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Electronic submittal to DEQ as directed

Subject: Public Comment for Class 2 Permit Modification Request (PMR) Including a Request for a Temporary Authorization for Proposed Modifications to the Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) Permit for the Materials and Fuels Complex (MFC) at the Idaho National Laboratory (INL), Environmental Protection Agency (EPA) Identification Number ID4890008952 (referred to herein as the MFC Permit)

This comment submittal by Environmental Defense Institute addresses the permit request by the Department of Energy and its operating contractor Battelle Energy Alliance, LLC (BEA) for a Class 2 Permit Modification Request (PMR) including a Request for Temporary Authorization (RTA) to the State of Idaho, Department of Environmental Quality (DEQ) for allowing the addition of container storage units and the installation of a shielded container material transfer station. Applicable laws include Idaho Administrative Procedures Act (IDAPA) 58.01.05.012 [Title 40 of the Code of Federal Regulations (CFR) Part 270.42].

The comments submitted herein address only the proposed container storage units that include two asphalt pads measuring approximately 100 ft. by 200 ft. each that are enclosed by chain link fences with access gates. The two asphalt pads are located at the Radioactive Scrap and Waste (RSWF) Staging/Storage Area and the North Fenced Area (NFA). The permit includes other changes such as the shielded container material transfer station will allow transfer of irradiated fuel samples and other small items into and out the hot cell. Also included are proposed changes for a piping modification. And the hazardous wastes allowed are changed.

The DEQ must deny the MFC permit request because it fails to protect the public and environment. The permit omits essential information that would be needed to indicate that reasonable and appropriate measures were considered and implemented in order to protect the public and the environment.

Summary

Absent are the necessary description of the how regulatory requirements are met and how design requirements and hazard analysis had been conducted to derive necessary requirements for preventing or limiting a radiological release.

In fact, not only is the documentation of requirements and mitigating features and controls inadequate, the development of the requirements that would be necessary to achieve protection of human health and the environment is inadequate. In other words, the way this permit submittal meets requirements is analogous to the way the Titanic met requirements — it had the required number of life boats on board. But no one had seriously thought about what would happen if life boats were needed as there were far more passengers on board than the life boats could accommodate.

The process of evaluating the permit adequacy cannot be completed without adequate reference to the existence of adequate analyses for the proposed above ground outdoor storage on asphalt pads. Hazards cannot be analyzed without knowing various characteristics of the waste containers such as fire barrier rating, manner of closure or sealing the container, container materials, and container penetrations such as vents or drains.

When the MFC permit submittal is compared to an above ground outdoor storage facility at the Waste Isolation Pilot Plant (WIPP) in New Mexico, it is obvious that the draft MFC permit falls far short of an adequate permit submittal.

The outdoor storage pads on asphalt proposed at MFC do not protect the chemically-laden and radioactive waste containers from the precipitation from Idaho weather. The containers will not be prevented from rain, snow and ice buildup and water infiltration. Snow removal activities could put containers at further risk of vehicle collisions. The permit lacks in a multitude of ways the adequate protection of waste container integrity.

Fire hazards analysis has not been conducted for the draft permit and necessary procedural requirements have not been specified. Given the unlimited amounts of volatile chemicals, and reactive and ignitable material in the waste, and given the fact that waste transport vehicles do sometimes ignite fires, the lack specific fire hazard mitigations would be appropriate perhaps for a non-radioactive storage facility but is entirely inadequate for the radioactive waste storage facility that includes remote-handled transuranic waste.

The quantity of radioactive waste allowed is enormous relative to INL activities not involving the weapons production waste from Rocky Flats mainly at the Radioactive Waste Management Complex and it is enormous for outdoor storage.¹ The proposed storage in concrete overpacks is unacceptable for indefinite outdoor storage. The verbalized one year storage limit required by RCRA regulations is in fact not a requirement that the facility is required by RCRA to meet.² The

¹ *Draft EIS for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems*, EIS-0373, 2005. Table 3-19 Waste Management Facilities at Idaho National Laboratory. Radioactive Scrap and Waste Facility (RSWF) capacity was 201 cubic meters. The remainder of MFC was 439.7 cubic meters. The proposed storage area is 666 cubic meters. The same EIS, p. 3-47 states that while some transuranic waste is stored at the RSWF “virtually no transuranic waste is generated at INL.””

² Code of Federal Regulations, 40 CFR 268.50 where part 50(c) applies does not have a specified maximum storage time limit, see footnote 3 below. Despite INL’s good intentions there is no definite storage limit.

concrete overpacks include numerous penetrations for venting. One concrete overpack penetration appears to be a drain or vent and is located low on the concrete overpack.

Given the potential for indefinite storage of the material due to temporary or permanent inability to process the waste or identify an operating facility to ship to, the casual dismissal of container degradation is inappropriate. The status of availability of a facility to ship the waste to can change, as we have witnessed with the interruption of waste shipping to WIPP.

An alternatives analysis should be presented that evaluates the need for the large capacity of radioactive waste including transuranic waste destined for WIPP and hazardous chemical wastes in the proposed outdoor storage facility. The alternatives must include consideration of a building enclosure to at a minimum prevent rain and snow accumulation.

Radioactive and chemical emissions from routine operation and from accidents are inadequately addressed and mitigated in the permit request. Routine fugitive emissions and unplanned loss of containment of the stored material is inadequately addressed. The proposed outdoor storage pads are inviting large radiological releases from the loss of container integrity allowing the release of radioactive and hazardous material to blow in the wind. The containers are vented and there is no discussion of the potential routine or accident releases from container venting.

If the Idaho DEQ is interested in protecting the public and environment, it must deny the MFC permit request. A multitude of permit request deficiencies, though not necessarily exhaustive, are described herein.

RCRA Permit Hazard Control for WIPP Far Superior to MFC Permit Submittal

The Department of Energy would not have submitted such an inadequate permit request to the State of New Mexico. In a similar outdoor storage unit and permit request by the DOE to the State of New Mexico in 2016, a much greater level of documentation rigor was presented in the permit request, including a regulatory crosswalk of the requirements and the key design requirements for the storage containers and the facility.³ The capacity of the outdoor storage at WIPP was 1,836 m³ which is comparable to the storage proposed at the INL's MFC of 666 m³.

The permit for WIPP contains many more restrictions, design features and analyses-derived requirements than the permit for MFC, yet the MFC permit allows a comparable amount of waste, more chemically hazardous waste forms and containers with far fewer container features to provide barriers to release the mixed radioactive and hazardous waste. The weather in Idaho also includes more snow precipitation, blowing snow and colder temperatures.

³ Class 3 Permit Modification Request Addition of a Concrete Overpack Container Storage Unit, Waste Isolation Pilot Plant, Carlsbad, New Mexico, WIPP Permit Number NM4890139088-TSDF, September 2016.
http://www.wipp.energy.gov/rcradox/rfc/RES_16-167_Class_3_PMR_Above_Ground_Storage.pdf

Perhaps the reason that DOE-ID submitted such a weak permit to DEQ but a far more rigorous permit document to the New Mexico state environmental quality agency is that DOE expects more rigorous reviews and requirements to be met in New Mexico than they expect in Idaho with Idaho's historically permissive DEQ.

Requested Waste Storage Capacity is Enormous

The requested capacity of the outdoor storage at MFC is enormous compared to other MFC facilities including the Radioactive Scrap and Waste Facility. The storage proposed at the INL's MFC of 666 m³, 333 m³ for each asphalt pad, is enormous relative to current MFC facilities storage facilities and relative to the entire INL storage when Rocky Flats transuranic waste is excluded.

Container Integrity Not Assured

The MFC permit request is deficient and is lacking in adequate description and requirements for the container integrity and robustness, fire protection, natural hazards phenomena (NPH), necessary surveillance and inspection, and other deficiencies documented herein.

In the 2016 permit request for an outdoor above ground storage facility at the Waste Isolation Pilot Plant in New Mexico, the features of the allowed containers are specifically identified and analyzed. In the MFC permit, many types of containers are allowed despite having no analysis pertaining to container integrity, impact or load drop integrity, fire barrier integrity and other characteristics pertaining to containing the mixed waste which includes radioactive and hazardous waste.

The permit for WIPP limits the container type to a specific design of a steel reinforced concrete overpack. The MFC permit allows everything from cargo containers with wooden floors to the concrete "interim storage containers" ISCs. The RSWF Staging/Storage Area allows casks and other non-DOT containers such as facility transfer containers as well as unspecified DOT containers lacking shipping manifests to assure their configuration. INL transport containers including casks have a long history of leakage/spillage of radioactive material. The "anything goes" allowance for any type of container with radioactive and hazardous waste material in it certainly provides flexibility but does not allow review to enable confidence necessary in order to issue a permit. The permit submittal has not provided reasonable assurance or evidence to conclude that there will be appropriate hazard mitigation necessary to provide isolation of the hazardous chemical and radiological material prevent a release to the environment.

The permit for WIPP above ground storage limits the container contents and prohibits reactive, ignitable waste and prohibits reactive sodium (Na) metal waste. The MFC permit allows ignitable, reactive, toxic metal, toxic organic, and listed waste, sodium (Na), yet has less rigorous evaluation of the containers and accident and fire prevention measures.

Indefinite Time Limit for Waste Storage

The permit for WIPP above ground storage limits the storage time to one year maximum and identifies no federal RCRA regulatory driver for the time limit. The MFC permit contains no time limit on storage. The applicable RCRA regulations do not specify a maximum time limit when the waste is waiting for treatment [see the CFR cited by the permittee by phone, 40 CFR 268.50 (c)].⁴ One year is a described limit in the regulations but it is not a maximum limit for the proposed facility. It may be the DOE's intent that the waste storage not exceed one year, but if so, this must be stated explicitly in the MFC permit. The process for the Idaho National Laboratory of the Site Treatment Plan⁵ does not necessarily address container integrity or limit storage times should a disposal path become unavailable.

Unspecified Quantities of Chemical Wastes Allowed

Having "no free liquids" in the containers is appropriate but absorbents (such as kitty litter) to absorb liquid waste in containers are added in roughly estimated amounts. The presence of absorbents containing chemical solvents is not the same as having no chemical solvents in the waste.

Per the draft permit, allowed waste types for the outdoor storage at the RSWF Staging/Storage Area and North Fenced Area include: "Ignitable, Reactive, Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver, Endrin, Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, Cresol, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethylene, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, 2,4,6-Trichlorophenol, Vinyl chloride, Spent or used solvents, other listed wastes from non-specific sources, and hazardous toxic chemical, Na, NaK, Radioactive, and Nonradioactive waste. Solids, liquids, and debris." (See page C-9 of the draft MFC permit.)

The expected amounts of liquid chemical waste may be low. But the permit does not state quantitatively any maximum quantities of chemical waste allowed in the containers.

⁴ Code of Federal Regulations, 40 CFR 268.50 where part 50(c) applies: (c) An owner/operator of a treatment, storage or disposal facility may store such wastes beyond one year; however, the owner/operator bears the burden of proving that such storage was solely for the purpose of accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal. (Emphasis added)

⁵ Here is one example of the "Site Treatment Plan" at <https://www.deq.idaho.gov/media/60179380/inl-annual-site-treatment-plan-report-1116.pdf> These plans appear to provide a status but do not appear to impose requirements on INL waste storage, such as time limitations. The document is difficult to understand and fails to identify naming schemes for various waste sources. The document is inscrutable. It is also very difficult to understand why such an enormous increase in mixed waste (hazardous chemical and radioactive waste) is required at the Materials and Fuels Complex, MFC.

Fire Hazards Inadequately Mitigated

In the 2016 WIPP permit, electric forklifts are utilized for specific operations. In the MFC permit, there is no discussion of the fire hazards posed by vehicles and container transporters, which may pose a potentially significant fire hazard and inherent combustible loading of the vehicle's fuel. Similarly lax, there are no combustible loading inspections or combustible loading limits for the outdoor pads at RSWF staging/storage area and North Fenced Area (NFA) where the mixed waste, radioactive and hazardous waste, will be stored outdoors. Wooden floors are accepted in the cargo containers. There are no container fire barrier ratings provided for the various container types allowed, which would be necessary in order to conduct a rigorous fire hazards analysis.

In the MFC permit, it is assumed that adequate fire hazards analysis will be conducted for the new activity. With investigation of the Department of Energy's track record on deficient and out of date fire hazards analysis for its nuclear facilities at the INL, the DEQ would be far more skeptical than to assume the DOE would provide adequate and timely fire hazard analysis with professionals of all necessary knowledge bases needed to address the chemical and radiological hazards of the outdoor storage facility. At MFC in particular, safety studies have historically been decades overdue. And importantly, even approved analyses have not been a reliable indicator of analysis adequacy.

Fire hazards inadequately documented and insufficiently mitigated has been the rule rather than the exception at the INL. The MFC permit request does not provide container fire barrier analysis of fire rating, does not provide adequate control of combustible loading including oil and gasoline from vehicles including those that transport radioactive material containers. Why wouldn't vehicles inside the facility require a fire fighting escort?

The permit does not specify a vegetation standoff distance from the facility to assure that expected sage and grass or tumbleweed wild fires do not pose a fire hazard. ^{6 7 8}

Would the contractor at WIPP even attempt to ask New Mexico to accept cargo containers with wood flooring at an outdoor facility storing transuranic waste? I seriously doubt it.

The MFC permit does not specify fire protection equipment being available or provide any assurance of its adequacy. The WIPP permit, on the other hand, at least describes the existence of fire hydrants. While this is inadequate, it is at least something. With the multitude of INL and MFC nuclear facilities to protect, there is no reason to expect that the above ground storage facility protection will be accomplished among potentially competing demands of range fire conditions. I

⁶ *Draft Idaho National Engineering and Environmental Laboratory Wildland Fire Management Environmental Assessment*, p. 2, DOE/EA-1372, September 2002. Between 1994 and 2000, 136,000 acres burned on the INL site and several hundred thousand acres of BLM managed land on the Snake River Plain burned.

⁷ *State of Idaho Oversight Monitor August 2001*, p. 6. In 2000 alone, 62,000 acres of INL burned.

⁸ Department of Energy, Occurrence Report, NE-ID-CFA-2007. In 2007 10,000 acres INL burned.

have seen how quickly the predicted direction of a range fire at the INL can change and how this serious emergency is an expected event at INL.

Wide Variety of Inadequately Analyzed Containers

The MFC permit would allow such a wide variety of containers with insufficient analysis of each that container integrity from degradation over time or from incidents cannot be assumed to be prevented. Yet, the amount of material at risk is enormous and release of a small fraction of the material could be environmentally and economically devastating to Idaho communities.

Non Department of Transportation (DOT) containers are in fact allowed in the outdoor storage facility. The analysis of impact resistance, and other characteristics pertaining to containing the material in each allowed container type is lacking and needs to be provided. Many container types allowed may actually be quite fragile to forklift impact, load drop, etc.

More specific surveillance requirements are needed for the containers to prevent container degradation. The outdoor conditions of the permit request simply do not adequately protect container integrity.

Natural Phenomena Hazards and Other Hazards

Natural Phenomena Hazards analysis lacking for the containers and analyses should be cited for seismic, wind, fire, flood, lightning and missile hazards. The Department of Energy has a long history of inadequate seismic analysis. While the concrete overpacks called ISCs appear adequate seismically, the arrangement of their internal contents is less obviously adequate and requires analysis of allowed configurations. The DEQ should require the DOE document the completion of and adequacy of seismic analysis for all the allow containers at the facility. Likewise, DEQ should be requiring DOE to prove that seismic analyses for all INL nuclear facilities have been completed and issues remedied. Isn't several decades long enough to wait for DOE to complete an adequate seismic analysis of its nuclear facilities?

Analysis of container loading and movement, including sliding and tipover of containers and of container lifts and equipment is likewise needed in addition to the requirement of no stacking of containers. Does the no stacking requirement apply to drums and other containers store inside cargo containers? The permit lacks identification and verification of the existence of adequate analyses for the concrete overpacks as well as for all the containers allowed on the asphalt pads.

Water Infiltration Not Prevented

Container integrity requires prevention of run-on mitigation which cannot simply use the arguments applied for containers that are stored inside a building. With the multiple vents and drains of the ISCs and the unstated design of other allowed containers, the permit has not adequately addressed water run-on mitigation.

Container integrity requires precipitation mitigation of rain, snow and ice and must address the

specific needs of Idaho weather. The cut-and-paste approach that took the precautions from indoor storage and extended it to outdoor storage in Idaho weather is inadequate to protect the containers from water infiltration resulting from rain, snow and ice. The unspecified duration of storage as well as allowed build up of snow and ice on the containers could allow significant ingress of water into the various container types as well as container degradation. The removal of snow may invite vehicle collisions in the facility. For these and other reasons stated herein, outdoor storage is not protective of container integrity and must not be permitted.

Container Venting Not Described

Container integrity assurance must also address normal and expected and excessive container venting to environment. Radiolytic headspace analysis must be provided. Assurance of staying below lower flammability limits is needed.

Fugitive emissions from the storage for other INL facilities are large and are typically based on guesstimates. There must be analysis and monitoring of possible fugitive emissions from the new outdoor storage facility. The extent expected as well as unplanned container venting to the atmosphere has not been addressed in the draft MFC permit.

In fact, the concrete containers for MFC, called Interim Storage Containers (ISCs) have 4 vents and one drain that may be plugged. The ISCs are to hold remote-handled mixed (radioactive transuranic and hazardous) waste, or RH mixed waste. Remote-handled radioactive waste containers to be put in the ISCs would have a surface dose of 200 milliRem or greater.

Extended time durations of storage up to one year and exceeding one year all but ensure significant fugitive emissions from venting and container leakage or loss of integrity.

Container Loading and Vehicle Controls

WIPP above ground storage engineered curbs to prevent forklift collision with waste containers. WIPP has addressed waste container loading issues. The MFC permit apparently relies on no driver mistakes occurring, despite all weather conditions and future surface irregularities as dips and puddles in the asphalt increase.

Asphalt Surface Adequacy Not Assured

Vehicle and load weight and traffic allowing asphalt deterioration may lead to vehicle tipover. WIPP above ground storage uses an engineered steel-reinforced concrete pad rather than an asphalt surface. Vehicle and container weights should be provided as provided in the WIPP permit. The hazard of unlevel road and storage pad surfaces for load transport and storage in the facility do not appear to be adequately addressed. In fact, documentation to support concluding that the asphalt pad is adequate for the expected traffic and loading has not been adequately provided.

Emergency Response

MFC has not had independent emergency response auditing in decades or perhaps ever, from DOE Oversight organizations outside of operating DOE field offices. Emergency response capability has not been audited for decades specifically because MFC safety documentation was known to be inadequate for years.⁹

Because the disposal destination for some of the waste to be stored at the new facility is the DOE's defense waste transuranic waste disposal facility in New Mexico called WIPP, the findings of the Defense Nuclear Facility Safety Board are applicable. The DNFSB has found that identified weaknesses in the nuclear facility emergency response that have not been remedied by the Department of Energy.¹⁰

Permittee History

The INL has a checkered past in inadequate fire protection, inadequate safety analysis, inadequate worker radiological protection, inadequate worker safety protections, and inadequate load handling. Many situations including recent experiences have involved load drops, improper equipment rating, and collisions. The wide variety of container types and transporter types increases the likelihood of mishaps during load movement or other vehicle movement.

At the MFC, the DOE's own accident investigation of the 2011 accident at the MFC's ZPPR facility¹¹ that resulted in plutonium inhalations that curtailed radiation work for some workers for many months found that decisions by BEA for removal of equipment to protect workers lacked technical basis. Warnings were given to MFC management 19 times concerning worker hazards at the ZPPR facility but no action was taken.¹² Such is the "business as usual" at MFC which is to remove safety mitigations on the basis of desired cost savings but without making a technically justifiable safety case. DEQ should be very suspicious that dangerous shortcuts may continue in the future from DOE's BEA at the MFC.

⁹ See Department of Energy Oversight 2012 report which decided to omit auditing INL's MFC at http://www.hss.doe.gov/IndepOversight/docs/reports/semevals/July_2012_INL_Site_Preparedness_for_Severe_Natural_Phenomena_Events_at_INL.pdf

¹⁰ See Defense Nuclear Facility Safety Board (DNFSB) report for 2016 at https://www.dnfsb.gov/sites/default/files/document/10173/ar_2016330_29921.pdf. Despite the importance of the recommendations of the DNFSB, most DNFSB recommendations to the Department of Energy go unheeded. Even so, DNFSB should provide more attention to the Idaho National Laboratory that in previous years has claimed that generation of transuranic waste at INL was virtually none. Now, we learn that 666 cubic meters of storage capacity is needed for transuranic waste destined for WIPP and/or other radioactive waste with other destinations for disposal.

¹¹ U.S. Department of Energy Office of Health, Safety and Security Accident Investigation Report, "Plutonium contamination in the Zero Power Physics Reactor Facility at the Idaho National Laboratory, November 8, 2011," January 2012.

¹² Patrik Malone, Peter Cary, *The Center for Public Integrity*, "Nuclear Negligence – Part Five: The inhalation of plutonium by 16 workers is preceded and followed by other contamination incidents but the private contractor in charge suffers only a light penalty," June 28, 2017 <https://apps.publicintegrity.org/nuclear-negligence/repeated-warnings/>

Insight into BEA's track record for compliance with its permits can be gleaned from its air permit at the ATR Complex. While BEA conducted the required gamma monitoring on the pipe containing waste water sent to the Evaporation Pond and conducted routine monitoring by the permit, it did not discover that excessive radiological material had been sent to the open air evaporation pond that it was not intended to receive, except by chance radiological monitoring for pond liner replacement. The soil contamination outside of the evaporation pond boundaries remains undocumented yet has likely been extensive. The DEQ remains curiously incurious about the excessive open air release of long-lived radioisotopes in resins that are so highly radioactive that no non-federal radioactive waste disposal facility will accept the radioactive resins. The inadvertent release of resins to the evaporation pond appears to be a long standing hidden mal-practice at the INL.¹³ The DEQ has not offered any evidence to conclude that the unintentional releases to the evaporation pond are insignificant.

Public Process

I attended the public meeting for the permit change. While DOE and BEA have been polite and responsive, I need to point out that on numerous occasions in person and on the phone, I was given answers to my questions that were not just imprecise —the answers were at times inaccurate and the answers were evolving over time. I asked whether the waste included chemical solvents. I was told no. But the permit allows unspecified amounts of numerous chemical solvents. I was told the waste storage was limited to one year maximum. But the permit does not state a storage limit, nor does the applicable RCRA regulation impose one. When I asked about vents I was told the containers did not have vents. Later I was told the concrete overpacks are vented. The evolving answers to some fairly straightforward questions are another strong indication of permit development and document inadequacy.

Locating the draft permit required a search of the INL digital library as no filtering or direct link was provided. Various logistics to facilitate public comment have been generally lacking.

Also in regard to transparency and accountability is the decision by DEQ to remove several decades of taxpayer funded DEQ environmental monitoring from its website. These reports generated before 2010 are a tiny fraction of the DEQ's website and are important to the transparency of the state monitoring program and INL operations. DEQ will charge fees for office help and copying for visitors granted permission to see paper records in its Idaho Falls office.

Closing Summary

Idaho Department of Environmental Quality must not accept this MFC permit change request which is of much less rigor than DOE would submit to the State of New Mexico. Idaho DEQ needs to protect Idahoans and Idaho from careless operations at the INL. DEQ must reject the MFC

¹³ Department of Energy Occurrence Report NE-ID—BEA-ATR-2016-0014. "Contaminated Soil Outside Warm Waste Evaporation Pond at the ATR Complex." a copy made available on our website www.environmental-defense-institute.org/publications/ATR-2016-0014.htm

permit request as submitted by the Department of Energy and BEA. The Department of Energy and its contractor, BEA, need to go back to an analysis of alternatives and a complete revision of its draft MFC permit request.

Respectfully Submitted,

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