## *Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani, Ph.D*

From: Lois Chalmers / IEER [mailto:lois@ieer.org]
Sent: Monday, June 30, 2003 11:24 AM
To: *CMRR EIS*
Cc: Arjun Makhijani
Subject: Comments - Chemical and Metallurgical Research (CMR) Building Replacement Project Draft EIS

Elizabeth Withers
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Dear Ms. Withers,

Attached are the comments of the Institute for Energy and Environmental Research on the Department of Energy/National Nuclear Security Administration's draft environmental impact statement (hereinafter the "DEIS") proposed Chemical and Metallurgical Research (CMR) Building Replacement Project at the Los Alamos National Laboratory (LANL).

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## *Response to Commentor No. 5*

# *Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)*



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30 June 2003

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Here are the comments of the Institute for Energy and Environmental Research on the Department of Energy/National Nuclear Security Administration's draft environmental impact statement (hereinafter the "DEIS") proposed Chemical and Metallurgical Research (CMR) Building Replacement Project at the Los Alamos National Laboratory (LANL).

Thank you

Arjun Makhijani, Ph.D
President
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# *Response to Commentor No. 5*

# Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)



**Comments on the Draft Environmental Impact Statement (EIS) For the Proposed Chemical and Metallurgical Research (CMR) Building Replacement Project**

Submitted by
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to
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June 30, 2003

**A. Need for the Project**

While the CMR Replacement (CMRR) Draft EIS is not very forthcoming on the details of the need for the new facility, there is an abundant amount of indication that this is an unneeded facility.

The CMR Replacement Facility is proposed primarily to create advanced capabilities for analytical chemistry and for materials characterization related to nuclear materials, non-radioactive analogs and other aspects of nuclear weapons programs that are part of the DOE Stockpile Stewardship Program. 5-1

DOE historical data shows that there have never been aging related safety problems in the primaries of nuclear weapons. Nor have any of the pits in the current arsenal ever had aging related reliability problems. As part of the evidence for that, I am enclosing the IEER study on the Stockpile Stewardship Program that analyzed aging-related issues based on data supplied by LANL. That study is an integral part of these comments.

The CMRR EIS itself states that "no problems [related to aging of pits] have been identified" (p. S-11). The Draft EIS on the Modern Pit Facility states that aging research provides confidence that pit lifetime is 45 years or more and indicates that data exists to support a lifetime estimate of 60 years. It identifies no problems that require pit replacement even beyond that time. Other evidence along the same lines is cited in the comments of Jay Coghlan of Nuclear Watch of New Mexico. Those citations from the DOE and other literature regarding aging are incorporated here by reference and I will not repeat them.[1]

Some materials characterization activities are being carried on in the restricted operations mode in the current CMR building. The Draft EIS provides no detailed rationale that for the going beyond these activities, much less a rationale for an entirely new replacement facility for the CMR. The estimated radiological impacts from some accident events postulated in the Draft EIS are among the most severe outside of reactor and reprocessing plant related events. They are also far more 5-2 5-3

[1] Jay Coghlan, "Comments on the Draft EIS on the CMRR," Nuclear Watch of New Mexico, Santa Fe, June 30, 2003.



# Response to Commentor No. 5

**5-1:** As described in Section 1.3 of the CMRR EIS, the CMRR Facility is needed to house existing LANL mission-critical CMR capabilities. The issue of pit aging is of relevance to the Stockpile Stewardship Program. However, the actinide research and material characterization capabilities housed in the CMR Building and which would be housed in the CMRR Facility support most of DOE and NNSAs mission responsibilities, and are not limited to just supporting the Stockpile Stewardship Program.

**5-2:** The DOE announced its decision in a 1999 Record of Decision for the *LANL SWEIS*, to operate LANL at the level identified in that *SWEIS* as the Expanded Operations Alternative. This then became the level of operation analyzed in the *CMRR EIS* for the proposed action alternatives. The purpose and need for a new CMRR Facility is discussed in Section 1.3 of the *CMRR EIS*. The level of operation that the new facility would be expected to accommodate is discussed in Section 2.4.

**5-3:** As shown in Tables 4-5, 4-15, and 4-25 of the *CMRR EIS*, radiological risks associated with all of the alternatives would be small. No latent cancer fatalities due to accidents would be expected under any of the alternatives, and the highest risk to the offsite population under the action alternatives (0.0005 latent cancer fatalities, facility-wide spill or seismic-induced spill) would be less than the highest risk expected under the No Action Alternative (0.0024, severe earthquake). Comparing the operation of the new CMRR Facility to the operation of a nuclear reactor or nuclear material reprocessing plant does not provide a reasonable comparison. The consequences shown for severe accidents in the CMRR Facility are bounding values that are calculated taking no credit for the safety design and shielding that would actually be present in the new CMRR Facility.

severe than the "no action alternative." Given that the DOE/NNSA is planning to increase risks to the public considerably, there is a need to justify the project in detail to the public that will suffer these risks. A great deal has, in the past, been simply swept under the rug of national security, only later to be revealed to be gratuitously damaging to the health and environment of the people. It is worthwhile, in this context, to recall the statement of then-Deputy Secretary W. Henson Moore in 1989, during the administration of President George H.W. Bush, on his visit to Rocky Flats in June of that year. Nuclear weapons production, he told the press, has been "a secret operation not subject to laws . . . no one was to know what was going on." He added that "the way the government and its contractors operated these plants was: This is our business, it's national security, everybody else butt out."[2]

5-3 (Cont'd)

The skimpiness of the Draft EIS on the justification for a facility that will create significant risks (see below) is lamentable and raises the possibility of a return to these attitudes that should be consigned to regrettable footnotes in history books. The problem should be fixed in the final EIS with a detailed justification for the project including exactly what will be done in the new facilities. Based on the present information, it appears clear that the "no action alternative" is the soundest one among the ones enumerated. Further, the serious consequences of a main vault fire in the existing CMR building described in Appendix C indicate the need to perform operations there with a plutonium inventory that is significantly lower than the 200 kilograms indicated in the Draft EIS.

5-4

**B. Air Emissions from Routine Operations**

The Draft EIS shows that emissions to the air from routine operations would increase greatly. Current CMR emissions are stated to be 0.03 millicuries of actinides, including plutonium, with no releases of fission products or tritium. The new facility releases would be much higher. Actinide releases would increase by more than 25 times to 0.76 millicuries, and there would be significant releases of fission product noble gases, krypton-85, xenon-131m, and xenon-133 (100, 45, and 1,500 curies per year respectively). The new facility would also release 1,000 curies of tritium, mostly in the more hazardous form of radioactive water vapor.

5-5

The Draft EIS does not detail where the fission products will come from. The two xenon isotopes mentioned have relatively short half-lives (11.9 and 5.2 days respectively). Hence these would appear to be from some kind of hot cell operations in which newly radiated actinides would be processed. However, the Draft EIS states that the hot cell operations in Wing 9 of the present CMR building would not be transferred to the new facility. The EIS does not discuss where the irradiated material would come from. It also does not discuss any new hot cell operations, though these seem to be implied by the release in Table 4-21 on page 4-41. Finally, the Draft EIS does not mention potential releases of other fission products such as cesium-137, strontium-90, or iodine-131 even in case of accidents and severe fires. This is mysterious, since the presence of fission product noble gas mixtures is generally accompanied by the presence of other fission products. While these other products might be filtered out of routine emissions, it is unlikely that their release could be prevented in severe accidents, such as those discussed in Appendix C.

5-6

**C. Accident Analysis**

[2] As quoted in *The Washington Post*, 17 June 1989.





## Response to Commentor No. 5

**5-4:** The NNSA notes the commentor's statement that the No Action Alternative is the "soundest" alternative under consideration. As shown in Section 4.2.9.2, Table 4-5, the risk of any latent cancer fatalities resulting from a fire in the main vault is approximately 1 in 500,000. That level of risk would not warrant a reduction in materials inventory at the existing CMR Building. The No Action Alternative fails to meet the NNSA's need for action, and implementing this alternative would result in mission support delays and problems at LANL. Considering the analytical results and the increased technological safety features planned for the CMRR Facility at a LANL location less vulnerable to earthquakes, the CMRR Facility would have the net effect of reducing accident risks to the public. Additionally, the computed consequences of a main vault fire in the existing CMR Building are "unmitigated", meaning that no credit is taken for safety features that would reduce or prevent the progression of a fire and the subsequent release of hazardous radioactive materials in the analyses. This is indicated by the conservative estimate of a leak path factor equal to one and a damage ratio equal to one. If credit were taken for a leak path factor and damage ratio less than one, the estimated consequences and risks for this accident would be greatly lessened. Accident analyses are prepared in part for existing facilities and during the planning stages of new facilities to facilitate the implementation of accident mitigations so that low probability, high consequence accidents can either be precluded by structure design features or management controls, or so the effects of such accidents can be minimized.

**5-5:** The NNSA proposes to construct the new CMRR Facility so that it could function at the expanded operational level identified by the 1999 *LANL SWEIS*'s Expanded Operations Alternative and its associated Record of Decision. As stated in Chapter 2 of the *CMRR EIS*, the new CMRR Facility would not include any hot cell operations, although hot cell operations have been conducted in the existing CMR Building. The *CMRR EIS* is tiered from the *LANL SWEIS*'s Expanded Operations Alternative. This analytical tiering and document production process has resulted in "bounding" impact analyses for the CMRR Facility. Fission products identical to those produced in the CMR Building's hot cells may never be produced by any operation conducted in the new CMRR Facility. However, using the greater operating envelope for the CMR Building and applying it to the new CMRR Facility provides a conservative analyses of

# Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)



Chapter 4 and Appendix C of the Draft EIS contain accident analysis that suffers from a number of technical deficiencies. They also appear therefore to misstate the risks arising from the various events that are postulated. At any rate, they provide no sound and sufficient scientific basis for the conclusion of low overall risk, given the conclusion of high accident consequences for several of the postulated events. 5-7

Appendix C lists five different accidents that it estimates would result in cancer deaths in the offsite population within 50 miles of the facility. These accidents, together with the comparable accidents for the no action alternative are summarized in Table 1 below.[3] 5-8

**Plutonium-239 (equivalent) release, offsite population dose, and offsite fatal cancer estimates for No Action and Preferred Alternatives, CMR Replacement Facility**

| Event | No Action Alternative, Pu-239 release, grams | No Action Alternative population dose, rem | No action Alt., fatal cancers | Preferred Alt. (#1), Pu-239 release, grams | Preferred Alt. (#1), population dose, rem | Preferred Alt. (#1), fatal cancers |
|---|---|---|---|---|---|---|
| Facility-wide (wing-wide for No Action) fire | 102 | 1,020 | 0.51 | 2,030 | 17,029 | 8.5 |
| Main vault fire | 400 | 4,000 | 2.0 | 1,430 | 14,500 | 7.25 |
| Seismic induced spill | 101 | 1,680 | 0.84 | 600 | 8,394 | 4.2 |
| Seismic induced fire | not listed | not listed | not listed | 600 | 6,110 | 3.1 |
| Facility wide spill (radioactive spill for No Action) | 0.02 (Note 1) | 0.31 | 0.00016 | 12,000 | 167,705 | 83.9 |

Source: Appendix C, Draft CMRR EIS

Note 1: The Draft EIS gives a Pu-238 spill of 0.000075 grams. The Pu-239 equivalent of this is estimated here (to one significant figure) by multiplying the weight by the inverse of the half lives and the ratio of the whole body dose equivalent for inhalation for the insoluble varieties of these isotopes.

Note that in every case, the consequences of an accident at the proposed new facility would be far greater than that at the present facility. The existing building is estimated to potentially cause more than one fatal cancer in only one possible event – a main vault fire. This possibility could be eliminated by reducing the amount of plutonium stored in this building from the present 200 kilograms mentioned in the Draft EIS. Instead of that the new facility would greatly increase the plutonium stored.

In order to get the annual risks, the DOE/NNSA multiplies the dose and fatal cancer estimates by an estimate of the frequency of occurrence. Since the frequencies of occurrences are estimated to be very low (apart from the case of a process spill, not shown here) where the population dose estimate is low in any case, the DOE/NNSA estimates that the risk to offsite populations is very low. The highest fatal cancer risk calculated in this way is about 4 in 10,000 per year for the whole offsite population.

[3] The accident designations in the no-action alternative are not exactly the same as those in the preferred alternative (Alternative 1), so the closest terms have been put together for comparison.



# Response to Commentor No. 5

its operating impacts - the real impacts of operating a new CMRR Facility would be, therefore, bounded by those associated with the old building and its operations. The waste impact analysis for the *CMRR EIS* is also bounding, as are most of the other resource impact analyses presented in this document.

**5-6:** The accident scenario analyses presented for all four action alternatives in Appendix C of the *CMRR EIS* evaluated the potential impacts to the public and to site workers from potential accidental radioactive releases. These accident analyses did not include any fission products, such as cesium-137, or strontium-90 because there is currently no material in the existing CMR Facility that would potentially produce significant quantities of fission products. Therefore these isotopes were excluded from the calculated consequences of the accident analyzed the *CMRR EIS*. Even though the new CMRR Facility would not have hot cell operation capabilities, small quantities (gram-sized samples) of irradiated material for AC and MC activities could be used at the new CMRR Facility. The gram-sized quantities could be produced at other facilities with hot cell capabilities such as the Plutonium Facility. The AC and MC activities on this sample would lead to release of fission noble gases that would be within the fuel matrix, but in small quantities, much smaller than those considered for the analyses in the normal releases. The fission products within this sample would not contribute to the consequences that could result from releases of plutonium compounds.

**5-7:** See response to comment 5-3. In addition, Appendix C of the CMRR EIS contains technical details and references pertaining to accident consequences and risks for each alternative.

**5-8:** See response to comment 5-3. In addition, the existing CMR Building has restricted operations which reduces materials at risk and, hence, the consequences and risk to workers and the public in the event of an accident. The new CMRR Facility would operate with materials at risk commensurate with mission support activities up to the maximum level of operation identified by the Record of Decision for the SWEIS, therefore the expected effects to workers and the public in the event of an accident would be correspondingly greater. As noted in Chapter 1.5 of the *CMRR EIS*, NNSA will not address at this time, any decision to remove mission

A quick check of the calculations indicates that the arithmetic appears to have been properly done using models that are in common use currently. However, there are some problems with these figures. A good part of the problem lies in the estimates of event probabilities and to some extent in the determination of fractions of radionuclides that would be released in case of catastrophic events. It is also noteworthy that if the analysis had been extended to a 60-mile radius instead of 50 miles used in the Draft EIS, the affected population would increase from just over 300,000 to more than 800,000, since Albuquerque would come within a 60-mile radius. 5-9

For instance, in case of a fire that "engulfs the entire contents of plutonium" in the main vault amounting to 5.7 million grams, the total estimated to be released is only about one part in 3,000. The event probability is assumed as one in a million. And voilà, the risk to the public become minuscule – a chance of about 7 in a million of a fatal cancer per year in the entire population in a fifty mile radius. In other words if 2,000 identical CMR replacement facilities were built and each operated for 70 years, there would be only one additional cancer in that time in the entire population in a fifty mile radius due to a catastrophic fire. Given the reality of intense fires in the region, this does not appear, on the face of it, to be a credible estimate unless it is provided with a detailed empirical and statistical justification. 5-10

This kind of result may be credible in Cheerapunji, which is the wettest place on Earth, or something resembling it, but not in semiarid, New Mexico. Astonishingly, the Draft EIS makes no mention of the immense Cerro Grande Fire on May-June 2000 that almost engulfed LANL and did destroy many homes in the town of Los Alamos. New Mexico has been suffering from an extended drought and is at risk of large forest fires. To assume that the risk of a fire in the main vault without an analysis of fires that have occurred historically and the probability that they might reach the main vault of the proposed facility is unscientific and renders the risk estimates invalid. Interestingly, the probability of a facility wide fire is assumed to be five times that of a fire in the main vault. Throughout the analysis, the DOE/NNSA has not provided a single reference or piece of data on how the event probabilities were calculated. The complete absence of any discussion of large forest fires indicates that existing data may not have been factored into the analysis at all. It is imperative that DOE/NNSA publish the data and the basis on which it has estimated event probabilities. 5-11

Similarly, the DOE/NNSA has not cited any data to support its assumptions regarding the tiny fractions of plutonium in the proposed facilities that would be released in case of severe fires. During the Cerro Grande fire, LANL facilities had to be abandoned, and had the doors been left open, as postulated in the Draft EIS for the Main Vault fire, the result could have been far more catastrophic than that estimated by DOE/NNSA. The town of Los Alamos also had to be abandoned by its residents. The fire reached within a furlong or two of Area G, where a large amount of radioactive waste is stored in plastic tents and 55-gallon drums. 5-12

The possibility that the Rio Grande near Los Alamos and a considerable downstream area would be severely contaminated with plutonium in the aftermath of the more severe accidents is also not discussed in the Draft EIS. This could be among the most damaging consequences of a main vault fire or a facility wide spill, for instance. 5-13

Further, the DOE/NNSA has not properly examined the consequences of the events it has postulated. Cancer risks are important, but only one part of the problem. For instance, if there were a 12,000 gram spill of plutonium-239, as postulated in one of the events, a part of the town of Los Alamos would turn into a low-level radioactive waste dump. Much of LANL itself, if not 5-14



critical support assignments of CMR capabilities from LANL, nor will the NNSA address any discussion to alter the level of those capabilities.

**5-9:** Appendix C of the *CMRR EIS* describes the basis for the accident consequences and risks and also references documents that form the basis for release fractions (such as DOE 1994b). Estimates of accident frequencies are made based on best available information (such as DOE 2002b). In the case of accidents with a leak path factor equal to one, accident frequencies are low, reflecting the chain of failure events that would have to occur in order for radioactive material to be released in the quantities indicated in the EIS. In such cases, if a leak path factor less than one was included in the analyses, the frequency of the accident would be higher but the consequences and risks would be proportionately lower, reflecting the reduction of material released to the environment. The accident analyses performed for the *CMRR EIS* considered impacts to LANL's surrounding population out to a distance of 50 miles from the accident site because the concentration of radioactive materials decreases with increasing distance from the release point. For example, for an accident at TA-55, increasing the distance used in the calculation of radiological impacts from 50 miles to 80 miles increases the population under consideration from approximately 309,000 persons to over 1,021,000 persons. However, the corresponding radiological impacts on the population that could result from the release of radioactive materials from a fire in the main vault were found to increase from $8.7 \times 10^{-6}$ to $9.3 \times 10^{-6}$ (about 7 percent). Conclusions concerning the radiological impacts of accidents on the population surrounding LANL would be the same whether the 50-mile distance or the 80-mile distance is used in the calculation. Also see response to comment 9-7.

**5-10:** See response to comment 5-9. Additionally, although a regional forest fire would likely have a much higher frequency of occurrence than the postulated internal fire at the CMRR Facility, the consequences of a regional fire on plutonium facilities such as the proposed CMRR Facility would be considerably lower, not just because of the actions routinely taken to protect plutonium in main vaults, but because of the forest thinning actions taken recently at LANL in forested areas to reduce the potential for high-intensity crown fires, such as the Cerro Grande Fire of 2000. (The LANL Site-Wide EIS addresses the effects of a forest fire on

# Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)



all of it would have to be written off. The postulated event is much more severe than most scenarios for dirty bombs. All of the severe events postulated by the DOE/NNSA for the new facility are far more serious than any postulated for the current CMR building, including those arising from an earthquake. The root of the problem is that the inventory of plutonium-239 and other radionuclides that the DOE/NNSA proposed to store in the proposed CMR replacement facility is about 30 times the inventory currently at risk in the CMR building. The amount currently at risk is stated to be 200 kilograms.

5-14 (Cont'd)

In the aftermath of the Cerro Grande fire a good case can be made that large inventories of plutonium do not belong in the Los Alamos area precisely because the entire facility as well as the towns of Los Alamos and White Rock, as well as the nearby San Ildefonso pueblo would be seriously affected. Other pueblos and towns farther away such as Española and Santa Fe could be at serious risk. The possibility that LANL, which is now at the center of the nuclear weapons establishment, would have to be abandoned along with its namesake town in the event of three or four of the events described is not even mentioned in the Draft EIS. What any of these events would do to the economy and society of New Mexico is, of course, not broached at all.

5-15

The Draft EIS also does not consider the alternative of locating the new building at another site, or moving the existing restricted CMR facilities to another site. Neither does the Draft EIS make a serious substantive case for a massive new facility, given that the analytical and materials characterization capabilities proposed for the new CMR Replacement facility would also be present at the proposed new Modern Pit Facility. The Draft EIS mentions that analytical chemistry and materials characterization would be created in the MPF, but provides no real in-depth case for a facility at LANL over and above that now in use at the CMR building. All in all, the proposal for a new CMR facility has the strong scent of plutonium pork (the silvery meat, one might call it).

5-16

5-17

Were it just a matter of pork-barrel politics, IEER would not make any comments on this Draft EIS. But as discussed above, the proposed facility would greatly increase the severity of the harm that would occur to LANL, nearby communities, and possibly to the entire state of New Mexico.

5-18

**Conclusions and recommendations for the Final EIS**

This is perhaps the most unusual Draft Environmental Impact Statements to have been issued by the DOE. A new facility has been proposed to replace one that is half-a-century old. Yet the consequences of severe accident estimates of cancer fatalities has gone up dramatically. The most severe consequences estimated for an accident at the existing CMR projects two cancer deaths in the fifty mile radius. The corresponding estimate for the new facility is more than 80 cancer deaths.

5-19

Granted that the scale of operations and plutonium storage would be greater at the new facility. Still, it is proposed to build a new facility because the old building can no longer withstand seismic and other rigors for the nature of the work proposed. IEER suggests that, even taking an inadequate and seriously deficient analysis at face value, the proposed new facility does not meet the minimal test of protecting public health.

5-20

The Draft EIS is deficient both scientifically and as regard the alternatives that are considered. It is also seriously lacking in its exploration of the consequences of the most serious events for LANL, for the US nuclear posture, for communities near LANL and for the economy and society

5-21



# Response to Commentor No. 5

existing LANL facilities at TA-55 as conditions existed in 1999; the area forest conditions have since been modified both by the Cerro Grande Fire and by subsequent massive forest thinning projects conducted over a widespread area of the Pajarito Plateau, by the Santa Fe National Forest, Bandelier National Monument, the county of Los Alamos, the Pueblos of Santa Clara and San Ildefonso, and LANL).

**5-11:** See responses 9-7, 5-9 and 5-10. The *CMRR EIS* discusses the Cerro Grande Fire in Chapter 3. There is no need to perform an analyses of the probability of a Cerro Grande-like wildfire occurring as an initiating event for a facility-wide fire at LANL or at the new CMRR Facility in order to make a decision about the CMRR Facility. The worst wildfire in the LANL-area history did not burn any of LANL's key facilities (including the Plutonium Facility and the CMR Building), and the risk of a fire of that severity occurring again at LANL within the next 100 years or more has been significantly reduced over the past 3 post-fire years of forest thinning activities. LANL staff is currently engaged in preparing the information needed to perform a new wildfire model for LANL given the recent changes to the area fuel loading. This information will be available in about 2004 as part of the *LANL SWEIS* 5-year review. The *CMRR EIS* considered a facility-wide fire in its accident analyses (see Appendix C.4.1 for details). Consequences of such a fire are independent of the initiating event.

**5-12:** To clarify the events of the Cerro Grande Fire, this wildfire was recognized as such on a Friday. LANL activated its Emergency Response Center late that day, and all operations at LANL underwent normal shut down for the weekend. As the fire progressed (on Saturday it was reported in the local papers as being under control only to have this information reversed the next day as winds carried the fire into new areas), a decision was made late Sunday based on site forest conditions, the unpredictable winds in the area, and the fact that there are a limited number of evacuation routes at LANL, to suspend LANL operations on Monday. Suspension of operations would limit the number of people that would later need to be evacuated to those that live within the townsite, less than half the number of people that would have needed evacuation had the LANL workforce been in place at LANL. The statement regarding the "abandonment of LANL facilities' inaccurately implies a disorderly element to the closure action in the face of the Cerro Grande Fire. The vault fire accident scenario analyzed in the *CMRR EIS*, Appendix C, in which the doors of the vault would remain

Sent By: IEER; 3012703029; Jun-30-03 15:23; Page 8/9

of New Mexico. Shockingly, it appears not to have taken the Cerro Grande fire of only three years ago into account in its event analysis. Equally disturbing is the lack of any discussion of the impact of any of the postulated events on the Rio Grande and the quality of water resources in the region. There is no estimate of the potential economic damage that could result to the state and possibly even to areas beyond the state. 5-21 (Cont'd)

Also problematic is the omission of frank discussion of the impact of a severe accident on Native Americans. The deposition of a large amount of plutonium on Native lands might threaten the survival of the Native Americans of the area as a people connected to the land. Their entire culture depends on it. For these lands to be contaminated with plutonium in range of tens or hundreds of picocuries per gram could have catastrophic consequences. The Draft EIS discussion on environmental justice wrongly dismisses the potential impact as being low and states that it "would not be disproportionately high" (p.4-65). Given that one of the severe incidents postulated might result in high levels of plutonium contamination that could raise the possibility of one of more pueblos becoming too polluted to live and farm on, and given the fact that Native American identity is closely tied to specific lands, the statement by the DOE/NNSA without an accompanying analysis of how much plutonium would be deposited on pueblo lands is cavalier at best. 5-22

The Draft EIS implies that irradiated materials would be processed in the new facility because it gives estimates of releases of fission product noble gases. But it does not discuss any hot cell operations. Nor does it provide any explicit estimate of releases of other fission products such as iodine-131 or strontium-90 in case of accidents. If these are present in the facility, it could have a material impact on the post accident analysis. The allusion to "plutonium-equivalent" may include fission products. If it does, this is scientifically inappropriate and highly unusual. It also does not allow for estimation of long-term impacts of accidents, notably the impacts on land and water resources. The limits for some radionuclides, such as strontium-90, in safe drinking are far more stringent in terms of implied radiation dose than the limits for plutonium. 5-23

The very least that the DOE/NNSA could do in the Final EIS is to:

- Provide a scientific basis for its accident and release fraction estimates, based on real, historical data as well as realistic technical analysis. 5-24
- Provide a realistic analysis of the risk, taking into account the fires that have recently occurred, and especially the Cerro Grande fire. 5-25
- Provide details on any hot cell or irradiated material processing that would occur in the new facility and explicitly include a range of fission products, as they are proposed to be present in the facility, in accident and radiation dose scenarios and social and economic impacts of accidents. 5-26
- Estimate that consequences of severe events to life and property, given that nearby areas may be converted into de facto radioactive waste sites in the event of a facility-wide spill. 5-27
- Estimate the consequences to the present national nuclear posture in case of a severe event. 5-28
- Estimate the consequences to the economy and society of New Mexico in case of a severe event. 5-29
- Provide a detailed case for why the new facility is needed, with and without the assumption that the Modern Pit Facility might be built. 5-30
- Provide an analysis of the consequences of similar events at a different location, where severe fires pose a smaller hazard than at LANL. 5-31
- Extend the accident analysis radius to include impacts on Albuquerque. 5-32

7

open, would be unlikely to occur. This scenario was included in the analyses, nonetheless, because leaving the doors open to the vault would be the only plausible means by which a fire could involve material within the main vault. See response to comment 5-10. Furthermore, standard operating procedures require that plutonium in vaults be placed in a safe and secure condition as identified through a Process Hazard Analysis, DOE Orders and other requirements. Special nuclear material is placed within certified containers, on seismically qualified shelving within locked vaults, and so forth. An accident scenario that includes a failure to carry out these required storage conditions, in addition to the vault doors being left open, and simultaneously having a facility-wide fire occur would be characterized by a still lower accident frequency.

**5-13:** Postulation of an incident by which the Rio Grande and a considerable downstream area would be severely contaminated due to an accident in the new CMRR Facility is such a remote possibility that it would constitute a "worse case scenario" analysis. NEPA analyses include accident scenarios that are estimated to be reasonably likely to occur rather than worst imaginable case scenarios. Should a fire or spill accident occur at the CMRR Facility, the effects would be mostly confined to the CMRR Facility. Postulation of contaminates reaching downstream to the Rio Grande would have to assume unlikely multiple site failures, including no emergency response site cleanup at the CMRR Facility or over the nearly 6 or more miles of territory that would separate it from the Rio Grande.

**5-14:** See responses to comments 5-3 and 5-4, which also apply to a facility wide spill at the CMRR Facility. In addition, the frequency of a facility-wide spill accident occurring at the CMRR Facility is estimated to be $5\times10^{-6}$/year, or once in 200,000 years as discussed in Appendix C. Multiple mitigative design features of the CMRR Facility structures, operational procedures, and engineering controls would all be present at the CMRR Facility. A spill of any size within the building would not result in portions of the Los Alamos townsite being turned into a "low-level radioactive waste dump", nor would LANL have to be "written off". Spills, if they occurred, would be contained and remediated as appropriate.

**5-15:** See responses 5-3 and 5-4, along with responses to comments 5-10 through 5-14. The 1999 *LANL SWEIS* analyzed multiple facility failures due to an earthquake at LANL. Seismic or other causative events of

## Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)

Sent By: IEER; 3012703029; Jun-30-03 15:23; Page 9/9

- Perform a detailed analysis of the consequences of severe plutonium releases on the nearby pueblos. **5-33**
- Perform a detailed analysis of the consequences of severe plutonium releases on the Rio Grande, on the economy and society of nearby communities, of New Mexico, and of states near New Mexico. **5-34**
- Conduct an analysis of whether a major deposition of plutonium in the Rio Grande Basin might affect U.S.-Mexico relations. **5-35**
- Provide an alternative in which no new facility is built and the present inventory of plutonium at the CMR building could be reduced. Such an alternative would seem to be called for in light of the fact that tens of billions of dollars of research on stockpile stewardship have yet to reveal a single aging-related problem connected to plutonium pits. **5-36**
- Provide an environmental justice analysis in case pueblos have to be abandoned. **5-37**

8

## Response to Commentor No. 5

sufficient magnitude to result in the kind of cataclysmic devastation postulated by the commentor are considered "incredible" events of sufficiently remote likelihood of occurrence to be beyond reasonable inclusion in NEPA analyses.

**5-16:** Refer to Section 1.3 of the *CMRR EIS* for the discussion about the need for AC and MC operations at LANL. Consideration of these operations being moved to other DOE and NNSA sites is discussed specifically in Section 1.5.

**5-17:** AC and MC capabilities are needed at LANL irrespective of whether DOE determines that it will pursue a new modern pit facility (refer to DOE/EIS-0236-S2, *Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility*, and the discussion in Section 1.6.2.1 of the *CMRR EIS*). LANL's CMR Building was constructed and operated 50 years before LANL was assigned any mission to support pit production. Should the DOE decide to pursue a Modern Pit Facility at LANL, or at any of the other 4 locations under consideration, the need for a CMRR Facility at LANL will remain.

**5-18:** NNSA opines that the *CMRR EIS* analyses of impacts demonstrates that the operation of a new CMRR Facility would pose small risks to the people and the environment surrounding LANL.

**5-19:** See responses to Comment Nos. 5-3 and 5-8. As discussed throughout Chapter 3 of the *CMRR EIS*, radiological risk to the population surrounding LANL is small.

**5-20:** The NNSA notes the commentor's opinion about the CMRR Facility. A new CMRR Facility would be designed to meet current building codes, including seismic codes, and construction requirements for nuclear facilities of its type, with new state-of-the-art systems and equipment, and utilizing the lessons learned over 50 years of operating and maintaining the existing CMR Building. The operation of the new CMRR Facility would be more protective of human health than that of its predecessor building.

**5-21:** The NNSA opines that the impact analyses provided by the *CMRR Draft EIS* is adequate. Accidents of severe consequence involving plutonium spills and fire are described in detail Appendix C of the EIS. High-consequence accidents evaluated in the *CMRR EIS* bound consequences

that could occur from a combined plutonium spill and fire, whatever the cause of the spill and fire. As indicated in Appendix C and Chapter 4, accident frequencies and radiological risks are small and indicate that the risks to the Rio Grande and regional water resources are also small. Economic damage to the State of New Mexico and surrounding states would be unlikely.

**5-22:** Potential environmental justice impacts for the alternatives are discussed in Sections 4.2.10, 4.3.10, 4.4.10, 4.5.10, 4.6.10, and Appendix D of the *CMRR EIS*. As discussed throughout Chapter 4, severe accidents with high consequences are unlikely to occur. If such an accident were to occur, and if lands surrounding LANL were contaminated, NNSA would respond immediately to ensure public and worker safety. The NNSA would then cleanup contaminated land as required by Federal regulations and DOE orders. DOE Order 151.1A describes the Department's Comprehensive Emergency Management System. Residents in the contaminated area could be temporarily displaced during emergency and cleanup operations.

**5-23:** See response to comment 5-5 and comment 5-6.

**5-24:** As explained in Appendix C, release fractions were obtained from the *CMRR Basis for Interim Operations (BIO)* data supplied by UC at LANL or the DOE handbook on release fractions. Accident scenarios and release fractions were selected to bound the consequences of severe accidents.

**5-25:** See responses to comments 1-9 through 1-12. Recent fires, including the Cerro Grande Fire, did not burn nuclear facilities in TA-55. The risks associated with severe accidents are described in Appendix C of the EIS. High-consequence events evaluated in the *CMRR EIS* bound the consequences of severe accidents, including those that could result from a plutonium spill and fire, whatever the cause of the fire.

**5-26:** No hot cells would be located in the new CMRR Facility. See also the response to comment 5-5.

**5-27:** See response to comment 5-14.

**5-28**: A severe event at any nuclear facility, including the CMRR Facility, would not have immediate impact on the Nation's nuclear posture. Should such a severe event occur, the damaged facilities would have to be replaced.

## *Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)*

## *Response to Commentor No. 5*

Support for maintenance of the Nation's nuclear stockpile would be temporarily disrupted in the unlikely event of a severe event at the CMRR Facility, but not permanently impeded.

**5-29:** The NNSA uses a sliding-scale approach based on DOE's NEPA as described in DOE's guidance on document preparation, *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements (May 1993)*. Guidelines to determine the extent of environmental impact analysis for all environmental resource areas of concern. As shown in Appendix C of the *CMRR EIS*, the frequency and risk of a severe accident were found to be small, and the level of analysis for socioeconomic effects stated by the commentor would not be warranted.

**5-30:** The purpose and need for the Proposed Action are discussed in Section 1.3 of the *CMRR EIS*. The need for the Proposed Action is independent of decisions regarding construction and operation of the Modern Pit Facility. If the Modern Pit Facility were to be constructed, it would be self-contained with regard to AC and MC activities for pit manufacturing (See Section 1.6.2.1 of the *CMRR EIS*.)

**5-31:** As discussed in Section 1.5 of the *CMRR EIS*, it would not be feasible to provide AC and MC support services to LANL if the new CMRR Facility were to be located at another DOE or NNSA facility site.

**5-32**: See response to Comment 5-9.

**5-33:** See response to Comment 5-22.

**5-34:** The NNSA uses a sliding-scale approach as described in DOE's guidance on document preparation, *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements (May 1993),* to determine the extent of environmental impact analysis for all environmental resource areas of concern. As shown in Appendix C of the *CMRR EIS*, the frequency and risk of a severe accident that would cause a severe plutonium release were found to be small, and the level of analysis stated by the commentor would not be warranted.

## *Commentor No. 5: Institute for Energy and Environmental Research, Lois Chalmers, Arjun Makhijani (Cont'd)*

## *Response to Commentor No. 5*

**5-35:** As discussed in Appendix C and Chapter 4, the frequency and risk associated with severe accidents at the CMRR Facility are small. It is unlikely that a severe accident at the CMRR Facility would cause a major deposition of plutonium in the Rio Grande Basin or have any effect on U.S. relations with Mexico. The risks associated with severe accidents at the CMRR Facility do not warrant the level of analysis requested by the commentor.

**5-36:** The recommended alternative would not satisfy NNSA's mission assignment for support and maintenance of the Nation's nuclear arsenal.

**5-37:** See response to Comments 5-22.