Site-specific analysis would consider the existing site infrastruc and any differences in cost. In determining the preferred alternative identified in section 3.7 of the PEIS, site infrastructure issues were among the many issues cons SRS is the preferred location if an accelerator is selected as the primary producti option.

16.11 The commentor states that representatives in Congress need to have more input the Secretary's decision on the PEIS for tritium supply and recycling.

Response: DOE participates regularly in Congressional hearings on defense issues in the tritium issue is discussed. Congress determines how funds are allotted and DOE monies consistent with Congressional direction. Therefore, Congress ultimately determines whether the preferred alternative will be implemented.

16.12 Commentors state that the public should have access and input to the cost ana and the weight given to the various costs in the final decision. The commentors fee public should have an opportunity to comment on the cost analyses and the other ass studies. In fact, some commentors express concern that materials such as cost analy and associated studies be released to the public early enough for review and commen before the ROD is issued. If materials cannot be released until after the Final PEI published, one commentor suggests that the comment period before the ROD be extende particular, the commentors believe that the public should be fully informed about t cradle to grave costs (including long-term waste costs, and D&D) of the facility. O commentor notes that a D&D comparison (including financial costs) between technolog should be included in the environmental effects section of the Final PEIS. Addition commentors suggest that the cost analysis should include decommissioning and revenu associated with any of the technologies, and any cost overruns with the APT. The commentors state the public needs to be convinced that developmental status of the accelerator option is properly reflected in cost and schedule sensitivity analyses.

Response: CEQ regulations require an agency to identify a preferred alternative in

draft only when one or more exists (40 CFR 1502.14(e)). At the time that the Draft was published, no preferred alternative existed. Studies have now been completed an preferred alternative is now identified in section 3.7 of the Final PEIS. Members o public may submit comments on the Final PEIS, including the preferred alternative. decision on tritium supply and recycling will not be made until at least 30 days af issuance of the Final PEIS. The specific environmental impacts of D&D cannot be det at this time because of the preconceptual designs of proposed facilities. However, relative comparison of the D&D activities and potential impacts between the tritium technologies is presented in section 4.15 of the PEIS. The costs associated with D& detailed in the supporting cost analyses included in the Technical Reference Report available in DOE reading rooms. The ROD will describe the basis for DOE's decision.

16.13 The commentor expresses interest in the cost benefits of the previously devel New Production Reactor Program in relation to this program.

Response: The records for New Production Reactor Program have been archived and can accessed through the National Archives.

16.14 Referring to volume I, chapter 3, section 3.6, commentors suggest providing a analysis of the cost associated with each of the alternatives to include direct cos construction, project maintenance costs, research and development costs, and other indirect costs. The commentors state that the Tritium Supply and Recycling Program compete with other Defense Program projects, such as the National Ignition Facility the programmatic responsibilities of Defense Programs, and with environmental clean commentors feel a fair analysis of the projects' impacts should include the billion dollars of cleanup that will not occur, or will be deferred due to the Tritium Supp Recycling Program. The commentor believes the absence of cost figures from the PEIS calculated attempt to avoid political attack. Since tritium decays, early productio carries a financial penalty of roughly $200 to $400 million per year if interest co construction are added to operating costs. For example, the commentor states that L Alamos National Laboratories (LANL) recently disposed of 106 curies of tritium beca recovery was not deemed important. Finally, the commentors suggest that DOE should full budget analysis of how much this facility will cost in out years (into the nex century).

Response: Cost and technical feasibility studies are not part of an environmental i statement but are included as a part of the Technical Reference Report available in DOE reading rooms. The analysis for the PEIS is being conducted in accordance with regulations (40 CFR 1500-1508), and DOE's NEPA procedures.

16.15 The commentor expresses the opinion that the NEPA process being used by DOE f Tritium Supply and Recycling Program is flawed because it didn't address the combin impacts of different activities described in the PEIS. In the commentor's opinion, approach to conduct individual assessments could run the serious risk of making the process appear to be "result-oriented."

Response: The approach presented in the PEIS does describe the effects of individua facilities (tritium supply alone), but also provides the effects of the possible combinations of these facilities (e.g., tritium supply and recycling). The analysis presents different operation scenarios to meeting tritium requirements (less than b operation). The methodology and presentation allow the public and the decision make review and consider all aspects of the project in the course of decision making. Se 4.9 has been expanded to include potential cumulative environ- mental impacts from programs.

16.16 The commentor states that the current draft does not meet the requirements of and its implementing regulations. The CEQ regulations for implementing NEPA call th discussion of alternatives "the heart of the environmental impact statement" (40 CF 1502.14). An EIS must discuss a reasonable range of alternatives, and an EIS that f do so violates NEPA (refer to Natural Resources Defense Council v. Morton, 458 F.2d

(D.C. Cir. 1972)). Because the PEIS analysis is not based on a reasonable range of estimates for the size of the post START II nuclear weapons stockpile for the perio 2003 to 2050 - when the period a tritium supply option would actually be constructe operated - this PEIS fails to analyze a reasonable range of tritium supply alternat and thereby violates NEPA. The uneven treatment and inadequate discussion of some o alternatives considered in the analysis also violate NEPA.

Response: As stated in chapter 2 of the PEIS, the tritium requirements in this docu are based on the 1994 Nuclear Weapons Stockpile Plan approved by the President on M 7, 1994, which projects a need for new tritium by approximately 2011 based on a STA level stockpile size of approximately 3,500 accountable weapons. For a stockpile si smaller than START II, the need for new tritium could be extended beyond approximat 2011. If the need date for new tritium were significantly later than 2011, DOE woul have a proposal for a new tritium supply, and would not be preparing a PEIS for Tri Supply and Recycling. Section 4.11 of the PEIS now includes an analysis of an incre stockpile level and a tritium need date of 2005. The PEIS analyzes the reasonable r alternatives to meet the National security requirements for tritium.

16.17 The commentor feels the decision making process is not truly a public involve process. In the commentor's opinion the public does not vote and therefore the publ does not have an opportunity to decide how tax dollars are spent.

Response: DOE is required by NEPA to allow several opportunities for the public to input on the proposed action and associated environmental impacts. In addition to p scoping meetings and public hearings held at specifically determined points in the and development process, several other methods for public input are available. The can request and review information by mail, electronically through the electronic b board and Internet sites established by DOE, and by calling the toll-free informati line. Members of the public are also encouraged to contact their elected officials concerning the decision making process as well as the spending and budget process.

16.18 The commentor notes that there is no mention of site-specific EISs on environ restoration and waste management or other proposed projects (except those specifica related to weapons material), which would be relevant in assessing cumulative impac and in choosing a site. The commentor asks if these will be considered in the futur site-specific tiered NEPA process.

Response: Compliance agreements at the candidate sites regarding environmental rest and waste management were reviewed relative to environmental impacts as addressed i section 3.3. The analysis also includes the types of waste management facilities, t capacity, and projected life. The project impacts were evaluated based on these lev More detailed analysis would be included in future site-specific tiered NEPA docume Section 4.9 (cumulative impacts) describes the impacts of these actions.

16.19 The commentor greatly approves of the Draft PEIS format and indicates that th following sections were particularly helpful: section 3.1.1 - planning assumptions analysis, section 3.1.2 - environmental impact analysis, and section 4.1.1 - environmental resource methodologies. The commentor also notes that these sections up front in the document rather than buried in an appendix provide a clearer introd to the alternatives and impact assessments. In fact, the commentor believes that al DOE's EISs should include similar sections. The commentor also likes the copresenta of the affected environment and environmental impacts for each candidate site.

Response: DOE will consider these comments in future NEPA documents prepared by the of Reconfiguration and in other DOE programs.

16.20 The commentor suggests that DOE have the NRC review the PEIS. The NRC is not in table 6.2-1 of the Implementation Plan (IP) (1/95) for purposes of coordination consultation. In 10 CFR 1021.100, 1021.101, and 1021.103, DOE acknowledges its obli to comply with the regulations issued by the CEQ as given in 40 CFR 1500 - 1509.

Specifically, under 40 CFR 1502.19, DOE is required to furnish the entire statement "any Federal agency which has jurisdiction by law or special expertise with respect environmental impact involved," and, under 40 CFR 1502.24, DOE "shall ensure the professional integrity, including scientific integrity, of the discussions and anal in environmental impact statements."

Response: NRC has been provided with copies of this document for review as suggeste Meetings and discussions were held with NRC and they have been included in the PEIS process.

16.21 The commentor feels that tritium production environmental impacts, "from init material collection to end by-products," need to be considered. In addition, the commentor feels other focus areas for consideration should include: how will tritiu affect endangered and other species, and how will they be protected; what measures undertaken should a radiological accident occur; and how, when, and where will trit "end" products be stored and disposed of. Also, another commentor states that the P Tritium Supply and Recycling should include information on the environmental condit (for example, Superfund activities) of each site.

Response: The PEIS does consider and evaluate the environmental impacts of the pote tritium supply and recycling facilities on biotic resources including endangered sp at each site (see sections 4.2.3.6, 4.3.3.6, 4.4.3.6, 4.5.3.6, and 4.6.3.6). The em planning and emergency preparedness plans and procedures in place at each site are described in the affected environment sections for each site under the heading "rad and hazardous chemical environment." More discussion of the emergency preparedness procedures as they relate to potential reactor accidents has been added to these se in the Final PEIS. The "end" products of radioactive waste, hazardous waste, and sp nuclear fuel are addressed and included in the analysis presented in the PEIS (see waste management sections 4.2.3.10, 4.3.3.10, 4.4.3.10, 4.5.3.10, and 4.6.3.10).

16.22 The commentor believes that DOE is being politically pressured into making a premature and unnecessary decision. The PEIS does not fully reflect this fact, but commentor strongly encourages DOE to insist on completion of a thorough and open an and discussion of this matter before any decision on future tritium production is m

Response: As discussed in chapter 2, DOE has conducted a thorough and open analysis tritium issue. DOE does not think this is a premature and unnecessary decision. Rat DOE is conducting this action in order to meet its responsibilities set forth in th Atomic Energy Act.

16.23 The commentor believes that each of the alternative technologies and sites ha environmental impacts that will need to be further evaluated and mitigated in futur documentation. The commentor further suggests that the ratings of the programmatic alternatives do not preclude the possibility of future, potentially significant, environmental impacts that may arise when site-specific tiered NEPA analyses are do

Response: DOE has already identified the need for further NEPA analysis in site-spe tiered NEPA documents and discusses the proposed compliance with NEPA for tritium s and recycling in section 1.2 of the PEIS. The possibility of future significant imp could arise but the PEIS attempted to bound the analysis so that impacts identified site-specific tiered NEPA documents would be encompassed.

16.24 In reference to page S-3, paragraph 4, the commentor suggests that the ROD sh also include a decision as to when to start to build the new supply and when it mus online.

Response: The ROD will select potential tritium supply technologies and site locati other issues such as construction and online data for operation are not expected to provided in the ROD. However, the current guidance shows that the tritium supply mu online by 2011. The detailed start and ending dates for any tritium supply and recy

facilities will be included in subsequent, site-specific tiered NEPA document for s facilities.

16.25 The commentor notes that an operational date for the new supply given on page paragraph 5 does not appear to be consistent with the date given near the end of pa S-1.

Response: The statement that new tritium be available for use in the year 2011 is consistent in both sections referred to by the commentor. The confusion may be in t statement on page S-1 that a new "source" of tritium be available by 2009. This mea a tritium supply technology must be constructed and ready to irradiate targets in t 2009 so that the tritium can be extracted and be available for replenishment of the tritium reserves in the year 2011.

16.26 The commentor asks how a person with a Q-clearance gains access to the classi appendix CA.

Response: Personnel with an active Q-clearance may be able to gain access by contac the Director of the Office of Reconfiguration at the following address: Office of Reconfiguration, US Department of Energy, P.O. Box 3417, Alexandria, Virginia 22302 addition, interested parties can call the following toll-free number to obtain more information: 1-800-776-2765.

16.27 The commentor notes that page 1-1, paragraph 1 contains the statement that th no capability to produce tritium within the Complex. While this may be technically correct, the commentor points out that DOE has significant capacity to produce trit described on page S-9.

Response: The statement in section 1.1 has been changed to clarify that DOE does no the capability to produce the required amounts of tritium.

16.28 The commentor requests that the particular NEPA documents referred to on page top of second column concerning the commitment of resources be specified.

Response: The other NEPA documents referred to in this section are the Waste Manage PEIS being prepared by the DOE Office of Environmental Management; the Storage and Disposition of Weapons-Usable Fissile Materials PEIS being prepared by the DOE Offi Materials Disposition; the Foreign Research Reactor Spent Nuclear Fuel EIS and Programmatic Spent Nuclear Fuel Management EIS recently completed by the DOE Office Environmental Management. A discussion of these documents is presented in section 1 To better clarify this, a reference to section 1.5 has been added to the paragraph by the commentor.

16.29 The commentor asks how can a requirement for tritium depend on funding levels mentioned on page 1-2 of the PEIS. In addition, the commentor asks why the operatio date for a new supply is not set only by military needs, treaty commitments, and th of the existing tritium supply.

Response: The tritium requirements are independent of funding levels. The need date independent of funding, however, the operation date is dependent on funding.

16.30 The commentor notes that the fourth sentence on page 3-4 concerning the stora spent fuel states "but no acceptance criteria has been established." Since criteria plural, the word "has" should be replaced by the word "have".

Response: The commentor is correct and the appropriate changes have been made to se 3.1.1 of the Final PEIS.

16.31 The commentor believes that DOE personnel and contractors are resources paid the taxpayers and should be accounted for in the PEIS. The commentor states that su accounting may put to bed concerns that DOE creates programs to maximize DOE jobs v study and development programs with DOE employees/contractors.

Response: The PEIS addresses the socioeconomic issues for each of the alternatives. Tritium Supply and Recycling Program is a result of national defense needs and not program for creating jobs.

17 Regulatory Compliance

17.01 The commentor is of the opinion that DOE needs to resolve the facility regula oversight issue and disclose its decision. In addition, the commentor also suggests DOE should be wary of allowing the state to set regulatory standards as they are of high.

Response: States have the legal authority to establish environmental standards whic be more stringent than Federal standards. In response to concerns that DOE needs regulatory oversight at its nuclear facilities, the Secretary has created an indepe Task Force on External Regulation. This task force is presently reviewing various alternatives for external oversight of activities at DOE's nuclear facilities and w submit a report, with recommendations, early in 1996.

17.02 Six departments within the state government of South Carolina, after reviewin Tritium Supply and Recycling Program, state that it is consistent with their goals objectives. In addition, the proposal is consistent with the South Carolina Coastal Management Program.

Response: As explained in the PEIS, DOE intends to meet all applicable state regula of the affected state in the siting, construction, and operation of the tritium sup technology.

17.03 The commentor notes the classification of radioactive wastes generated by the target, multiplying blanket, and beam stop in the APT is under the jurisdiction of NRC per sections 2(12)(B) and 2(16)(B) of the Nuclear Waste Policy Act of 1982, as amended, and per section 2(9)(B) of the Low-Level Radioactive Waste Policy Act. In addition, the commentor suggests that the NRC review the nuclear waste classificati all options discussed in the PEIS.

Response: Currently DOE-generated LLW is disposed of at DOE facilities and it is no regulated by the NRC. The PEIS was provided to the NRC for review. Mixed LLW is shi offsite and does comply with NRC provisions.

17.04 The commentor provides a rewrite for volume I, chapter 5, table 5.3-4, page 4 water resources row, potential applicability/permits column. The suggested rephrasi as follows: A permit may be required prior to any modification of waters of the sta including stream alteration for the construction of intakes, discharges, bridges, submarine utility crossings, etc.

Response: The phrase "A permit may be required prior to any modification of waters state including stream alteration for the construction of intakes, discharges, brid submarine utility crossings, etc." has been substituted in table 5.3-4 in section 5 the Final PEIS.

17.05 The commentor suggests DOE ensure that all Nevada action alternatives are con

with the State of Nevada's water protection laws. A copy of the those laws were mai DOE. In addition, the commentor believes that PEIS table 5.3-4, page 2 of 5 should modified to indicate that a groundwater withdrawal permit is or will be required fr the Nevada State Engineer.

Response: DOE believes the proposed action at NTS would be consistent with applicab Federal law and State of Nevada water laws. The site-specific NEPA document will an these issues in more detail and DOE will comply with all applicable Federal, state, local laws if NTS is selected.

18 National Nuclear Weapons Policies

18.01 Several commentors express opposition to additional tritium production and continuation of nuclear weapons production for the following reasons: such activity contradiction of the Non-Proliferation Treaty and the decision should be No Action; does not show good faith to other countries; tritium from dismantled weapons can be beyond the year 2011; it is unwise from a fiscal, health, and political standpoint; produces tremendous amounts of hazardous waste which we are already unable to handl Also, commentors suggest reduced nuclear threat has reduced the need for nuclear bo and results of a re-evaluation/negotiation of the Non-Proliferation Treaty could el the need for a production facility.

Response: As a result of the STARTI Treaty, the STARTII Protocol, and the recently completed Nuclear Posture Review, the Nation's nuclear stockpile is being greatly reduced. The Nuclear Posture Review forecasts steady declines in both the size and diversity of the stockpile through the year 2003. Thus, DOE is currently engaged in significant dismantlement effort. Such actions are consistent with the recently rea Nuclear Non-Proliferation Treaty. Additionally, DOE has made significant progress i consolidating the Complex, and is now considering further consolidation to make the Complex smaller and less costly to operate, while protecting the environment and pu and worker safety. With the exception of a facility to make tritium, DOE is not considering the construction of any major new weapons production facilities. The ne a new tritium supply is discussed in chapter 2 of the PEIS.

18.02 The commentor is of the opinion that DOE should not create any more nuclear w until a positive use can be found for it.

Response: As discussed in the waste management sections, all tritium supply alterna will create waste. DOE cannot meet its responsibilities without generating waste. D will attempt to minimize any waste that is produced and to manage waste in a safe a environmentally conscious manner in accordance with all applicable regulatory requirements.

18.03 The commentor states that we should abolish all weapons and not further destr land and the environment. According to the commentor, the SRS tritium production pl has already released significant amounts of radiation into air and water. The comme adds that radioactive elements cannot be stored safely for long periods of time. In addition, the commentor notes that some of the land on military bases that have suc storage will not be able to be used again.

Response: DOE recognizes that its facilities require varying levels of environmenta cleanup and has instituted a cleanup program over the past several years. DOE has w with EPA, states, stakeholders, and the general public to develop long-range progra commitments to clean up its facilities to acceptable levels. All of these plans and commitments have been reviewed for the proposed sites to determine if there are any conflicts or restrictions which would inhibit these sites from serving as good loca for the facilities proposed in the PEIS for tritium supply and recycling. Nothing w found which would inhibit the alternative sites from performing the required missio

a specific site is selected, additional site-specific tiered NEPA documents will be prepared. This analysis will address specific contamination problems of the specifi proposed DOE facility and, to the extent mitigative measures are required to allow ongoing environmental restoration or to prevent additional contamination, it will b integral part of this site-specific analysis.

18.04 Commentors state that DOE should consider technology alternatives that use a commercial reactor for defense purposes and that create saleable electricity. One commentor suggests DOE consider producing excess tritium for sale to other countrie affect taxpayer burden. Another commentor states that developing APT technology cou possibly pose a greater proliferation threat than using ALWRs, which have become a worldwide standard and are a controlled known technology.

Response: The primary purpose of the proposed action is to obtain a new source of t to meet the National defense needs of the future. The PEIS evaluates the reasonable alternatives to meet defense requirements and potential environmental impacts assoc with each tritium supply technology. Although there are other commercial uses for tritium both in the United States and abroad, this use of the new tritium supply to provide tritium for these uses is not proposed. The use of a commercial reactor to irradiate tritium target rods is now included as a reasonable alternative and has b added in the PEIS. The preferred alternative identified in section 3.7 of the PEIS dual track strategy to pursue both the use of an existing commercial light water re and the construction of an accelerator to produce tritium. The preferred alternativ identifies SRS as the preferred site if an accelerator is selected as the primary production option.

18.05 Commentors express support for the National Defense Policy and general missio DOE. Another commentor notes that this is an important process and an important dec

Response: These comments will be considered in the decision making process.

18.06 The commentor is of the opinion that controversy over the nuclear program con hidden agendas designed to kill nuclear power.

Response: The PEIS contains a fair and open assessment of the proposed alternatives

18.07 One commentor states that the government continues to practice "pork barrel economics" by suggesting the possibility of a multipurpose reactor which can dispos plutonium, produce tritium and generate electricity. Another commentor suggests usi plutonium trigger for weapons less than 20 tons of TNT equivalent.

Response: The decision on the tritium supply technology will not be identified unti ROD has been published after this PEIS. Two of the technologies analyzed for tritiu production in the PEIS have the capability to burn plutonium (ALWR and MHTGR), as d commercial reactor alternative. The potential use of these technologies for plutoni disposition has been addressed in the PEIS. DOE does not expect that the ROD on tri production would restrict or prejudice decisions of any plutonium options. In fact, preferred alternative would allow for subsequent integration with future plutonium disposition decisions if desired.

18.08 Commentors suggest that DOE should provide a declassified Nuclear Weapon Stoc Plan showing what it considers a safe and reliable nuclear deterrent.

Response: Chapter 2 of the PEIS is the unclassified version of the Nuclear Weapons Stockpile Plan.

18.09 One commentor refers to volume I, chapter 2, section 2.1 and requests that an explanation or history of the Nation's nuclear weapons stockpile adjustments be pro

(i.e., the impact of recent treaties, the fall of the Soviet Union, the projected t and other associated factors that would affect future tritium needs). In addition, commentor states that the public should be aware of the actual numbers and amounts tritium that are needed. In the commentor's opinion, more analysis on tritium and w needs is necessary and might indicate that further reductions could be made thereby eliminating the need for a new facility. Another commentor suggests that the Final should address the total tritium supply needs for not only strategic defense but al other defense missions, critical non-defense missions and energy security consisten the legally binding goals imposed in Sections 1602, 2001, and 2114 of the Energy Po Act of 1992.

Response: The previous and current number of actual nuclear weapons in the stockpil well as the amount of tritium required for such stockpile numbers, remains classifi the extent possible, the general levels, as well as a correlation to the various tr activities, have been reflected in the PEIS.

18.10 In reference to the last paragraph on page S-1, the commentor questions the b for the year 2009 as the time when the new supply of tritium must be available. The commentor also asks if this is based on START II levels or something else.

Response: As stated in chapter 2 of the PEIS, the tritium requirements in this docu are based on the 1994 Nuclear Weapons Stockpile Plan approved by the President on M 7, 1994. These levels are based on START II levels.

18.11 The commentor asks if DOE is turned over to DOD, what effect, if any, will th on site selection and technology for tritium.

Response: The requirements for tritium would not change as a result of a shift of responsibility from DOE to the DOD. The existing Complex has in the past and is cur charged with monitoring the Nation's nuclear weapons stockpile. There is no reason believe that under DOD the potential sites or the technologies considered for triti production would change.

18.12 The commentor asks what would be the impact of failing to supply tritium by 2 by 2016.

Response: The consequences of failing to supply tritium by 2011 and 2016 is explain section 2.1 of the PEIS. Essentially, after 2011 it would be necessary to use the strategic reserve of tritium to maintain the readiness of the nuclear stockpile. Wi new source of tritium, the strategic reserve would be depleted by 2016 and the nucl deterrent capability would degrade because the weapons in the stockpile would not a capable of functioning as designed.

18.13 The commentor states that it is unacceptable for the Federal Government to kn proceed with a project that they know will cause an increase in the levels of cance estimated for the alternative PEIS sites.

Response: Potential human health impacts are discussed in the PEIS and the ROD will consider these in any decisions for selecting a tritium supply technology or site.

18.14 The commentor states that the manufacturing of nuclear weapons has become a h nest of environmental catastrophes. The cost of cleaning up these catastrophes, the commentor believes, is astronomical. Therefore, the commentor suggests that DOE sho stop making weapons that it never intends on using.

Response: The Nation has significantly reduced its nuclear arsenal. However, even w international treaties and major reductions, tritium will still be required. Chapte of the PEIS addresses the purpose of and need to provide a tritium supply. The DOE of Environmental Management directs an ongoing program to remediate contamination o

facilities due to past operations. The characterization activities of potential contamination areas or any planned or ongoing remediation activities would be consi in the siting of any tritium supply technology at any site. Lessons learned from pa production reactors and the incorporation of the latest designs in proposed tritium technologies are being used to ensure the protection of the environment and minimiz generation of additional waste.

18.15 Commentors believe that global nuclear disarmament should also be considered important variable in the decision to produce tritium. Several commentors believe t the continued existence of nuclear weapons and the materials to assemble them is a to our safety. According to the commentors, as a result of the reduced Russian thre there is no longer a need to produce nuclear weapons. Commentors feel reducing more weapons adds to the possibility of increased terrorist threats. The commentors stat the United States has almost 20 years to continue to seek quick ratification of STA and negotiate deeper cuts. In addition, the commentors suggest that DOE analyze var stockpile levels, not just conservative ones. If reductions are made, the commentor believe that recycling could continue to supply tritium into the twenty first centu thereby greatly reducing the need for tritium. Finally, the commentors note that wh DOE may not have final authority over whether a tritium facility should be built, D should make the case with the Nuclear Weapons Council that the United States does n to make an immediate decision. Commentors recommend a delay since an immediate deci build may be dangerous for the United States.

In addition, commentors refer to section 2.1, paragraph 3, and section 3.1.1, parag and request that the section on sizing be expanded to include the specific reductio the stockpile, or limitations on the stockpile, as a result of specific treaties an international agreements. The commentors ask how much tritium is required to suppor STARTI and START II levels, as a percentage of the pre-STARTI levels. With this information, the commentors believe that it will be easier to understand why the ne supply needs to come online at a specified data. For example, the commentors note t if the STARTII level is 25 percent of the pre-START I level and the last production tritium was in 1988, then a new supply must be available in 2013. The commentors no under START II, implemented in 2003, our arsenal will contain approximately 8,000 w By 2010, the commentors believe that number should be reduced as the result of negotiating further cuts. Therefore, the commentors feel that the need for addition tritium could be delayed well beyond 2010.

Response: The Nation has significantly reduced its nuclear arsenal. Even with these treaties and major reductions, tritium will still be required. Chapter 2 provides t rationale for stockpile size. DOE has to support Nuclear Weapons Stockpile Plan und Atomic Energy Act of 1954. These levels are established to provide an effective nuc deterrent. DOE cannot unilaterally change the stockpile size. The previous and curr number of actual nuclear weapons in the stockpile, as well as the amount of tritium required for such stockpile numbers, remains classified. To the extent possible, th general levels, as well as a correlation to the various treaty activities have been reflected in the PEIS.

19 Allocation of Federal Funds

19.01 Commentors believe DOE should not fund a tritium facility. One commentor clai taxpayers are not ready to pay for a tritium facility for several reasons: the Fede Government is trying to reduce spending; it is a poor use of money that should be s environmental cleanup so as not to leave the cleanup legacy to our children; given imminent financial insolvency of Medicare and the poor state of American schools, proceeding with tritium supply and recycling will only weaken the value of United S currency; and money should be used for people's needs. Also, after spending a lot o money, the commentor notes that the project could be canceled. Another commentor be that DOE's decisions regarding the Tritium Supply and Recycling Program should keep with the proposed legislation to drastically reduce and balance government spending

Response: Congress determines how funds are allotted. DOE spends monies consistent Congressional direction. All of DOE's facilities require some level of environmenta cleanup. DOE facilities were designed in the 1940s and 1950s, prior to environmenta regulatory requirements when the understanding of waste management principals was n it is today. Over the past several years, DOE has had a very aggressive cleanup pro and has worked with EPA, states, stakeholders and the general public to develop lon programs and commitments to clean up its facilities to acceptable levels.

19.02 The commentor suggests that money should be spent on solar power and other alternative energy sources.

Response: The evaluation of utilizing power from a Solar Powered Demonstration Proj NTS has been added to the PEIS. Any further evaluation of methods to reduce electri costs will be done in the site-specific tiered NEPA documentation as appropriate.

19.03 The commentor is of the opinion that DOE should include funding support for t multipurpose facility as part of the FY'95 Energy and Water Appropriation Bill.

Response: The development of the budget and congressional spending process are beyo scope to the PEIS.

20 Support of or Opposition to DOE Policy

20.01 Several commentors oppose the funding and construction of the Tritium Supply Recycling Program because they believe DOE should spend more time and funds on environmental cleanup and waste management at existing sites. One commentor express opinion that DOE should counter any efforts to reduce funds allocated for environme cleanup. For example, the commentor notes that a 9.2 percent decrease in such fundi might require DOE to default on legally binding cleanup commitments. The commentor suggests that if DOE would include in funding estimates for a tritium facility the required to dispose of waste produced by the facility, the project probably wouldn' practical. In addition, the commentors also believe that opening a tritium supply f will have a negative environmental impact. In fact, one commentor states that the t facility should not be built because weapons use is costly and as morally wrong as Vietnam War. The commentor contends that the United States should be reducing weapo stockpiles instead of planning more weapons plant construction, which the commentor believes sends the wrong signal to the other nations and contradicts the assertion DOE is downsizing. Another commentor favors tritium recycling instead of producing tritium because it is safer and less expensive.

Response: As a result of the START I Treaty, the START II Protocol, and the recentl completed Nuclear Posture Review, the Nation's nuclear stockpile is being greatly reduced. With the exception of a facility to make tritium, DOE is not considering t construction of any major new weapons productions facilities. Remediation of contamination due to past operation of DOE facilities is an ongoing program of DOE the direction of the Office of Environmental Management. The characterization activ of potential contamination areas or any planned or ongoing remediation activities w considered in the siting of any tritium supply technology at any site. Lessons lear from past DOE production reactors and the incorporation of the latest designs in pr tritium supply technologies are being used to ensure the protection of the environm minimize the generation of additional waste. Congress determines how funds are allo DOE has no direct participation in funding, only allocation.

20.02 The commentor claims that originally, DOE was going to obey a CEQ requirement DOE identify a preferred alternative for the tritium production facility. The comme states that choice was to be the APT, located at NTS. However, the commentor conten

politicians from South Carolina and Georgia pressured the Secretary of Energy to po the decision. Pork barrel politics should not be involved in the choice, according commentor.

Response: CEQ regulations require an agency identify a preferred alternative in the only when one or more exists (40 CFR 1502.14(e)). At the time the Draft PEIS was published a preferred alternative did not exist because cost and technical studies not completed. These studies now exist and a preferred alternative is identified in section 3.7 of the Final PEIS. The rationale for selecting the tritium supply and recycling alternative will be identified in the ROD. DOE's decision making process weigh factors such as cost, technological feasibility, environmental issues, and po considerations.

20.03 The commentor states that DOE should not continue with its engineering studie are scheduled for the next 5 years. In the commentor's opinion, this will just be a additional burden on the taxpayers. If DOE decides to proceed with the studies, the commentor believes that it will mean that the tritium facility will be built.

Response: Engineering studies will continue to support decisions made by the ROD.

20.04 The commentor asserts that weapons should not be redesigned to avoid the need tritium.

Response: DOE considered but eliminated from detailed study the redesign of weapons require less or no tritium. The reasons why redesign is not proposed are discussed section 3.1.3 of the PEIS.

20.05 The commentor believes that the use of nuclear weapons is never appropriate a urges a No Action decision.

Response: The PEIS analyzes the potential environmental impacts associated with var site and technology alternatives for the production of tritium. Under the No Action scenario, DOE would not have sufficient quantities of tritium to fulfill its requir under the Atomic Energy Act of 1954 to support the enduring stockpile as directed b President and approved and funded by Congress. The tritium in weapons which are bei retired from the stockpile as a result of recent arms negotiations can be recovered utilized in the existing weapons, but this supply is not sufficient to replace the which decays in the existing weapons. Based on a stockpile consistent with the requirements of START II levels, it is expected that an additional supply of tritiu be required by 2011. Accordingly, DOE is proposing to develop a new source of triti The use of nuclear weapons is beyond the scope of the PEIS.

20.06 The commentor believes that Idaho has shouldered the Nation's most undesirabl for far too long. In the commentor's opinion, the other states should accept an equ share of the waste. In addition, the commentor would like to see more environmental protection and less nuclear development.

Response: Only waste generated at INEL would be handled there. No outside waste wou sent to INEL under any other alternatives.

20.07 The commentor believes that DOE should build a reactor fueled by plutonium or enriched uranium.

Response: Section 4.8.3 of the PEIS discusses the option of building a reactor capa burning this type of fuel.

20.08 The commentor believes that Westinghouse should be replaced as the prime cont

Response: This issue is beyond the scope of the PEIS. However, DOE contracts are re on a regular basis.

20.09 One commentor believes that new technology would be developed if sufficient t were allowed to pass before the project is approved, making the Tritium Supply and Recycling Program unnecessary. The commentor notes that by rushing headlong into th project now, we are precluding some feasible alternatives (using tritium from retir weapons). This kind of action the commentor states is what lead to the arms race/bu in the first place. In addition, another commentor believes DOE should delay its de to build a new tritium supply source for 20 years to save money and to phase-out "thermonuclear" weapons production here and in nuclear-capable nations.

Response: Chapter 2 provides the rationale for stockpile size. DOE has to support t Nuclear Weapons Stockpile Plan under the Atomic Energy Act of 1954. These levels ar established to provide an effective nuclear deterrent. DOE cannot unilaterally chan stockpile size.

21 Storage of Special Nuclear Materials

21.01 Commentors state concerns about waste management in Nevada. One commentor is to storage or disposal of surplus special nuclear materials or high-level waste in Nevada. Another notes that State of Nevada officials contend that the PEIS fails to provide any real discussion or assessment of the real waste management risks and eq issues important to Nevadans. Currently, virtually all of the LLW being shipped to is shipped from offsite generators. Equity issues are concerns for Nevadans since D stated that the NTS site could become the largest burial ground in the DOE Complex defense-related radioactive waste. Finally, the commentor states, while the PEIS in an assessment of the potential cumulative impacts associated with some of these sto activities, it fails to consider the civilian spent reactor fuel to be placed at Yu Mountain.

Response: Section 4.3.3.10 addresses the potential waste management impacts at NTS. of the tritium supply technologies will generate high-level waste. Impacts of spent nuclear fuel at Yucca Mountain are not quantifiable at the present time.

22 Commercial Reactor Alternative

22.01 Several commentors believe that cost issues are a priority and offer suggesti addressing this matter in the PEIS. One commentor asserts that there needs to be a estimate for a tritium production and plutonium disposition facility together and a estimate for each facility separately. DOE also needs to compare the three cost est The cost analysis, according to another commentor, should also include the cost to government of a privately financed reactor proposal - how would DOE inform the publ the costs/benefits of a privately- or publicly-owned multipurpose reactor. In addit another commentor feels the high cycle costs of the proposed technology alternative should be a major consideration in the ROD. The commentors also believe that DOE sh compare the costs of accelerator-produced versus reactor-produced tritium and a per tritium cost comparison. Finally, the commentors suggest evaluating the cost of buy tritium versus producing it. The obvious cost-effective option is to locate the tri facility where a tritium recycling facility already exists, at SRS. Other cost-effectiveness-related comments from the commentors include: the idea to utiliz upgrade existing DOE tritium recycling facilities and reactors or accelerators; the to purchase foreign-source tritium such as from North American Free Trade Agreement partner, Canada; and purchasing irradiation services from existing commercial facil

Response: DOE has conducted extensive cost and technical reliability analyses for e the alternatives analyzed in the PEIS. All of this information will be considered a with the information developed through the PEIS to reach an ultimate decision. Info developed to analyze the costs associated with the various alternatives for the PEI further placed under the additional scrutiny of an independent review. Although the studies are not included in the PEIS, as the PEIS deals with the projected environm impacts of the various programmatic alternatives, they are reflected in the Technic Reference Report which is available in DOE reading rooms. No cost analysis was perf on the purchase of tritium from a foreign source. This alternative was considered, determined to be unreasonable, since it would place the Nation's defense at the mer the supply source nation.

22.02 Several commentors state that DOE should consider more closely the use of an existing commercial reactor. Using a commercial reactor might create fewer negative environmental impacts and save money compared to building a new facility, according commentors. Commentors suggest that an analysis be provided of the modifications ne to convert a functioning reactor to tritium production and discuss the prospect of converting a commercial reactor to tritium reduction in more detail, with relation costs, engineering feasibility, and public health and environmental issues. Other commentors believe that the PEIS does not adequately explain the exclusion of eithe commercial reactor-purchase or control rod production alternatives from the full-sc analysis of tritium supply alternatives on page 3-7 and in section 4.10. The commen further state that they believe nothing in existing nonproliferation law or practic suggests that the United States could not legally produce tritium for military or c purposes in a "civil" reactor. One commentor notes that tritium is not a material s to IAEA safeguards, is not regarded as central to the proliferation problem, and is produced for civil purposes, such as runway lighting and fusion energy research. Fi Commentors believe that the existing reactor option should be analyzed in more deta the PEIS and also suggest that DOE develop a list of commercial reactors that are u consideration.

One commentor feels that the nonproliferation policy of the reactor purchase option not sufficiently different from DOE's own proposed ALWR alternative, which includes use of a next generation civil reactor design and the generation of electricity for commercial sale, to justify its "elimination from detailed study." Another commento contends that if DOE is now considering the existing reactor option that they shoul consider the privatized multipurpose reactor. The commentor further states that if existing reactor option were chosen then it should also include the large evolution light water reactor as well. In contrast, other commentors believe that the United should not use commercial reactors for tritium production because we have asked oth countries not to use their commercial reactors for national security efforts and it be considered a violation of the Nonproliferation Treaty. In addition, commentors e skepticism about the conversion of commercial power reactor to tritium production, a new reactor were employed. Commentors also state that military and civilian nucle technologies should be kept separate.

Response: Section 3.1.3 of the Draft PEIS, alternatives considered but eliminated f detailed study addressed the issues of potentially using commercial reactors for th production of tritium. As a result of comments received on the Draft PEIS, DOE is n considering both the purchase of a commercial reactor and conversion to tritium pro and the use of a commercial reactor for irradiation services as an alternative. A m detailed and comprehensive analysis of the purchase of an existing light water reac been added to the PEIS. DOE invited public comments on this specific issue, includi comments on the potential environmental impacts described in section 4.10 of the Dr PEIS, in a special 21 day comment period. Results of that additional comment period included in this Comment Response Document.

22.03 In reference to page 3-29, section 3.4.2.1, commentors request that a discuss included on why a power-producing HWR, such as the Canadian CANDU reactor, has not considered. One commentor asserts that given the objectives on page A-31, it would that basing the design on a modern design that is currently in commercial service, the CANDU, would be preferable to using technology from the 1950s. Another commento

expresses opposition to considering the use of a CANDU reactor as an alternative, a states the United States must stop subsidizing the CANDU reactor in Canada.

Response: Utilization of the CANDU reactors was not considered because the utilizat such facilities, or the sale of tritium generated from these facilities for use in nuclear weapons, is precluded by Canadian law. The heavy water reactor being consid an alternative by DOE, however, is similar in design to the CANDU reactor. The CAND reactor is a reliable but older reactor design. The heavy water reactor alternative considered in the PEIS is the next generation reactor design, is much more advanced the CANDU reactor, and has many more design safety features built in to it.

22.04 Several commentors express dissatisfaction with the length (21 days) of the e comment period for the commercial reactor alternative. One commentor states that se 4.10 of the Draft PEIS does not provide a detailed study of the existing reactor op eliminated as a reasonable alternative. The commentor believes that DOE has not pro adequate justification for the "last minute" decision to allow existing reactors to included in the Final PEIS. The commentor further suggests that DOE provide an oppo for public comments on the Final PEIS, prior to issuing the ROD.

Response: As discussed in the Federal Register Notice of August 25,1995 (60 FR 4432 public comment period was reopened for a limited period to solicit comments on DOE' intention to consider utilizing a commercial reactor or reactors (securing irradiat services) as a reasonable alternative in the PEIS. The decision to treat the irradi services scenario as a reasonable alternative was reached after further evaluation response to public comments on the Draft PEIS, in which several commentors asserted irradiation services (or purchase of a commercial reactor, which was considered a reasonable alternative in the Draft PEIS) have the potential to be a low cost optio would not violate any law nor weaken nonproliferation efforts. Section 4.10 of the PEIS included an evaluation of the environmental impacts of both of these scenarios this discussion has been expanded in the Final PEIS. Although the irradiation servi scenario was considered as a contingency in the case of a national emergency and no a reasonable alternative in the Draft PEIS, the impacts were evaluated in detail an not added to the Final PEIS without providing the opportunity for public review and comment. As the reopened public comment period was intended only to solicit additio comments on analysis available to the public throughout the original comment period 21 day period was deemed to be sufficient. Members of the public may submit comment the Final PEIS, including the alternatives considered and the preferred alternative decision on tritium supply and recycling will not be made until at least 30 days af issuance of the Final PEIS.

23 Commercial Irradiation Services

23.01 Some commentors express support for the purchase or lease of irradiation serv for tritium production. One commentor states that such a purchase from a utility wi an existing reactor is less costly than rebuilding a new facility since the infrast is already set. Other commentors favor the purchase of irradiation services only in event of a national emergency or as a contingency source of tritium. In contrast, o commentor argues that building a new facility to produce tritium or leasing irradia services is contradictory to the Nation's goals of reducing its nuclear weapons sto

Response: The decision to consider utilizing a commercial reactor or reactors (secu irradiation services) as a reasonable alternative in the PEIS was reached after fur evaluation in response to public comments on the Draft PEIS, in which several comme asserted that both have the potential to be a low cost option that would not violat law nor weaken nonproliferation efforts. DOE has conducted extensive cost and techn reliability analyses for each of the alternatives analyzed in the PEIS. Although th irradiation services scenario described above was originally considered by DOE only case of a national emergency, as described in section 3.1.3 of the Draft PEIS, DOE since concluded that it represents a reasonable alternative to be considered for al

tritium supply requirements. These issues will also be considered in the decision o
tritium supply and recycling.