I. JURISDICTIONAL STATEMENT

These consolidated petitions involve orders of the U.S. Nuclear Regulatory Commission ("NRC"). Jurisdiction lies under the Hobbs Act, 28 U.S.C. §2342(4), Atomic Energy Act ("AEA"), 42 U.S.C. §2239(b), and Administrative Procedure Act ("APA"), 5 U.S.C. §702 *et seq.* Petition 06-1301 was timely filed on August 15, 2006, within 60 days of June 23, 2006, date of the license. Petition 06-1310 was timely filed on August 31, 2006, within 60 days of August 17, 2006, date of NRC's decision in CLI-06-22.

Standing is based upon declarations of three persons resident near the proposed National Enrichment Facility ("NEF"), demonstrating imminent injury, redressable by the action of this Court.

II. STATUTES AND REGULATIONS

Statutes and regulations appear in a separate addendum.

III. ISSUES PRESENTED FOR REVIEW

1. Whether NRC violated AEA §193, which requires NRC to prepare an Environmental Impact Statement ("EIS") for an enrichment plant "before the hearing . . . is completed," when, after the hearing, it supplemented an inadequate EIS?
2. Whether NRC violated AEA §193, which requires NRC to hold an adjudicatory hearing on the record, when it determined that near-surface

disposal of depleted uranium is a "plausible strategy" by adopting a decision by state regulators?

3. Whether NRC violated APA standards when NRC ruled that near-surface disposal of depleted uranium waste is a "plausible strategy" but:

    a. made no determination that such disposal would comply with 10 C.F.R. §§61.41 and 61.42, as precedents require?

    b. ignored fundamental parts of the problem, such as human presence, impacts after 1000 years, erosion, and doses exceeding regulatory limits, and relied upon several misconceptions?

    c. failed to articulate criteria for "plausible strategy"?

    d. changed criteria for "plausible strategy" without justifying new criteria?

    e. gave intervenors no opportunity to present evidence addressing new criteria?

    f. determined that large amounts of depleted uranium were Class A low-level waste under 10 C.F.R. §61.55, suitable for near-surface disposal, contrary to its determination in issuing §61.55?

4. Whether NRC violated AEA and APA when it rejected challenges to estimates of costs of DOE's dispositioning of depleted uranium, where NIRS/PC alleged specific errors in cost estimates?

5. Whether NRC violated APA and the National Environmental Policy Act, 42 U.S.C. §4321 *et seq.* ("NEPA"), in ruling that human presence at the depleted uranium disposal site should be disregarded as "remote and speculative," where NRC determined that human intrusion is "likely" in issuing 10 C.F.R. Part 61, and humans had recently visited the site?

6. Whether, in analyzing NEPA impacts, NRC may adopt a state agency's analysis without independently analyzing its conclusions, where that analysis was fundamentally flawed?

7. Whether a Commissioner should have recused himself, after publicly stating that NIRS uses "factoids or made-up facts or irrelevant facts in order to try to condition the public" and "to spur fear in the public" and that the NIRS/PC's key expert "doesn't know anything about radiation"?

IV. STATEMENT OF FACTS

a. Initial proceedings:

On December 15, 2003, Louisiana Energy Services, L.P. ("LES") applied for an AEA license to construct and operate a uranium enrichment plant. (59 N.R.C. 10 (2004)). NRC's hearing notice included an accelerated schedule, calling for a determination within 30 months. (*id.* 16-21). NRC referred to the LES's obligation to present a "plausible strategy" for dispositioning depleted uranium waste. (*id.* 22).

NIRS/PC petitioned to intervene (Petition, April 6, 2004), and the Atomic Safety and Licensing Board ("Board") admitted contentions, including:

a. LES lacks a "plausible strategy" for disposal of depleted uranium, because its hazards require it to be disposed of in a deep geological repository.

b. LES's decommissioning cost estimates are inadequate, since LES erroneously assumes that the costs are for low-level radioactive waste ("LLW"), and the engineered trench method of near-surface disposal is not acceptable.

c. The Application does not adequately describe economic impacts of the NEF.

Louisiana Energy Services, L.P. (National Enrichment Facility), LBP-04-14, 60 N.R.C. 40, 77-80 (2004). The Board referred to NRC a contention that depleted uranium is not LLW. (*id.* 67).

b. Draft EIS:

In September 2004 NRC issued the Draft EIS ("DEIS"), containing minimal discussion of depleted uranium disposal. (NIRS/PC Ex. 152 at 4-58, 4-59). NIRS/PC moved to contend that the DEIS incorrectly analyzed disposal impacts; that depleted uranium cannot be deemed Class A LLW, thus suitable for near-surface disposal (as the DEIS did) without NEPA analysis, and should be disposed of as Greater than Class C ("GTCC") waste. (Motion 12-16, Oct. 20, 2004). Amendment was denied. (Memorandum 15-17, Nov. 22, 2004).

c. LLW ruling:

On January 18, 2005, NRC ruled that depleted uranium is LLW, but did not address disposal performance, whether depleted uranium is "acceptable for disposal in a land disposal facility" (10 C.F.R. §61.2, *Waste*), nor "whether it meets one of the particular low-level waste classifications." (CLI-05-05, 61 N.R.C. 22, 26, 28-29, 34)(2005). NRC emphasized that the "bottom line for disposal" is the 10 C.F.R. Part 61, Subpart C radiation limits (*id.* 31) and that this question—"which relates both to the plausibility of LES's proposed private disposal options, and to financial assurance"—remained before the Board. (*id.* 35).

NIRS/PC moved again to contend that near-surface disposal would not meet 10 C.F.R. Part 61. (Motion, Feb. 2, 2005). The Board refused. (Memorandum 6-14, May 3, 2005).

d. February 2005 hearings; the Board's "First Decision":

NIRS/PC contested the DEIS forecast that the NEF would serve 25% of U.S. demand. (NRC Staff Ex. 36 (draft) at 1-5; 60 N.R.C. at 80). The Board heard such environmental issues in February 2005 (*See* NIRS/PC proposed FFCL at 41-51, March 14, 2005), but upheld the estimates. ("First Decision" 68-82)(June 8, 2005).

e. The LMI dispositioning cost estimate:

In June 2005 LES produced an estimate by LMI Government Consulting ("LMI"), a unit of Lockheed Martin, Inc., of costs of deconversion and disposal by

DOE. (LES Ex. 86). The Board had stated that "the reasonableness of the estimated costs of either the DOE plausible strategy or any potential private disposal strategy will be at issue in this proceeding." (Memorandum 14, June 30, 2005).

NIRS/PC moved to contend that LMI erroneously assumed (a) disposal at the Envirocare of Utah site ("Envirocare") and (b) an inadequate contingency allowance. (Motion 30-35, July 5, 2005). NIRS/PC proffered testimony that (a) Envirocare could not meet Part 61 dose limits and depleted uranium from enrichment was not Class A LLW, and (b) the contingency allowance should reflect DOE's cost experience. (*id.*). The Board refused amendment, holding the LMI estimate immune from challenge under §3113 of the USEC Privatization Act, 42 U.S.C. §2297h-11 ("§3113"), but deemed the contingency allowance contention otherwise "sufficient to establish a genuine material dispute." (Memorandum 21-22 & n.15, Aug. 4, 2005).

f. NRC remand as to impacts of near-surface disposal (CLI-05-20):

NIRS/PC sought NRC review of the First Decision, including the rejection of contentions about EIS disclosure of disposal impacts. (Petition, June 23, 2005). On October 19, 2005 NRC held that NIRS/PC had timely moved to contest the

EIS.[1] (CLI-05-20 (2005)). It directed the Board to "resolve the 'impacts' contention" in scheduled October 2005 hearings and to add any "impacts" findings to the NEPA record of decision. (*id.* 27, 30 n.59). NRC acknowledged that LLW classifications were established without NEPA analysis of near-surface disposal of large quantities of depleted uranium (*id.* 29-30) and allowed the "waste impacts contention to go forward because a formal waste classification finding is not necessary to resolve the disposal impacts contention." (*id.* 30-31).

NRC later affirmed the remainder of the First Decision, including the ruling upholding estimates of market impacts. (CLI-05-28 at 7-10)(Nov. 21, 2005).

g. October 2005 hearings:

At the October 2005 hearing on "safety-related" contentions and disposal impacts, LES (Tr. 2617-18) and Staff (Tr. 2865-67, 2870, 2881) agreed that a "plausible strategy" must meet Part 61 dose limits. The FEIS discussed disposal impacts as follows:

> The environmental impacts at the shallow disposal sites considered for disposition of low-level radioactive wastes would have been assessed at the time of the initial license approvals of these facilities or as a part of any subsequent amendments to the license. For example, under its Radioactive Materials License issued by the State of Utah, the Envirocare disposal facility is authorized to accept depleted uranium for disposal with no volume restrictions (Envirocare, 2004). Several site-specific factors contribute to the acceptability of depleted uranium disposal at the Envirocare site, including highly saline groundwater that makes it unsuitable for use in irrigation and

[1] NIRS/PC's contentions addressed to the DEIS are construed to apply to the FEIS. (Second Decision 24 n.17; Ruling on Motion to Amend 13, March 3, 2006).

> for human or animal consumption, saline soils unsuitable for agriculture, and low annual precipitation (NRC, 2005c). As Utah is an NRC Agreement State and Envirocare has met Utah's low-level radioactive waste licensing requirements, which are compatible with 10 CFR Part 61, the impacts from the disposal of depleted uranium generated by the proposed NEF at the Envirocare facility would be SMALL. (NRC Staff Ex. 36 at 4-63).

Staff explained that "small" meant that doses would meet Part 61 limits. (Tr. 2870, 2881). The Board stated that the 25 millirem per year limit in 10 C.F.R. §61.41 sets the standard. (Tr. 2740, 3075-76, 3080).

The Board ruled that §61.41 and §61.42 contain no time limit. (Tr. 2699-2700, 2907, 2910, 2914-15, 2986, 3076). LES's expert proposed a 1000 year compliance period but conceded that Part 61 contains no time limit. (Tr. 2618-19, 2660). Staff agreed that a time limit would require a rule change. (Tr. 2890, 2894).

NIRS/PC's expert witness, Dr. Arjun Makhijani, emphasized the high specific activity and long half-lives of uranium isotopes and daughters and the large quantity (Makhijani disposal direct 16, 20-24)—factors supporting dose calculation without time limit, *i.e.*, "[i]n the year of maximum exposure." (*id.* 24; NIRS/PC Ex. 152 at 4-59; NRC Staff Ex. 36 (final) at 4-63).

All analyses presented of near-surface disposal showed violations of Part 61. NRC's 1992 study in the Claiborne case[2] concluded that "[i]ntruder radiological

[2] LES's application to license the Claiborne Enrichment Center was the first NRC proceeding to license a private enrichment plant. In 1998 LES withdrew the

doses . . . are large at all times," finding violative doses at 1000 years, 10,000 years, and year of maximum dose. (Tr. 2889; NIRS/PC Ex. 128 at 11-14, 19-20, 48-49). The 1999 DOE Programmatic Environmental Impact Statement ("DOE PEIS") reported doses of 10 rems after erosion of the cover. (LES Ex. 18 at I-19).

Dr. Makhijani's November 2004 report examined a site like Envirocare. (Tr. 3042, 3050). From pathways not involving ground water, it found annual doses of 30 to 75 rems. (NIRS/PC Ex. 190 at 23-29, Table 5; Makhijani disposal rebuttal 18). His July 2005 report analyzed the Waste Control Specialists ("WCS") near-surface site and showed annual doses of 44 to 120 rems. (NIRS/PC Ex. 224, Table at 16, 8-24; Makhijani disposal rebuttal 18; Tr. 2989).

LES and Staff advocated Envirocare (LES disposal direct at 15-16; rebuttal at 7; Staff disposal direct at 4-7; rebuttal at 5-6), which was analyzed for the Utah Division of Radiological Control ("DRC") in Baird, et al. (1990)(NIRS/PC Ex. 170)(the "Baird Report"). At Envirocare waste would be disposed of under 2.9 meters of cover. (*id.* 4-5 through 4-9). The Baird Report examined human "intruder" scenarios of construction, agriculture, and exploration. (*id.* ES-2). It modeled erosion (*id.* 2-9 through 2-11), but it only examined 1000 years of

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application. *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), 47 N.R.C. 113 (1998).

performance, limiting erosion's impact. (*id.* 2-12, 5-5).[3] Based upon calculated doses, it recommended concentration limits (*id.* 3-3; Tr. 2705-09, 2896), which would bar depleted uranium. (NIRS/PC Ex. 170 at 5-12, 5-14; Tr. 2709-10, 2897). Utah adopted such limits. (NIRS/PC Ex. 273 at 6-8; Tr. 2916-17). Dr. Makhijani testified without contradiction that the Baird Report incorrectly calculated the U_{238} dose, causing a gross error in the concentration limit. (Tr. 2979-82; NIRS/PC Ex. 170 at 5-13).

Neither LES nor Staff modeled doses at Envirocare or any other site. Mr. Johnson of NRC Staff testified that Staff telephoned DRC, which advised that (a) concentration limits for uranium had been eliminated and Envirocare may receive depleted uranium and (b) residential and agricultural pathways are "unrealistic" because of low precipitation, high evapotranspiration, lack of suitable irrigation water, soil salinity, and zoning that bars residential and farming use. (Tr. 2873-74; LES Ex. 104, att. at 1, 2). DRC also advised that (c) there are updated performance assessments from 1997-2000 and (d) on adjacent federal land there may be sheep or cattle grazing. (*id.* 2, 4).

Staff "relied on the State of Utah's analysis . . . in reaching its conclusion that disposal of depleted uranium generated by the proposed NEF at Envirocare would be small" (NRC proposed FFCL 64-65, 66 (Nov. 30, 2005)). Staff

[3] Calculated doses to the "intruder-explorer" are very small, showing that the model assumes that the cover is not eroded. (NIRS/PC Ex. 170 at 5-8, col. H).

conducted no independent analysis or detailed review of DRC's analysis. (Tr. 2882-83). Dr. Palmrose declined to explain or defend DRC's conclusions: "No, that performance assessment was evaluated by the State of Utah, and accepted by the State of Utah." (Tr. 2883). Staff said:

> the state of Utah indicated that it had done those analysis. *We have not personally gone back to second guess or reanalyze them for them.* (Tr. 2255)(*emphasis supplied*).

Neither Staff nor LES obtained DRC's 1997-2000 analyses. (LES Ex. 104, att. at 2; Tr. 2639, 2648, 2710-11, 2726-27). Staff sought no underlying reports,

> because in our conversations with the State the State assured us that they did not—would not change their conclusion, that disposal—depleted uranium is acceptable without limitation. (Tr. 2711. *See also* Tr. 2744).

The Board said that Staff "reviewed" DRC's analysis (Second Decision 54), but no review took place. Mr. Johnson reviewed the Baird Report and considered its results reasonable. (Tr. 2884-86). The Baird Report barred disposal of depleted uranium (Tr. 2894-97). He reviewed no later studies. (Tr. 2884-85). Concerning DRC's elimination of intruder scenarios, Mr. Johnson had only a telephone call stating DRC's "conclusions," which he considered "reasonable." (Tr. 2884).

DRC eliminated *agricultural* and *residential* scenarios—long-term users—for lack of potable groundwater. (LES Ex. 104 att. at 2). Staff's memorandum does not state that DRC eliminated *all scenarios* involving human presence. (*id.*). But Mr. Johnson concluded that *all* such scenarios were eliminated and that DRC

thought "the site will never be used." (Tr. 2875, 2897, 2911). The Baird Report includes an "intruder-explorer" scenario, involving a visitor who does not use ground water or excavate, and states that the site had actually been used for hunting, recreation, and grazing. (NIRS/PC Ex. 170 at 5-4, 4-4, 4-5)(Tr. 2895). Staff's memorandum also mentions grazing usage. (LES Ex. 104 att. at 4). Mr. Johnson did not know of such usage. (Tr. 2901). He admitted that, after erosion removed the cover, a visitor might receive 25 millirems in 1.44 to 2.87 *hours*. (NIRS/PC Ex. 224 at 16; Tr. 2906, 2911-13).

Dr. Makhijani testified that DRC had not "done any new work to eliminate these [intrusion] scenarios" (Tr. 2998) and rejected such elimination, especially given recent grazing, hunting, and recreational vehicle driving: "[W]e know these things have happened." (Tr. 3001. *See also* Tr. 2750, 2901, 2906, 2909-13, 2976-78, 2985-89, 2993-94, 2997-3002).

h. The Board's "Second Decision":

The Board's "Second Decision" (March 3, 2006) voiced concern "whether the staff's FEIS analysis of near-surface disposal impacts was deficient on its face." (*id.* 53). As to the EIS's conclusion that soil and water salinity and low rainfall make Envirocare unsuitable for human use, the Board stated that "it is problematic whether such a conclusory statement by the staff is sufficient to comply with NEPA." (*id.* 53 n.34). Further:

> [I]t is not clear whether the staff's deferral to the State of Utah's conclusion that Envirocare can accept large quantities of depleted uranium for disposal can, in and of itself, suffice to fulfill the staff's obligation to review the State of Utah's determination before reaching its own conclusions. (*id.*).

Nevertheless, it concluded that a post-FEIS "review of the Baird report by NEF project manager Johnson provides a sufficient basis to find that the staff's hard-look responsibility has been fulfilled." (*id.* 55 n.35). It noted that the Baird Report "concluded that the dose limits of Part 61 would likely be exceeded for the intruder scenarios" (*id.* 54), that intruder doses must ordinarily be considered (*id.* 53), and that "this regulation does not provide a basis for arbitrarily truncating exposure computations at 1,000 or 10,000 years." (*id.* 56). The Board stated that NEPA compliance was "a hard case for the Board." (*id.* 62). But it said that Staff

> reviewed and likewise found reasonable the State of Utah's conclusion that it was "appropriate to drop the intruder pathways because they were unrealistic because of the unique site characteristics of the Envirocare site." (*id.* 56).

It held that

> the staff made a reasonable determination, as did the DRC staff, that the high salinity of the soil and groundwater and the low annual precipitation and high evapotranspiration rates make ***any*** intruder scenario so unrealistic, i.e., so unduly speculative, as to fall outside the scope of the staff's NEPA review. (*id.* 57)(*emphasis supplied*).[4]

[4] It stated that the FEIS would be amended pro tanto (Second Decision 54) and directed inclusion in the FEIS of the "underlying adjudicatory record." (*id.* 63).

The Board discussed only residential and agricultural scenarios. (*id.* 58 n.37). It failed to recognize that DRC's analysis had *not* excluded short-term human presence for hunting, grazing, or recreation—which had recently occurred. (NIRS/PC Ex. 170 at 4-4, 4-5). The Board ignored Dr. Makhijani's modeling and made *no findings of fact* as to likely doses.

i. NRC affirms the Second Decision (CLI-06-15):

NRC also expressed concern about NEPA compliance:

> We are concerned, though, that the Board (and the underlying FEIS) may not have fully explored potential long-term effects from disposing of depleted uranium—whose radiological hazard gradually *increases* over time. Hence, we grant review, offer additional observations on the disposal question, and affirm the Board decisions as supplemented by our decision today. (CLI-06-15 at 4)(64 N.R.C. ___)(June 2, 2006)(*italics original; footnote omitted*).

NRC added a supplemental discussion of "issues related to long-term impacts of disposal" (*id.* 25-28), covering "key considerations," including potential disposal sites (*id.* 25, 27 n.59); important site conditions (infiltration rate, depth to groundwater, soil characteristics)(*id.* 25); conditions affecting intruder protection (potable water, erosion rate, depth of burial)(*id.* 26); possible reclassification of depleted uranium (*id.* 26); waste characteristics; and chemical contamination (*id.* 27 n.59).

NRC said that an "intruder" engages in "activities such as agriculture, dwelling, or construction"—*i.e.*, like the Board, NRC failed to consider short-term visitors. (*id.* 15 n.35). NRC understood that erosion could cause direct exposure:

> If erosion wears away the disposal site cover (and there has been no remediation of the cover), an intruder coming onto the site could receive direct external and dust inhalation doses from the uncovered waste. These exposure pathways would not depend upon water consumption or use. (*id.* 17).

But it stated that such impacts only arise "out many thousands of years" (*id.*), apparently approving DRC's 1000-year analysis.

NRC deferred to the Board's findings. (*id.* 25). It stated that DRC concluded that, since water at Envirocare is saline, agricultural or residential intruders are unrealistic (*id.* 15) and, therefore, the "Staff's analysis . . . in the FEIS" drops intruder pathways. (*id.*).

NRC emphasized that NEPA analysis "is not a Part 61 compliance review" (*id.* 5; *see also id.* 6, 26, 27) and that the "appropriate regulatory authority" would "conduct any site-specific evaluations necessary to confirm that radiological dose limits and standards can be met . . ." (*id.* 6).

In dismissing violations of Part 61 in Dr. Makhijani's 2004 and 2005 reports, NRC found:

1. Higher dose predictions in the 2004 report were based upon intruders drinking contaminated water or consuming plants grown on site. (*id.* 19).

2. The 2005 report assumed that an intruder would receive a year of exposure. (*id.* 19).
3. LES's expert testified that short-term intrusions "would not result in unacceptable intruder doses." (*id.* 19).
4. LES's expert testified that a site like Envirocare "could be licensed under 10 CFR Part 61 regardless of the time frame you looked at." (*id.* 19).
5. Dose limits for intruders should be higher than 25 millirems. (*id.* 19 n.47).
6. Staff testified to "the unlikely nature of someone being [on site] for long periods of time." (*id.* 21).
7. As the Board said, intruder scenarios are "so unlikely . . . as to fall outside of what can reasonably be called anticipated or not unduly speculative impacts." (*id.* 24).
8. Further, as the Board also said, "projections about the likelihood of an intruder scenario would be exceedingly speculative." (*id.* 24).
9. Residential or agricultural scenarios would require "material socio-economic changes and/or improvements in technology" which are "not predictable." (*id.* 24).
10. NIRS/PC's analysis "assumes geologic, economic, societal, technological, and climate changes that might occur over thousands or

even tens of thousands of years and could affect environmental impacts." (*id.* 25).

j. The Board's "Third Decision":

The Board's "Third Decision" (May 31, 2006), addressing "plausible strategy" and costs, inquired "whether near-surface disposal meets the Part 61, Subpart C performance objectives." (*id.* 94; see also 95). The Board received extensive expert evidence on that question, but did not answer it, stating that "it is not for this Board to question the validity of Envirocare's license, or the State of Utah's determination to license Envirocare . . . ." (*id.* 96)[5].

It emphasized its waste classification determination:

[5] It added that near-surface disposal at "some other LLRW disposal facility with similar characteristics *might* be plausible as well" (Third Decision 97, *emphasis supplied*), stating that DOE had decided that DU_3O_8 "would likely meet . . . waste acceptance criteria" for Nevada Test Site ("NTS") and Envirocare (*id*. 98), citing EISs for deconversion plants. However, the cited EISs state that disposal *impacts have not been evaluated*, and *no decision has been made* about a disposal location. (LES Ex. 16 at I-21; LES Ex. 17 at I-20). One reference DOE document states that a supplemental performance assessment of the NTS for disposal of depleted uranium may be required. (NIRS/PC Ex. 257 at 7). Another notes that

> the performance assessment for Envirocare's Class A disposal cell license amendment . . . was based on a spectrum of LLW typical of wastes accepted at other commercial LLW disposal sites and the potentially large amount of DU product now being considered for disposal *was not encompassed in this spectrum of waste*. (NIRS/PC Ex. 273 at 13)(*emphasis supplied*).

Thus, neither NTS nor Envirocare has met performance assessment requirements for disposal of depleted uranium.

> [O]ur findings here regarding the appropriateness of near-surface disposal of DU *hinge on the fact* that the current Part 61 regulations mandate that DU is a Class A waste. (*id.* 96 n.71)(*emphasis supplied*).

Citing §3113, it rejected NIRS/PC's contentions about the LMI estimate of DOE costs (*id.* 25, 41-42), and it found LMI's estimate "sufficiently reliable to provide the basis for an initial estimate . . ." (*id.* 42).

k. Mandatory hearing, "Final Decision" and License:

Anticipating the "mandatory hearing" on statutory issues, the Board ruled the EIS discussion of NEF's purpose and need "insufficient." (Memorandum 4, Jan. 30, 2006). At that hearing (in which NIRS/PC were barred from participating) (Memorandum, Feb. 24, 2006), Staff presented new market projections. (Staff prefiled testimony on purpose and need, attachment, March 3, 2006). In the Final Decision on June 23, 2006 the Board adopted Staff's new projections as a "supplement to the FEIS." ("Final Decision" 77; *id.* 77-83)(June 23, 2006). Later that day, the license was issued. (License, June 23, 2006).

l. NRC affirms the Third Decision (CLI-06-22):

NRC's decision, issued nearly two months after the license, again deferred to the Board's findings. (CLI-06-22 at 5)(Aug. 17, 2006). It upheld the Board's determination that depleted uranium is Class A LLW. (*id.* 24). It held that "plausible strategy" was "already decided" (*id.* 26) when NRC stated that Envirocare "may be a plausible option." (CLI-06-15 at 17-18).

NRC held that "the Board erred in giving the DOE [cost] estimate preclusive force under section 3113." (CLI-06-22 at 14). But, instead of remanding for hearing (as in CLI-05-20), NRC rejected all NIRS/PC contentions. It held that NIRS/PC should have made an "argument to revive this contingency claim" (CLI-06-22 at 16)—even though the Board held it admissible, but for §3113. It deemed DOE cost overruns irrelevant "misbehavior," which became "moot" when LES and Staff settled on a 25% contingency allowance, and it held arguments for other NIRS/PC contentions "unpersuasive." (*id.* 16 & n.38).

NRC upheld the LMI estimate based on a regulation allowing "prompt correction of any under-funding." (*id.* 18). It found that the estimate had "the required arm's-length third-party characteristics" (*id.* 22) and met tests for private-sector estimates. (*id.* 21).

V. SUMMARY OF ARGUMENT

NRC here issued the first license for a NRC-regulated private uranium enrichment plant. LES proposed near-surface disposal of depleted uranium. NIRS/PC alleged that such disposal was not a "plausible strategy," that the EIS did not disclose disposal impacts, and that LES grossly underestimated waste dispositioning costs. AEA §193 requires that an enrichment license issue only after an "adjudicatory hearing on the record" and an EIS be prepared before the licensing hearing is completed.

Contrary to AEA §193, NRC unlawfully supplemented the FEIS after the hearing was completed. And, despite the requirement of an "adjudicatory hearing on the record," NRC resolved the key issues—plausible strategy and dispositioning cost—based on determinations made outside the hearing.

Title 10 C.F.R. Part 61 is designed to protect human intruders from contamination by near-surface disposal sites, *first*, by limiting doses (§61.41), and *second*, by waste classification allowing near-surface disposal only where appropriate. (§61.55). NRC arbitrarily nullified *both* protections: NRC found "plausible strategy," without finding compliance with 10 C.F.R. §§61.41 and 61.42, by ignoring doses after 1000 years, impacts of erosion, and violations of dose limits upon human intrusion. NRC found that depleted uranium from enrichment is Class A LLW, thus suitable for near-surface disposal, despite NRC's previous analysis finding depleted uranium not suitable for near-surface disposal.

NRC's new "plausible strategy" criteria are not articulated, requiring clarification. The new criteria constitute an unexplained change in NRC policy. They were not disclosed before the hearing, denying due process.

NIRS/PC questioned LMI's estimates of DOE's dispositioning cost—specifically, the inadequate contingency allowance and assumption of disposal at Envirocare. NRC arbitrarily excluded such challenges. Such action denied due

process. Further, NRC arbitrarily found that the estimate would meet applicable standards.

Under NEPA, NRC could not properly dismiss human intrusion as remote and speculative, without finding its probability extremely low. NRC could not so find, in light of assumptions underlying 10 C.F.R. Part 61 and recent human presence at Envirocare.

A Member of the Commission should have disqualified himself, since his public remarks would lead the disinterested observer to consider him partial. NRC's licensing action here should be vacated.

VI. ARGUMENT

1. NRC unlawfully supplemented an inadequate EIS after the hearing was completed.

AEA §193 governs licensing of enrichment facilities:

> Sec. 193. Licensing of Uranium Enrichment Facilities.
> (a) Environmental Impact Statement.—
> (1) Major Federal Action.—The issuance of a license under sections 53 and 63 for the construction and operation of any uranium enrichment facility shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (42 USC 4321 et seq.).
> (2) Timing.—An environmental impact statement prepared under paragraph (1) shall be prepared before the hearing on the issuance of a license for the construction and operation of a uranium enrichment facility is completed.
> (b) Adjudicatory hearing.—
> (1) In General.—The Commission shall conduct a single adjudicatory hearing on the record with regard to the licensing of the

> construction and operation of a uranium enrichment facility under sections 53 and 63.
>
> (2) Timing.—Such hearing shall be completed and a decision issued before the issuance of a license for such construction and operation.
>
> (3) Single proceeding.—No further Commission licensing action shall be required to authorize operation.

Thus, AEA §193 requires NRC to prepare an EIS "before the hearing on the issuance of a license . . . is completed." 42 U.S.C. §2243(a)(2)(See also 10 C.F.R. §51.97(c)). NRC so stated in its hearing notice. (50 N.R.C. 10). That requirement was violated, contrary to "the unambiguously expressed intent of Congress." *Chevron U.S.A., Inc. v. NRDC,* 467 U.S. 837, 843 (1984).

NRC's post-hearing actions confirm NIRS/PC's contentions and show the inadequacy of the EIS. Thus, NIRS/PC offered evidence that the EIS fails to analyze economic impacts of the NEF[6], under NEPA precedent requiring "weighing of the environmental costs against the economic, technical, or other public benefits of the proposal." *Louisiana Energy Services* (Claiborne Enrichment Center), CLI-98-03, 47 N.R.C. 77, 88 (1998). NRC rejected this evidence.[7] But, subsequently, the Board held the EIS discussion "insufficient" and required new Staff studies. (Memorandum 4, Jan. 30, 2006; Tr. 3226-27). Counsel for LES observed that the Board's concern "overlaps with questions that

[6] Sheehan direct testimony 9-15, 17-19, 20-36, Jan. 7, 2005; Sheehan rebuttal testimony 9-12, 15-18, 19-20, 21-22, 24-26, 28-29, Jan. 28, 2005.

[7] Memorandum 12-13, Jan. 21, 2005; Memorandum 4-5, Feb. 4, 2005; First Decision 72-77; CLI-05-28 at 7-10.

were litigated last February." (Tr. 3229). Staff submitted supplemental market projections. (Revised mandatory hearing testimony concerning purpose and need, March 3, 2006). The Board adopted them as a "supplement to the FEIS." (Final Decision 77, 75-83).

NIRS/PC also sought to show that the FEIS inadequately presented long-term impacts of deconversion and disposal of depleted uranium.[8] NIRS/PC's testimony was either stricken or disregarded.[9] But, subsequently, NRC expressed "concern[] that the Board (and the underlying FEIS) may not have fully explored potential long-term effects" (CLI-06-15 at 4) and added a lengthy supplement on "key considerations." (*id.* 25-28).

Congress adopted §193 specifically to prevent such post-hearing supplementation of enrichment plant EISs. Sen. Bennett Johnston, Chairman of the Energy Committee, stated on the Senate floor:

> The bill provides . . . that a NEPA environmental impact statement [EIS] *must be completed prior to completion of the hearing just discussed, so that it may be considered in that hearing.* 136 Cong. Rec. 36373 (Oct. 27, 1990)(*emphasis supplied*).

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[8] Such matters included long-term effects of erosion on near-surface disposal sites, ingrowth and decay of depleted uranium, impacts of disposal at the WCS site, and appropriate §61.55 waste classification. (Makhijani disposal direct at 17-19, 20-45, 48-49; 56-64 (Sept. 16, 2005); disposal rebuttal at 15-19; 24-25)(Oct. 11, 2005).

[9] Memorandum 11-14, Oct. 4, 2005; Memorandum 4-5, 6, Oct. 20, 2005; Second Decision 8-10, 47-62; CLI-06-15 at 13-25.

NRC's supplements were unavailable for review, comment, and response. (*See:* 10 C.F.R. §§51.71, 51.73, 51.91). Had they been published, the public could have commented on, *e.g.*, inadequate economic modeling or discussion of supposed alternative disposal sites. Since NRC itself has held the FEIS inadequate, remand is required to reopen the hearing and complete the EIS before the hearing closes. Since §193 requires that a "hearing shall be completed and a decision issued before the issuance of a license," the license must be vacated.

2. NRC denied NIRS/PC the adjudicatory hearing required by §193 by determining a material issue—"plausible strategy"—based upon action by Utah regulators.

A uranium enrichment plant may only be licensed after an "adjudicatory hearing on the record." (AEA §193). Such congressional direction unambiguously requires formal adjudicatory procedures. *Chevron U.S.A., Inc.*, 467 U.S. at 843. *See* 5 U.S.C. §§554-57; NRC, Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2183, 2203 (Jan. 14, 2004). "Material" issues may not be excluded from a statutorily-mandated hearing. *Union of Concerned Scientists v. NRC,* 735 F.2d 1437, 1442-52 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1132 (1985)(*UCS*); *Massachusetts v. NRC*, 924 F.2d 311, 333-36 (D.C. Cir.), *cert. denied*, 502 U.S. 899 (1991); *San Luis Obispo Mothers for Peace v. NRC,* 751 F.2d 1287, 1316 (D.C. Cir. 1984), *vacated in part*, 760 F.2d 1320 (D.C. Cir. 1985)(*en banc*), *and aff'd*, 789 F.2d 26 (D.C. Cir.)(*en banc*), *cert. denied*, 479 U.S. 923 (1986)(Hearing

requirement for reactor licensing requires a hearing of material issues properly presented.).

"Plausible strategy" is clearly a material issue, and a hearing was held at which expert evidence on the issue was taken. But NRC ignored that testimony and determined "plausible strategy" based on DRC's determination, made wholly outside the statutory hearing. Such action denied NIRS/PC a hearing as effectively as excluding NIRS/PC's evidence.

Staff expressly relied upon DRC's decision. (NRC proposed FFCL at 64-66 (Nov. 30, 2005); LES Ex. 104; Tr. 2883). The Board ruled that "it is not for this Board to question the validity of Envirocare's license, or the State of Utah's determination to license Envirocare to accept DU." (Third Decision 96). The Commission "defer[red] to the Board's [NEPA] factual findings" (CLI-06-15 at 25) and deferred again on "plausible strategy." (CLI-06-22 at 5).

DRC's conclusion raises substantial questions. No supporting studies were introduced. In deeming residential or agricultural scenarios "unrealistic," what likelihood is implied? (LES Ex. 104 att. at 2). Did DRC even consider impacts upon occasional users—*i.e.*, hunters, herdsmen, and recreationists—who had, in fact, recently been present? (NIRS/PC Ex. 170 at 4-4, 4-5). Did DRC somehow conclude that saline ground water would deter such users, who do not use ground water? Why did DRC consider only 1000 years of performance, thus modeling

minimal erosion? How did current zoning limitations, which DRC mentioned (LES Ex. 104, att. at 2), support DRC's conclusion, since institutional controls may only be assumed effective for 100 years? (10 C.F.R. §61.59).

Counsel for NIRS/PC could not investigate DRC's position, for, as the Board observed: "The State of Utah is not here to defend themselves." (Tr. 2917). Staff could not explain or defend DRC's determination. (Tr. 2883). Mr. Johnson knew only the Baird Report, which disqualified Envirocare. (Tr. 2894-97). He was unaware of previous uses of the site. (Tr. 2901-02). Whether DRC even considered short-term human presence for hunting, grazing, or herding is not known. Staff's memorandum says DRC excluded residential and agricultural scenarios (LES Ex. 104, att. at 2), but Mr. Johnson concluded that *all* intruder scenarios were eliminated (Tr. 2875) and that DRC thought the site would never be used. (Tr. 2911). There was no explanation of the significance of zoning. (Tr. 2749-50). Staff did not obtain DRC's documentation (Tr. 2711), nor did LES's expert. (Tr. 2648-52, 2710-11).

Dr. Makhijani presented detailed expert evidence about the performance of near-surface disposal sites in containing depleted uranium. (Tr. 2966-3064). The Board essentially ignored the substance of his testimony, made *no findings* based

upon it, contrary to 5 U.S.C. §557(c)(3)(A) and Commission rules,[10] and NRC affirmed.

Thus, NRC decided "plausible strategy" by Staff's inquiry about DRC's position, outside the "adjudicatory hearing on the record" (AEA §193) and without any participation by NIRS/PC.[11] As Dr. Makhijani said, "this whole thing rests on a phone call." (Tr. 2993). "Plausible strategy" was excluded from the hearing as effectively as the emergency preparedness issues improperly excluded in *UCS*. NRC, by basing its decision on the undocumented DRC position obtained in Staff's ex parte phone call, and ignoring the expert testimony, "removed from the licensing hearing *consideration of evidence that it considers relevant* to a material issue in the [section 193] proceeding *as it has defined that issue.*" (*See UCS* at 1443)(*italics original*). The decision should be vacated.

[10] NRC rules require the Board to make findings of fact and conclusions of law on contested issues. (10 C.F.R. §2.713(a), (c)(1)).

[11] There can be no claim that the DRC determination, and Staff's conversations with DRC, constitute "ministerial" inquiries outside the statutory hearing requirement. See *UCS*, 735 F.2d at 1449-51; *Private Fuel Storage* (Independent Spent Fuel Storage Installation), CLI-03-8, 58 N.R.C. 11, 19-20 (2003); *id.*, CLI-00-13, 52 N.R.C. 23, 33 & n.3 (2000).

3. NRC violated APA standards of agency decisionmaking in determining "plausible strategy."

a. NRC made no determination that near-surface disposal at Envirocare would comply with 10 C.F.R. §§61.41 and 61.42.

NRC's determination of "plausible strategy" violates established standards of administrative decisionmaking. This Court will set aside agency action that is arbitrary, capricious, an abuse of discretion, or otherwise contrary to law. *Massachusetts v. NRC,* 924 F.2d at 324; *Limerick Ecology Action, Inc. v. NRC,* 869 F.2d 719, 728 (3d Cir. 1989); *San Luis Obispo,* 789 F.2d at 31. *Motor Vehicle Manufacturers Association, Inc. v. State Farm Mutual Automobile Insurance Co.,* 463 U.S. 29, 43 (1983), outlines the standard of "arbitrary and capricious" review:

> The scope of review under the "arbitrary and capricious" standard is narrow and a court is not to substitute its judgment for that of the agency. Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a "rational connection between the facts found and the choice made." . . . In reviewing that explanation, we must "consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment." . . . Normally, an agency rule would be arbitrary and capricious if the agency has relied upon factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view of the product of agency expertise.

Moreover, licensing decisions based on a hearing must be supported by substantial evidence. 5 U.S.C. §706(2)(E); *Carstens v. NRC,* 742 F.2d 1546, 1551 (D.C. Cir. 1984), *cert. denied*, 471 U.S. 1136 (1985).

NRC's "plausible strategy" decision constitutes the application of 10 C.F.R. §70.25(e), which requires that

> Each decommissioning funding plan must contain a cost estimate for decommissioning and a description of the method of assuring funds for decommissioning . . . .

NRC has construed §70.25(e) to require a "plausible strategy" for dispositioning depleted uranium. *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-04-3, 59 N.R.C. 10, 22 (2004). *See also* 56 Fed. Reg. 23310, 23313 (May 21, 1991)) (*Claiborne* hearing notice requires plausible strategy for tails disposition.). The *Claiborne* Board stated:

> For the regulation to have meaning the cost estimate should contain reasonable estimates for an adequately described decommissioning strategy. *Louisiana Energy Services* (Claiborne Enrichment Center), LBP-91-41, 34 N.R.C. 332, 338)(1991).

Thus, it required a "reasonable or credible plan" and "cost estimates for components of the plan." (*Id.*, LBP-97-3, 45 N.R.C. 99, 101, 105)(1997)(*vacated after withdrawal of application,* CLI-98-5, 47 N.R.C. 113 (1998)).

NRC previously interpreted §70.25(e) to require that the planned disposal method would comply with Part 61, Subpart C, dose limits. The Claiborne Board found that LES's deep mine disposal strategy would comply with those limits. 45 N.R.C. at 108-10, 119-23. Thus, NRC observed that dose impacts would come "within regulatory limits." *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-97-11, 46 N.R.C. 49, 49-50 (1997). NRC remanded for clarification

of whether certain parameter values might "result in dose impacts above the regulatory limit." (*id.*). The Board again found compliance with Part 61 limits. *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), 46 N.R.C. 275, 278-82 (1997). This finding was explicitly "integral to the Board's finding" of a "plausible strategy":

> Having thus rejected the Intervenor's challenge to the Staff's choice of values for eH, pH, and retardation factor and found those values reasonable, the Board necessarily concluded that deep burial of the enrichment tails would comply with the regulatory standards of 10 C.F.R. Part 61. This determination, in turn, was integral to the Board's finding in LBP-97-3 that deep burial was a plausible disposal strategy by which to judge the Applicant's tails disposal costs. (*id.* 283).

NRC stated in this case that "[i]n the end, the 'bottom line for disposal' of low-level radioactive wastes are the performance objectives of 10 C.F.R. Part 61, Subpart C, which set forth the ultimate standards and radiation limits . . . ." (CLI-05-05, 61 N.R.C. at 31). Addressing the LLW question, it added:

> A more difficult question—and one we need not answer today—concerns whether the LES material, in the volumes and concentration proposed, will *meet the Part 61 requirements* for near-surface disposal. (*id.* 35)(*emphasis supplied*).

It stated that this issue

> relates both to the plausibility of LES's proposed private disposal options, and to financial assurance—issues that remain before the Board. (*id.*).

NRC later reemphasized that NIRS/PC's contentions about disposal impacts "challenge the viability of the near-surface disposal option." (CLI-05-20 at 26).

The Board concurred that "whether near-surface disposal at a particular site would meet the requirements of Part 61 is *the bottom line inquiry* relative to the plausibility of such disposal." (Third Decision 95)(*emphasis supplied*).

Now NRC has found "plausible strategy" *without* determining compliance with Part 61—postponing that question to "a final determination on disposal." (CLI-06-15 at 27. *See id.* 5, 6, 26; CLI-06-22 at 26-27). Thus, NRC's decision fails to consider the critical factor of compliance with dose limits. *State Farm,* 463 U.S. at 43.

NRC's decision ignores specific requirements of Part 61. Section 61.42 contains no time limit:

> Design, operation, and closure of the land disposal facility must ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste *at any time* after active institutional controls over the disposal site are removed. 10 C.F.R. §61.42 (*emphasis supplied*).

Depleted uranium has a half-life of 4.46 billion years. (NIRS/PC Ex. 190 at 5). Staff previously examined site performance at time of maximum dose—without time limit. (NIRS/PC Ex. 128 at 10-14, 19-20)(near-surface disposal)(NRC Staff Ex. 36 (final) at 4-63, 4-64)(deep disposal).

However, Mr. Johnson stated that Staff did not object to DRC's use of a 1000 year compliance period (Tr. 2890-91, 2893, 2899-900), and NRC dismissed doses occurring after "many thousands of years" (CLI-06-15 at 17) and "changes

that might occur over thousands or even tens of thousands of years" (*id.* 25), evidently endorsing DRC's analysis of only 1000 years.

Mr. Johnson stated that DRC assumed that erosion would only proceed for 1000 years and would not be significant. (Tr. 2899-2900, 2911). But to limit analysis to 1000 years essentially disregards erosion.[12] Erosion clearly contributes to violative doses. (NIRS/PC Ex. 190 at 23-25; NIRS/PC Ex. 224 at 12-16). Further, "rates of erosion (denudation) are highest for semi-arid environments" (*id.* 13) and are from 10 to 100 centimeters over 1000 years. (*id.* 14). Indeed, NRC's Part 61 analysis incorporated erosion:

> Another source of potential environmental releases is through the effects of wind and water erosion. Through these mechanisms, the covers over disposal trenches may be removed over time, eventually exposing the disposed wastes which could then be potentially dispersed into the environment through airborne or water-borne pathways. (NIRS/PC Ex. 275 at 5-85. *See also* NIRS/PC Ex. 168 at M-13, M-14).

It is arbitrary and capricious to disregard erosion; it conflicts with the Commission's assumptions underlying Part 61 and fails to consider an important aspect of the problem. *State Farm*, 463 U.S. at 43.

NRC also ruled that violations of the 25 millirem dose limit are *not relevant* to intruder exposures. (CLI-06-15 at 19 n.47). It failed to specify a different limit.

[12] The rate of erosion is measured at 0.010 to 0.1 centimeters per year (NIRS/PC Ex. 224 at 15). Erosion rates of 0.015 to 0.1 centimeters per year were used in adopting Part 61. (*id. 14;* NIRS/PC Ex. 275 at 5-86, 5-87; NIRS/PC Ex. 168 at M-16 to M-18).

Part 61 contains a dose limit of 25 millirems per year for protection of the public (10 C.F.R. §61.41), and LES's expert concurred that the occasional visitor, *e.g.*, a hunter, would be a member of the public. (Tr. 3079). The Board rejected evidence based on any dose limit *other than* 25 millirems. (Tr. 3075-76, 3080).

LES's expert proposed a 500 millirem limit for intruders. (Tr. 3067, 3071). Doses shown in Dr. Makhijani's reports so far exceeded 25 millirems that a 500 millirem limit would clearly be violated.[13] To ignore such impacts overlooks an important part of the problem. *State Farm,* 463 U.S. at 43.

NRC's decision rests upon misconceptions. It noted that LES's expert testified that larger doses in NIRS/PC's November 2004 report came from groundwater pathways. (CLI-06-15 at 19)(Tr. 3068-70). It failed to note that the same report calculated large doses from direct exposure:

> Importantly, however, we found that for the scenarios in which the uranium does not reach the aquifer with the 100,000 year timeframe analyzed by ResRad, the external radiation dose at the time of the peak dose would alone exceed the 25 mrem annual limit by 1,270 to nearly 3,000 times. (NIRS/PC Ex. 190 at 23).

[13] The Part 61 DEIS used a 500 millirem intruder limit in waste classification. (NIRS/PC Ex. 275 at 4-56, 4-65). The time for violation of a 500 millirem limit can be calculated by multiplying the time for a 25 millirem dose by 20. Since an intruder would receive a dose of 25 millirems in 1.44 to 2.87 hours, a 500 millirem dose requires 28.8 to 57.4 hours. (NIRS/PC Ex. 224 at 16).

LES's expert admitted: "Okay, I missed that." (Tr. 3074). Clearly, NRC also disregarded the large doses caused by direct exposure.

NRC said that NIRS/PC's July 2005 report assumed an intruder would receive "a full year of onsite radiological exposures" and that LES's expert testified that short term intrusions would not cause unacceptable doses. (CLI-06-15, at 19)(Tr. 3072). But the report simply calculates the §61.41 "annual dose." Importantly, it states that "it would take just 1.44 to 2.87 hours on the site to violate the 25 mrem per year dose limit." (NIRS/PC Ex. 224 at 16). LES's expert conceded this point (Tr. 3079), as did Staff. (Tr. 2912-13). Thus, a 500 millirem dose would require 28.8 to 57.4 hours.[14] LES's expert assumed a visitor would be present for 88 hours to two weeks (Tr. 3072), causing even larger doses, clearly in excess of measures used in adopting Part 61. (NIRS/PC Ex. 275 at 4-65).

NRC said that Staff found it "unlikely that [the Envirocare] area would result in serious exposures because of the unlikely nature of someone being there for long periods of time," such as for "building a residence" and believed that "significant intruder exposures at a site like Envirocare are unrealistic." (CLI-06-15 at 21). But it failed to note that Staff conceded that a visitor could receive 25

[14] LES's expert admitted that it makes sense to calculate an annual dose, from which doses for other periods can be calculated by ratios. (Tr. 3080-81). See note 13.

millirems in a few *hours* (Tr. 2906, 2912-13) and there was *actual* use by short-term visitors (NIRS/PC Ex. 170 at 4-4, 4-5).

NRC cited LES's expert's statement that a site like Envirocare "could be licensed under 10 C.F.R. Part 61 regardless of the time frame [*i.e.*, compliance period] you looked at." (CLI-06-15 at 19)(Tr. 3073). But it disregarded the facts that LES's expert assumed that a short-term exposure would not violate Part 61, that NIRS/PC's reports required year-long exposures, and that a dose limit of 25 millirem is inapplicable (Tr. 3067-68, 3071-72), —none of which is correct, as shown above.

NRC also stated that NIRS/PC's analysis

> assumes geologic, economic, societal, technological, and climate changes that might occur over thousands or even tens of thousands of years and could affect environmental impacts. (CLI-06-15 at 25).

But NIRS/PC's reports assume only erosion (occurring today) and human presence for a few hours (which has occurred recently). (NIRS/PC Ex. 190 at 23-25; NIRS/PC Ex. 224 at 12-16). NRC's list of supposed changes is simply wrong.[15]

NRC's analysis ignores precedent, disregards violations of Part 61, misapprehends the evidence, and lacks substantial evidentiary support. It fails to consider relevant factors and contains clear errors in judgment. *State Farm*, 463

[15] Dr. Makhijani said the usual approach models a resident farmer, which his November 2004 report does. (Tr. 2999; NIRS/PC Ex. 190 at 23). He also noted that there was no need to consider climate change, because doses were so high already. (Tr. 2986).

U.S. at 43; *AT&T Corp. v. FCC*, 394 F.3d 933, 938-39 (D.C. Cir. 2005)(Decision based upon misconceptions must be vacated.).

b. NRC failed to articulate criteria for plausible strategy.

APA's standard of "reasoned decisionmaking" requires that an agency decision be supported by clear reasoning, disclosing the applicable standard and the facts found under that standard:

> In order to survive judicial review in a case arising under § 706(2)(A), an agency action must be supported by "reasoned decisionmaking." *Allentown Mack Sales & Serv., Inc. v. NLRB*, 522 U.S. 359, 374 (1998)(quoting [*State Farm*, 463 U.S. at 52.] "Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational. Courts enforce this principle with regularity when they set aside agency regulations which, though well within the agencies' scope of authority, are not supported by the reasons that the agencies adduce." *Id.* (*Tripoli Rocketry Association, Inc. v. Bureau of Alcohol, etc.*, 437 F.3d 75, 77 (D.C. Cir. 2006)).

NRC's decision raises, but fails to answer, important questions about "plausible strategy," leaving its conclusion without a "clear and coherent explanation" (*id.* 81), "including a rational connection between the facts found and the choice made." *PPL Wallingford Energy LLC v. FERC*, 419 F.3d 1194, 1198 (D.C. Cir. 2005). Since the Court may only sustain agency action on the basis chosen by the agency (*SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947)), the Court must know the basis of the decision.

But NRC has left licensing criteria in confusion, judicial review is not possible, and remand is required. *See: Williams Gas Processing-Gulf Coast Co. v. FERC,* 475 F.3d 319, 329 (D.C. Cir. 2006)("We have repeatedly required the Commission to fully articulate the basis for its decision." Decision vacated.); *Manhattan Center Studios v. NLRB,* 452 F.3d 813, 821 (D.C. Cir. 2006)(Remand for explanation of standard and its application); *Tripoli Rocketry Association,* 437 F.3d at 81 ("But, as a reviewing court, we require *some* metric . . ."); *PPL Wallingford Energy,* 419 F.3d at 1200)(Agency decision vacated for failure to "respond meaningfully" to comments relevant to agency's expressed rationale or to "address . . . evidence" on that issue.); *Bluewater Network v. EPA,* 370 F.3d 1, 21-22 (D.C. Cir. 2004)("This generalized discussion of the limiting factors does not explain how the Agency arrived at the specific conclusion. . . . 'judicial review can occur only when agencies explain their decisions with precision,'" *quoting from American Lung Association v. EPA,* 134 F.3d 388, 392 (D.C. Cir. 1998)*; Keyspan-Ravenswood, LLC v. FERC,* 348 F.3d 1053, 1056 (D.C. Cir. 2003)(Agency must "respond meaningfully to the evidence," for "[u]nless an agency answers objections that on their face appear legitimate, its decision can hardly be said to be reasoned." Decision vacated.); *Jost v. Surface Transportation Board,* 194 F.3d 79, 88 (D.C. Cir. 1999)(Agency "must articulate the reasoning behind its decision with sufficient clarity to enable petitioners and this court to

understand the basis for its decision."); *Sithe/Independent Power Partners v. FERC,* 165 F.3d 944, 949 (D.C. Cir. 1999)("FERC neither provided a clear explanation of its rationale nor revealed the data and assumptions underlying its findings;" case remanded.); *Serafyn v. FCC,* 149 F.3d 1213, 1219-20 (D.C. Cir. 1998)(Failure to explain rationale requires vacatur and remand.); *SEC v. Checkosky,* 23 F.3d 452, 462 (D.C. Cir. 1994)(Remand required for clarification of decision "in a manner that would permit reasoned judicial review.").

Precedents require a "plausible strategy" to comply with 10 C.F.R. Part 61, Subpart C. (See point 3(a), *supra*). NRC's decisions herein suggest that Envirocare's license alone establishes "plausible strategy." (Third Decision 96; CLI-06-22 at 4, 24-25). However, NRC makes additional factfindings supposedly supporting disposal at Envirocare. (Second Decision 53-57; CLI-06-15 at 19-25). Several of the factfindings are incorrect. (See point 3(a), *supra*). Further, NRC states that its NEPA impact determination resolves "plausible strategy" under AEA, a different statute. (CLI-06-22 at 26). NRC's action leaves critical unanswered questions:

1. Is "plausible strategy" established by Envirocare's license, standing alone? (Third Decision 95-96).

2. What likelihood is meant by "unrealistic," as applied to agricultural and residential scenarios, and how is it determined? (CLI-06-15 at 15, 19, 21, 22 n.50).

3. Does a determination that an impact is "speculative" under NEPA (CLI-06-15 at 24) mean that it may be disregarded in applying 10 C.F.R. Part 61, Subpart C, a regulation under AEA?

4. May a scenario be ignored under AEA if its likelihood cannot be determined? (CLI-06-15 at 24).

5. What time frame should be considered, in assessing likelihood and impacts? Is it only 1000 years? (CLI-06-15 at 17).

6. Has NRC excluded the short-term visitor—hunter, herdsman, recreationist—from Part 61? (CLI-06-15 at 15 & n.35).

7. What weight is given to zoning rules, which presumably cannot be relied upon for more than 100 years? (LES Ex. 104, att. at 2; 10 C.F.R. §61.59).

8. NRC apparently ignored doses of 31 to 75 rems from pathways *not* involving groundwater. (CLI-06-15 at 19; NIRS/PC Ex. 190 at 23). May such doses be disregarded?

9. NRC asserted that "both the Staff and LES experts agree that significant intruder exposures . . . are unrealistic." (CLI-06-15 at 21).

However, experts agreed that a short-term visitor could receive 25 millirems in 1.44 to 2.87 hours (Tr. 2912-13, 3079). What is NRC's measure of "significant intruder exposures"?

10. NRC rejected the 25 millirem standard for intruders. (CLI-06-15 at 19-20 n.47). What limit would NRC apply?

11. If a 25 millirem dose is obtained in 1.44 hours (NIRS/PC Ex. 224 at 16), two weeks (*i.e.*, 336 hours; Tr. 3072) would give a dose far in excess of 500 millirems. Is such a dose to be ignored?

12. NRC observed that LES's expert said that the site could properly be licensed regardless of the compliance period. (CLI-06-15 at 19; Tr. 3073). However, he thought that short-term exposures would not violate Part 61, and he disagreed with the 25 millirem dose limit and the lack of time limit in Part 61. (Tr. 2618-19, 3067, 3071-73).

Would NRC ignore these terms in determining "plausible strategy"? Without NRC's criteria for "plausible strategy," the Court cannot conduct APA review. Based on *Williams Gas Processing* and other cases cited, the decision should be vacated and remanded so that NRC can explain its criteria.

c. NRC changed the standard for "plausible strategy" without explanation.

NRC has failed to support with reasoned analysis a change in standards for "plausible strategy":

> Agencies are free to change course as their expertise and experience may suggest or require, but when they do so they must provide a "reasoned analysis indicating that prior policies and standards are being deliberately changed, not casually ignored." *Greater Boston Television Corp. v. FCC,* 444 F.2d 841, 852 (D.C. Cir. 1970); *see also Philadelphia Gas Works v. FERC,* 989 F.2d 1246, 1250-51 (D.C. Cir. 1993). An agency's failure to come to grips with conflicting precedent constitutes "an inexcusable departure from the essential requirement of reasoned decision making." *Columbia Broad. Sys. v. FCC,* 454 F.2d 1018, 1027 (D.C. Cir. 1971). (*Ramaprakash v. FAA,* 346 F.3d 1121, 1124-25 (D.C. Cir. 2003)).

See also: State Farm, 463 U.S. at 41-42; *Williams Gas Processing,* 475 F.3d at 326; *New York Cross Harbor Railroad v. STB,* 374 F.3d 1177, 1183 (D.C. Cir. 2004); *Nuclear Energy Institute v. EPA,* 373 F.3d 1251, 1296 (D.C. Cir. 2004); *Mountain Communications, Inc. v. FCC,* 355 F.3d 644, 646-47 (D.C. Cir. 2004); *Sithe/Independence Power Partners, L.P. v. FERC,* 165 F.3d at 950.

To the extent its standards are discernible, NRC's decision breaks precedent without explanation. NRC previously interpreted §70.25(e) to require compliance with Part 61, Subpart C. (See point 3(a), *supra*.). Here, the Board found only that Utah had issued a license, ruled that depleted uranium is a Class A LLW, and looked no further. (Third Decision 95-96). NRC affirmed, adopting the Board's reasoning but adding several erroneous observations. (See point 3(a), *supra*.). In approving a 1000 year compliance period, rejecting the 25 millirem standard, refusing to consider erosion and ignoring the short-term visitor, NRC appears to have changed the test for "plausible strategy." NRC "neither explained its action as consistent with precedent nor justified it as a reasoned and permissible shift in

policy." *Williams Gas Processing*, 475 F.3d at 322. Adoption of a new standard without explanation is arbitrary and capricious and should be vacated.

d. NRC's introduction of a new standard for "plausible strategy" denies due process.

For NRC to introduce new standards after hearing violates NIRS/PC's due process rights. *Public Service Commission v. FERC*, 397 F.3d 1004, 1012-13 (D.C. Cir. 2005)(Agency "failed to place petitioners on notice that it would consider an incentive-based premium" and "denied petitioners . . . a chance to present their side of the case."); *Trinity Broadcasting of Florida, Inc. v. FCC*, 211 F.3d 618, 631 (D.C. Cir. 2000)(Agency used a new standard for minority control, unavailable to the litigants; decision vacated.). *See also*: *Williston Basin Interstate Pipeline Co. v. FERC*, 165 F.3d 54, 63 (D.C. Cir. 1999)("The law will not tolerate . . . after-the-fact, in fact retroactive, imposition of standards . . . ").

Here, the Board applied criteria for "plausible strategy" that (a) contain no time limit, (b) contain a 25 millirem dose limit, and (c) protect intruders. (Tr. 2699-2700, 2907, 2914-15, 2986, 3071, 3075-76, 3080). On review, NRC apparently disagreed with those standards but found "plausible strategy" using new standards as to compliance period, dose limit, consideration of erosion, and protection of short-term visitors. (*See, e.g.*, CLI-06-15 at 19 n.47). The new standards were not announced before the hearing. Retroactive standard-making

gave NIRS/PC no opportunity to present evidence under the applicable standards, contrary to due process requirements.

e. NRC's ruling that depleted uranium from enrichment constitutes Class A low-level waste is arbitrary and capricious.

NRC states that, under a "plain reading" of §61.55(a)(6), large quantities of depleted uranium from an enrichment plant constitute "radioactive waste [that] does not contain any nuclides listed in either Table 1 or 2." Thus, NRC reasons, under §61.55(a)(6), the depleted uranium is Class A LLW, suitable for near-surface disposal. (CLI-06-22 at 24). That interpretation should be rejected.

On review, the Court asks whether NRC's regulatory interpretation is consistent with the regulatory language and whether it is arbitrary, capricious, an abuse of discretion, or otherwise contrary to law. *Massachusetts v. NRC,* 924 F.2d at 324; *San Luis Obispo,* 789 F.2d at 30-33; *Guard v. NRC,* 753 F.2d 1144, 1149-50 (D.C. Cir. 1985). The Court has stressed the importance of the regulatory "context." (*id.* 1446).

Part 61 regulates disposal of commercial LLW and, specifically, protects inadvertent human intruders. In 1981 NRC's Part 61 DEIS modeled intrusion at near-surface disposal sites to classify radionuclides for increasing levels of stabilization and management. (NIRS/PC Ex. 275 at 7-3, 7-4). Class A allows near-surface disposal without stabilization or intruder protections, Class B imposes

"more rigorous requirements on waste form to ensure stability," and Class C "requires additional measures" to protect intruders. (*See* CLI-05-05, 61 N.R.C. at 27; 10 C.F.R. §61.7(b)(2), (4)). GTCC waste is inappropriate for near-surface disposal. (10 C.F.R. §61.7(b)(5); NIRS/PC Ex. 275 at 7-5). The DEIS found high intruder doses from uranium disposal. Thus, it deemed depleted uranium *not suitable* for near-surface disposal.[16] (*id.* 7-5, 7-7, 7-18, 7-19).

But NRC regulates only commercial LLW. In 1981 depleted uranium was generated only by DOE enrichment plants, unregulated by NRC. Therefore, NRC did not address depleted uranium in Part 61: "DOE wastes are now disposed of at DOE owned and operated facilities which are not subject to NRC or Agreement State licensing authority. Such wastes are thus not addressed in this EIS." (NIRS/PC Ex. 275 at 3-8). "Hence, waste streams produced from uranium enrichment operations are not considered further . . ." (NIRS/PC Ex. 276 at D-7). NRC recently stated that, in issuing Part 61, it did not consider impacts of disposal of large quantities of depleted uranium from enrichment. (CLI-05-20 at 30 & n.54).

[16] Modeling showed that uranium at a concentration exceeding .05 $\mu Ci/cm^3$ "would generally not be considered suitable for near-surface disposal" in Class A, B, or C. (NIRS/PC Ex. 275 at 7-18, 7-19). Conservatively using a density equal to water (*id.* 7-15), this value equals 50 nCi/g, which is exceeded by depleted uranium from enrichment. (NIRS/PC Ex. 190 at 6, Table 3).

NRC found that other "'types of uranium-bearing waste being typically disposed of by NRC licensees' at the time" (*id.* 30) presented no significant hazard and need not be included in classification tables. (NIRS/PC Ex. 169 at 5-38; NIRS/PC Ex. 85 at 57456, col. 1; Tr. 2763-64).

NRC stressed that the classification tables included "many, if not most, of the longer-lived radionuclides delivered to any disposal facility." (NIRS/PC Ex. 274 at 42, NIRS/PC 275 at 7-21). *In this context,* §61.55 classified unlisted radionuclides as Class A. (10 C.F.R. §61.55(a)(6)). Thus, such classification addressed a residuum in a rule that specifically *listed* the principal radionuclides of concern to NRC and *excluded* uranium.

Now the waste population has radically changed; NRC is regulating disposal of 133,000 metric tons of depleted uranium from enrichment (NIRS/PC Ex. 190 at 4)—the very material it *declined to address* in issuing Part 61. In this changed context, NRC uses supposed "plain reading" to interpret §61.55(a)(6)—which refers to the residuum of a waste population containing *no* depleted uranium—to put *large amounts* of depleted uranium into Class A. This is clearly wrong. Such reading disregards the "context" of Part 61 (*Guard,* 753 F.2d at 1146), which addressed a waste population that *excluded* depleted uranium, so that §61.55(a)(6) addressed a small residuum of that population. NRC's interpretation defeats the purpose of waste classification, which seeks to protect intruders (LES Ex. 112 at 5-

25), contradicts NRC's finding that depleted uranium from enrichment *not suitable* for near-surface disposal (NIRS/PC Ex. 275 at 7-5, 7-7, 7-18, 7-19), and thus fails to "examine the relevant data and articulate a satisfactory explanation for its action, including a rational connection between the facts found and the choice made." *State Farm*, 463 U.S. at 43.

4. NRC arbitrarily rejected contentions about LMI's estimate of costs of deconversion and disposal by DOE.

Under *UCS*, NRC may not remove material issues from a licensing hearing. (735 F.2d at 1446). In *Massachusetts v. NRC*, the Board had excluded material contentions, made late without "good cause" (10 C.F.R. §2.309(c)(1)(i)), for insufficient "particularity." (924 F.2d at 335). The Court reversed, holding that contention rulings must balance "the public's right to a hearing . . . and the NRC's discretion to structure efficient licensing proceedings." (*id.* 333-34. *See id.* 335-36). *See also Limerick*, 869 F.2d at 751 (use of "rote formalism" to reject contentions held abuse of discretion.).

Decommissioning cost is clearly material. NIRS/PC received the LMI report in June 2005. (LES Ex. 86; Motion 6, 35, July 5, 2006). NIRS/PC faced obstacles: Discovery is not allowed before contentions are admitted. *Georgia Institute of Technology* (Georgia Tech Research Reactor), CLI-95-10, 42 N.R.C. 1, 2 (1995). The Board considered contentions untimely if made more than 30 days after notice. (Memorandum 9-10, June 30, 2005). On July 5, 2005 NIRS/PC

proposed contentions, inter alia, supporting a large contingency allowance based on DOE's cost increases at projects like Yucca Mountain, and arguing that LMI could not assume disposal at Envirocare because depleted uranium is not Class A waste and disposal would violate Part 61 dose limits. (Motion 30-35, July 5, 2005).

The Board excluded all such contentions, holding the LMI estimate immune to challenge under §3113. (Memorandum 21-22, Aug. 4, 2005). It noted that the contingency allowance contention otherwise "establish[es] a genuine material dispute adequate to warrant further inquiry." (*id.* 22 n.15). The Board said that to contest disposal at Envirocare "constitutes an impermissible challenge to Commission regulations." (*id.*). On review, NRC held that §3113 creates no shield (CLI-06-22 at 14)—but held all contentions about LMI's estimate inadmissible. (*id.* 14-17).

NRC's rejection of NIRS/PC's contentions violates *UCS, Massachusetts,* and *Limerick*. NRC brushed aside DOE's cost overruns as mere "anecdotes" about irrelevant "misbehavior." (*id.* 16 n.38).[17] But NIRS/PC alleged *facts* concerning

[17] NRC cited *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-01-24, 54 N.R.C. 349 (2001), and *Commonwealth Edison Co.* (Zion Nuclear Power Station, Units 1 and 2), CLI-99-4, 49 N.R.C. 185 (1999). But *Dominion* rejects evidence on management problems preceding a change in ownership (at 366), and *Commonwealth* concerns "broad-brush claims of wholesale corruption." (at 190). Neither precedent supports disregard of inability to manage costs—as it bears on a cost estimate. Previous inaccurate estimates are

DOE's *cost estimates*—not elusive "management integrity" (*id.*) issues. DOE's cost overruns of 56% to 368% at Yucca Mountain and other waste projects show the unreliability of the LMI estimate. (Motion 34-35, July 5, 2005; NIRS/PC Ex. 190 at 44-45; Makhijani proposed deconversion direct at 20-24; disposal direct at 59-64; contingency direct at 29-34 (Sept. 16, 2005); deconversion rebuttal at 15-19; contingency rebuttal at 12-15 (Oct. 11, 2005)). Whether overruns will recur is a question of fact (*Connecticut Yankee Atomic Power Co.* (Haddam Neck Plant), LBP-01-21, 54 N.R.C. 33, 85-86 (2001)), which NRC may not decide at the contention stage. (*Sierra Club v. NRC,* 862 F.2d 222, 228 (9th Cir. 1988); *Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Unit 1), ALAB-868, 25 N.R.C. 912, 931 (1987)).

NRC ruled that LES's and Staff's agreement on a 25% contingency allowance renders *NIRS/PC's* contention "moot." (CLI-06-22 at 16). But DOE's past exceedences dwarf the 25% allowance, and LES and Staff cannot settle NIRS/PC's claims. *See* Memorandum 7, August 12, 2005; *CFC Logistics, Inc.,* 60 N.R.C. 475, 478 (2004); *Sequoyah Fuels Corp.,* 1995 WL 761196 at 5 (1995).

Even though the Board considered the contingency claim a "genuine material dispute," (Memorandum 22 n.15, Aug. 4, 2005), NRC held that NIRS/PC

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relevant to decommissioning costs. See *Connecticut Yankee Atomic Power Co.* (Haddam Neck Plant), LBP-01-21, 54 N.R.C. 33, 85-86 (2001).

failed to "revive" it on review. (CLI-06-22 at 16). This bizarre new requirement "denied petitioners . . . a chance to present their side of the case," violating due process (*Public Service Commission*, 397 F.3d at 1013), and "upend[ing] the balance struck by Congress between efficiency and public participation." (*UCS*, 735 F.2d at 1446).

NRC also rejected NIRS/PC's contention that LMI's estimate may not assume disposal at Envirocare, holding such contention "an impermissible challenge to Commission regulations." (CLI-06-22 at 14-17; Motion 30-35, July 5, 2005; Memorandum 22 n.15, Aug. 4, 2005). Such theory was long since rejected by NRC and abandoned by the Board. In CLI-05-20 (October 20, 2005), NRC reversed a Board ruling that a contention concerning near-surface disposal improperly challenged waste classification, emphasizing that NRC's January 2005 waste classification ruling, CLI-05-05,

> left open the question whether disposal in a near-surface facility is appropriate. (CLI-05-20 at 12. *See id.* 14).

The Board recognized the relevancy; indeed, despite excluding testimony about LMI's estimate based on §3113, it invited testimony about costs outside the LMI estimate. (Memorandum 7, Oct. 4, 2005). At the October hearing the Board heard extensive evidence on near-surface disposal performance. In its Third Decision, the Board shielded the LMI estimate based only on §3113, mentioning no contention deficiencies. (Third Decision 25, 41-42).

If near-surface disposal is not a "plausible strategy," NRC could hardly approve a cost estimate based on disposal at Envirocare. (*Louisiana Energy Services*, 46 N.R.C. at 49). NIRS/PC's review petition addressed near-surface disposal extensively, including at Envirocare. (Petition 17-25, June 12, 2006). NRC itself made numerous factfindings about disposal at Envirocare in CLI-06-15. (*id.* 11-28). It is pointless to demand that NIRS/PC reargue issues which it had won in CLI-05-20. NRC's laconic rejection of this contention, on the discredited theory of "impermissible challenge to Commission regulations," constitutes "rote formalism"[18] (*Limerick*, 869 F.2d at 751), raising the question "whether [NRC] properly considered the potential materiality of the allegations involved," and requiring remand. (*Massachusetts*, 924 F.2d at 333).

NRC arbitrarily held LMI's estimate "reliable." (Third Decision 42; CLI-06-22 at 18-23). NRC credited only estimates by "experienced" private entities (*See* Third Decision 42, 43, 61-62, 104; CLI-06-22 at 10-13), but DOE has no experience deconverting or disposing of depleted uranium. (LES Ex. 86 at 2-1). NRC said that LMI's estimate has no source in LES (CLI-06-22 at 22), but LES answered Staff's questions about LMI's estimate and supplied revisions. (LES Ex.

[18] The exhaustion principle is no bar, since NRC held NIRS/PC's argument "unpersuasive" (CLI-06-22 at 16 n.38), and when the agency rules on an argument, the Court is not barred. *Rollins Environmental Services (NJ) Inc. v. EPA*, 937 F.2d 649, 652 (D.C. Cir. 1991); *NRDC v. EPA*, 824 F.2d 1146, 1151 (D.C. Cir. 1987).

87, enclosure; *id.* 7). NRC thought that the estimate was prepared by a "DOE official" (CLI-06-22 at 22-23 n.48), but it was prepared by Lockheed Martin and revised by LES. (LES Ex. 86, 87).

NRC reached contradictory conclusions. The Board rejected a price quotation as *unreliable* evidence of DOE's disposal cost (Tr. 2802-03; Third Decision 106-07), but it held the LMI estimate, based on the *same* quotation, *reliable*. (LES Ex. 86 at A-1; LES Ex. 87 at 10, 13)(Third Decision 42). NRC affirmed. (CLI-06-22 at 22-23). Such contradictory action is arbitrary and capricious.

NRC also reasoned that (a) the LMI estimate is subject to annual reevaluation, "enabling the prompt correction of any under-funding," (b) Staff scrutinized the estimate, and (c) NIRS/PC presented no testimony on "whether the DOE estimate potentially left out any required decommissioning or disposal cost elements." (CLI-06-22 at 19). But annual reevaluations exclude intervenors, denying the hearing mandated by AEA §193. And Staff's ex parte review found errors, proving the estimate unreliable. (LES Ex. 87 att. at 7). Moreover, NIRS/PC *did* present testimony on the LMI estimate,[19] which the Board excluded. (Memorandum 2, 4, 5-7, Oct. 20, 2005; CLI-06-22 at 19 n.44).

[19] NIRS/PC presented evidence that Envirocare is unacceptable (Makhijani disposal rebuttal at 16-19), disposal requires a geologic repository (*id.* 7-11), DOE has not selected Envirocare (deconversion rebuttal at 19, contingency rebuttal at

5. NRC failed to analyze impacts of near-surface disposal of depleted uranium, contrary to NEPA.

Review of NEPA compliance inquires whether the agency's action is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." (5 U.S.C. §706(2)(A); *Marsh v. Oregon Natural Resource Council*, 490 U.S. 360, 376 (1989); *Nevada v. DOE*, 457 F.3d 78, 88 (D.C. Cir. 2006); *National Committee for the New River, Inc. v. FERC*, 373 F.3d 1323, 1327 (D.C. Cir. 2004); *Communities Against Runway Expansion, Inc. v. FAA*, 355 F.3d 678, 685-86 (D.C. Cir. 2004)).

The Court asks whether "the agency took a 'hard look' at the environmental consequences of its decision." *Olmsted Falls v. FAA*, 292 F.3d 261, 269 (D.C. Cir. 2002). An EIS must analyze "reasonably foreseeable" impacts of the proposed action. *Village of Bensenville v. FAA*, 457 F.3d 52, 71 (D.C. Cir. 2006); *Mid-States Coalition for Progress v. STB*, 345 F.3d 520, 549 (8th Cir. 2003); 40 C.F.R. §§1502.22; 1508.8; NRC Final Rule, 49 Fed. Reg. 9352, 9353 (March 12, 1984)(NRC will follow 40 C.F.R. §1502.22(a)).

NEPA analysis may not be shirked by dismissing future impacts as a "crystal ball inquiry." *Scientists' Institute for Public Information, Inc. v. AEC*, 481

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12), LMI's estimates are understated (deconversion rebuttal at 16-19; contingency rebuttal at 12-14), and the contingency allowance must be based upon a valid underlying estimate, the status of DOE's deconversion project, and NEPA analysis. (*id.* 14-15).

F.2d 1079, 1092 (D.C. Cir. 1973). NEPA excludes only "remote and highly speculative consequences," *i.e.*, events whose probabilities are "inconsequentially small" or "highly unlikely." *San Luis Obispo,* 751 F.2d at 1300-01. An impact may be deemed remote and speculative only after a study *establishing* the probability as extremely low. *See, e.g., Ground Zero Center for Non-violent Action v. Department of the Navy,* 383 F.3d 1082, 1089-91 (9th Cir. 2004)(probability of nuclear explosion found "infinitesimal"); *San Luis Obispo,* 789 F.2d at 39-40 (probability of large earthquake coinciding with radiologic emergency calculated as one in 35,750,000); *San Luis Obispo,* 751 F.2d at 1298 (probability of core melt "inconsequentially small" and "scientifically and legally insignificant"); *Carolina Environmental Study Group v. United States,* 510 F.2d 796, 799 (D.C. Cir. 1975)(probability of major reactor accidents "exceedingly low"). No such study has been done here.[20]

NRC found human intrusions "so unlikely based on the specific characteristics of the Envirocare site as to fall outside of what can reasonably be called anticipated or not unduly speculative impacts." (CLI-06-15 at 24). It also said that "any projections about the likelihood of an intruder scenario would be exceedingly speculative." (at 24). Thus, it stated both that such intrusions are

[20] The Board elsewhere said that a 3% probability is "not low likelihood." (Tr. 3245). No inquiry has determined that the likelihood of human use is less than 3%.

"unlikely" and that their likelihood *cannot be estimated*. Such statements are contradictory, and neither is supported.

Staff's memorandum states that DRC excluded agricultural or residential uses based on inadequate ground water (LES Ex. 104, att. at 2, 3), but there is no indication that DRC calculated their probability by any accepted method, sufficient to find them highly unlikely. DRC failed to mention hunting, grazing, or recreation scenarios and clearly did not find them highly unlikely. Such uses do not require ground water. Nevertheless, NRC dismissed *all* human use—including short-term use by a hunter, herdsman or recreationist—as "unduly speculative." (CLI-06-15 at 24). No study supports such conclusion, which is arbitrary, capricious, and unsupported.

Human intrusions are a recurring fact at Envirocare. The Baird Report states that "use of the land in the immediate vicinity of the Clive [*i.e.*, Envirocare] site . . . was for grazing of sheep, jackrabbit hunting, and occasional recreation vehicle driving." (NIRS/PC Ex. 170 at 4-4, 4-5). Staff's memorandum states that sheep and cattle were grazed on adjacent federal land. (LES Ex. 104, att. at 4).

Further, the Part 61 rulemaking refutes the idea that human presence can be called "remote and speculative." NRC then stated:

> In evaluating the level of safety which should be achieved, NRC identified 3 principal components that needed to be considered:
>
> * * *
>
> 3. protection of an inadvertent intruder. (NIRS/PC Ex. 274 at 2).

It studied intrusion scenarios:

> Given the potential for human intrusion and the possibility of human exposures from intrusion, NRC believes it is reasonable to estimate the magnitude of exposures that could be received by an intruder. If such potential exposures appear to be significant, then it would be reasonable to explore ways in which such potential exposures can be reduced. First, however, some estimate should be made of the types of activities that could potentially be carried out by an intruder and of the potential pathways for exposure. (NIRS/PC Ex. 275 at 4-2).

NRC studied several direct exposure scenarios: "inhalation of eroded waste," "direct gamma irradiation from 55-gallon drums," "direct gamma irradiation from the ground surface," and "exposure of waste, followed by persons living on the disposal facility being exposed through inhalation of contaminated dust and consumption of food grown on contaminated soil." (*id.* Table 4.1 at 4-4). NRC concluded:

> The potential for inadvertent human intrusion into a closed disposal facility at some point after closure of the disposal facility *is likely*. (*id.* 4-53)(*emphasis supplied*).

Having found human intrusion "likely," NRC may not now call it "unduly speculative" and ignore it. (CLI-06-15 at 24).

NRC has directed Staff to investigate reclassification of depleted uranium under 10 C.F.R. §61.55. (CLI-05-20 at 30). Such classifications are themselves based upon impacts of human intrusion. (NIRS/PC Ex. 275, at 4-6, 4-7). NRC's direction refutes any claim that intrusion is "remote and speculative."

San Luis Obispo Mothers for Peace v. NRC, 449 F.3d 1016, 1030 (9th Cir. 2006), *cert. denied*, 127 S.Ct. 1124 (2007), rejected NRC's dismissal of terrorist attacks as remote and speculative, where NRC (a) had no basis to call such impacts highly improbable and (b), in fact, strove to prevent attacks. Similarly, *Limerick Ecology Action* required NEPA analysis of severe reactor core accidents, where (a) NRC presented no reliable method to determine that they are highly unlikely (869 F.2d at 726, 737-38), and (b) NRC investigations "indicate[d] that it no longer considers such risks remote and speculative." (*id.* 740).

Nor may NRC curtail NEPA analysis at 1000 years. (CLI-06-15 at 17, 25). NEPA "explicitly mandate[s] concern for the long run." *Potomac Alliance v. NRC*, 682 F.2d 1030, 1036 (DC. Cir. 1982). An EIS must "extend throughout the period in which the [depleted uranium] could, under reasonably foreseeable circumstances, remain." (*See id.*). Considering the half-life of 4.46 billion years (NIRS/PC Ex. 190 at 5), abbreviated analysis "fails to ensure that the environment will be preserved and enhanced for . . . our descendants." (*Id.*, *quoting Concerned about Trident v. Rumsfeld*, 555 F.2d 817, 830 (D.C. Cir. 1977)).

NRC also said that the likelihood of intrusion *could not be determined*. (CLI-06-15 at 24). But NRC need not establish the probability of intrusion. *San Luis Obispo*, 449 F.3d at 1031-32. NRC has not ignored other impacts based on difficulty of calculating probability. *Protection Against Malevolent Use of*

Vehicles at Nuclear Power Plants, 59 Fed. Reg. 38,889, 38,890-91 (Aug. 1, 1994). If deemed important, NRC could have addressed probability of intrusion under 40 C.F.R. §1502.22, "Incomplete or unavailable information" (*See San Luis Obispo*, 449 F.3d at 1033), or 10 C.F.R. §51.71:

> To the extent that there are important qualitative considerations or factors that cannot be quantified, these considerations or factors will be discussed in qualitative terms.

There is no substantial evidence for the conclusion that human intrusion is highly unlikely. (5 U.S.C. §706(2)(E)). To disregard human presence "runs counter to evidence before the agency" and fails to consider an important aspect of the problem. *State Farm,* 463 U.S. at 43.

NEPA analysis here also falls short for overlooking elements authorized in addition to uranium, *viz:* "Technitium-99, transuranic isotopes and other contamination." (License, June 23, 2006). Neither LES's application nor the FEIS discloses an intention to use such elements. (*See* 59 N.R.C. 10; NRC Staff Ex. 36 (final) at 2-4). NRC rules require such disclosure. (10 C.F.R. §70.22(a)(4); 10 C.F.R. §51.45(b)). Failure to analyze impacts of such elements is arbitrary and capricious. *State Farm,* 463 U.S. at 43.

6. NRC erroneously adopted DRC's decision without reviewing that decision.

Staff may not abdicate their responsibilities for preparation of an EIS. *See EMR Network v. FCC,* 391 F.3d 269, 273 (D.C. Cir. 2004), *cert. denied,* 125 S.Ct.

2925 (2005); *Sierra Club v. Sigler,* 695 F.2d 957, 962 n.3 (5th Cir. 1983); *Essex County Preservation Association v. Campbell,* 536 F.2d 956, 959-60 (1st Cir. 1976); *Sierra Club v. Lynn,* 502 F.2d 43, 59 (5th Cir. 1974). NRC itself says that Staff may not rely upon data, analyses, or reports prepared by others, unless

> the staff independently evaluates and takes responsibility for the pertinent information before relying on it in an EIS, see 10 C.F.R. Sec. 51.70(b). In other words, the staff need not replicate the work completed by another entity, but rather must independently review and find relevant and scientifically reasonable any outside reports and analyses on which it intends to rely. (Second Decision 18).

See Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2), LBP-82-43A, 15 N.R.C. 1423, 1463-70 (June 1, 1982)(Federal official adopting state analysis must exercise independent judgment.). *See also* 40 C.F.R. §1506.5. Thus, Staff must independently evaluate and be responsible for the reliability of any information which they use. 10 C.F.R. §§51.41, 51.70(b).

Staff testified that DRC—not Staff—analyzed Envirocare's performance. (Tr. 2882-83, 2255). DRC's analysis is clearly faulty (*see* point 3, *supra*)(*Compare: Communities Against Runway Expansion,* 355 F.2d at 686-87). Staff did no review, for Staff did not even request DRC's underlying analyses (Tr. 2711, 2744) and were ignorant of recent *actual* intrusions and of whether DRC considered such intrusions. (Tr. 2901, 2911). Put simply, Staff "reflexively rubber stamp[ed] a statement prepared by others." (CLI-05-28 at 21). Any finding that

Staff "reviewed" DRC's faulty analysis is unsupported by substantial evidence (5 U.S.C. §706(2)(E)) and must be deemed arbitrary and capricious.

7. A Member of the Commission was disqualified.

On May 2, 2006, when hearings were completed and Board decisions were in preparation, Commissioner McGaffigan publicly stated that:

1. NIRS specializes in "factoids and irrelevant facts."
2. NIRS is an "extreme organization."
3. NIRS uses "factoids or made-up facts or irrelevant facts in order to try to condition the public" and "to spur fear in the public."
4. Dr. Makhijani is "another person who doesn't know anything about radiation."
5. NIRS is the "Nuclear Disinformation Resource Service" and produces "disinformation." (See Transcript of May 2, 2006, attached to Declaration of Paul V. Gunter, May 24, 2006).

Such statements are tantamount to prejudgment, and rejection, of any position advanced by NIRS or Dr. Makhijani, regardless of merit. The Commissioner later described his remarks as "non-adjudicatory" (Decision, June 2, 2006, at 2), but the law makes no such distinction, and the opinions stated are clear. The Court's words in a similar case apply here:

> Conduct such as this may have the effect of entrenching a Commissioner in a position which he has publicly stated, making it difficult, if not impossible,

> for him to reach a different conclusion in the event he deems it necessary to do so after consideration of the record. *Cinderella Career and Finishing Schools, Inc. v. FTC,* 425 F.2d 583, 590 (D.C. Cir. 1970).

An adjudicator is disqualified if "a disinterested observer may conclude that (the agency) has in some measure adjudged the facts as well as the law of a particular case in advance of hearing it." *Cinderella*, 425 F.2d at 591. *See also Gilligan, Will & Co. v. SEC,* 267 F.2d 461, 469 (2d Cir.), *cert denied,* 361 U.S. 896 (1959).

The Commissioner's opinions appear to arise from extrajudicial sources. See *Liteky v. United States,* 510 U.S. 540, 545 (1994). But, even when opinions derive from judicial proceedings, a decisionmaker should disqualify himself when his opinion displays "deep-seated favoritism or antagonism that would make fair judgment impossible" (id. 555) and his views are wrongful or inappropriate, because undeserved or excessive. (*id*. 550). The statements here are plainly "wrongful" and "inappropriate."[21]

In *International Business Machines Corp.,* 45 F.3d 641, 644 (2d Cir. 1995), a Judge was disqualified for indicating a desire to prolong a related case, where the parties sought dismissal:

> We think it manifestly clear that a reasonable observer would question the Judge's impartiality on the pending issue . . . . (*id.*).

[21] The statements which triggered the outburst, about the ability of tritium to pass to the placenta, are well-founded. (See Motion at 5 n.2, May 24, 2006).

The reasonable observer is required to question the Commissioner's impartiality, based on statements that NIRS employs "factoids and irrelevant facts" to "spur fear" and produces "disinformation" and that Dr. Makhijani is "another person who doesn't know anything about radiation." Disqualification is required: "The guiding consideration is that the administration of justice should reasonably appear to be disinterested as well as be so in fact." *Liljeberg v. Health Services Acquisition Corp.*, 486 U.S. 847, 869-70 (1988).

Since the Commissioner should have been disqualified, the decision of the tribunal on which he sat must be vacated. *Cinderella*, 425 F.2d at 161.

VII. CONCLUSION

The Court should grant the petitions for review. Since no hearing as required by §193 has been held, and in light of NEPA violations and a Commissioner's disqualification, the license must be vacated.

Respectfully submitted,

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April 2, 2007

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION, TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS

1. This brief complies with the type-volume limitations of Fed. R. App. P. 32(a)(7)(B) because this brief contains 13,994 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionately spaced typeface using Microsoft Word 2000 in 14 point Times New Roman type.

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to Rule 15 of the Federal Rules of Appellate Procedure, the undersigned attorney of record certifies that on April 2, 2007, the foregoing Brief for Petitioners on behalf of NIRS/PC was mailed to the Clerk by First-Class mail, postage prepaid, and served by First Class Mail upon the following:

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