

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued October 9, 2012

Decided February 19, 2013

No. 11-1449

SHIELDALLOY METALLURGICAL CORPORATION,
PETITIONER

v.

NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF
AMERICA,
RESPONDENTS

STATE OF NEW JERSEY,
INTERVENOR

On Petition for Review of an Order
of the Nuclear Regulatory Commission

Matias F. Travieso-Diaz argued the cause for petitioner. With him on the briefs were *Jay E. Silberg*, *Alison M. Crane*, and *Stephen L. Markus*.

Grace H. Kim, Senior Attorney, U.S. Nuclear Regulatory Commission, argued the cause for respondents. With her on the brief were *Lane N. McFadden*, Attorney, U.S. Department of Justice, and *John F. Cordes, Jr.*, Solicitor, U.S. Nuclear Regulatory Commission.

Andrew D. Reese, Deputy Attorney General, Office of the Attorney General for the State of New Jersey, argued the cause and filed the brief for intervenor.

Before: ROGERS and BROWN, *Circuit Judges*, and WILLIAMS, *Senior Circuit Judge*.

Opinion for the Court filed by *Senior Circuit Judge WILLIAMS*.

Opinion concurring in part and dissenting in part filed by *Circuit Judge ROGERS*.

WILLIAMS, *Senior Circuit Judge*. This case arises from our remand in *Shieldalloy Metallurgical Corp. v. NRC*, 624 F.3d 489 (D.C. Cir. 2010). It concerns, above all, an important question of public safety that demands great clarity and precision, neither of which the agency has supplied: What rules govern the means by which the owner of a licensed nuclear facility may decommission that facility and dispose of its radioactive materials? The Nuclear Regulatory Commission claims that it has taken a clear and consistent approach to answering this question. The clarity and consistency are not apparent to us.

The order now under review, *Shieldalloy Metallurgical Corp.*, CLI-11-12, 74 NRC ___ (Oct. 12, 2011) (“Order”), presents that issue and several others. All stem from the interaction between the NRC’s regular decommissioning process and a statutory provision (§ 2021 of the Atomic Energy Act, 42 U.S.C. § 2021) authorizing the NRC to transfer regulatory authority over classes of nuclear materials located within a state to the government of that state. Except as to the primary issue just highlighted—the Commission’s basic standards for decommissioning—we find no legal error in the Commission’s Order; as to that issue, however, our

inability to understand the key regulatory materials purportedly guiding the agency's exercise of control over decommissioning requires another remand.

* * *

Petitioner Shieldalloy Metallurgical Corporation is an industrial company that manufactured metal alloys in Newfield, New Jersey between 1955 and 1998. Its manufacturing process generated radioactive byproducts, which the company held at the Newfield facility under license from the NRC. In the early 1990s, Shieldalloy began consulting with the NRC on the development of a proposal to decommission the facility and dispose of its radioactive materials on-site. It proposed that the disposal would be "restricted," an NRC term of art requiring special conditions designed to minimize the risks to public health and safety. Restricted disposal is in contrast to "unrestricted," under which remediation and reduction of radiation levels have proceeded to the point where there is no need for limits on public access to the disposal site. See 10 C.F.R. § 20.1003 (definitions of "restricted area" and "unrestricted area"). These consultations stretched on for many years and culminated in a formal decommissioning plan, which Shieldalloy submitted to the agency in 2002.

The NRC rejected the 2002 plan as technically deficient. After further consultations with NRC staff, Shieldalloy submitted a second, revised plan in 2005. The NRC rejected that plan, too, with comments. In 2006, Shieldalloy submitted a third plan, which responded to the NRC's comments, as well as to NRC guidance on decommissioning of licensed facilities issued earlier in 2006. The NRC accepted this third plan for the purposes of technical review, but still sought further clarification from Shieldalloy on various aspects. In the

summer of 2009, Shieldalloy submitted a fourth plan that was responsive to these last inquiries. The agency never reviewed that document.

In 2008, while the NRC was reviewing the 2006 plan, New Jersey applied for a transfer of regulatory authority over in-state nuclear materials, pursuant to § 2021 of the Act. The NRC made an initial determination that the transfer to New Jersey would satisfy § 2021(d)'s requirement that the state's regulatory program be "compatible" with that of the NRC, and sought comments from the public. Shieldalloy filed a letter asserting incompatibility between the programs. To no avail: the agreement transferring authority to New Jersey went into effect in September 2009, barely a month after Shieldalloy submitted the fourth version of its decommissioning plan. Less than two weeks later, New Jersey informed Shieldalloy that its 2009 plan—which the NRC had forwarded to the state—did not meet the state's remediation requirements.

Fearing that New Jersey would require it to abandon its plans for on-site disposal and pursue a more expensive off-site alternative (again, in NRC parlance, "unrestricted"), Shieldalloy appealed to this court. We agreed with the company in part and remanded the case to the agency. See *Shieldalloy Metallurgical Corp.*, 624 F.3d at 489. Specifically, we found that the NRC had not responded meaningfully to Shieldalloy's invocation of criterion 25 of the Commission's "Criteria Document:"¹

¹ Criteria for Guidance of State and NRC in Discontinuance of NRC Regulatory Authority and Assumption Thereof by States Through Agreement, 46 Fed. Reg. 7540 (Jan. 23, 1981), as amended by 46 Fed. Reg. 36,969 (July 16, 1981) and 48 Fed. Reg. 33,376 (July 21, 1983). See *Shieldalloy*, 624 F.3d at 491 & n.1.

Existing NRC Licenses and Pending Applications. In effecting the discontinuance of jurisdiction, appropriate arrangements will be made . . . to ensure that there will be no interference with or interruption of . . . the processing of license applications, by reason of the transfer.

46 Fed. Reg 7540, 7543 (Jan. 23, 1981). Shieldalloy had argued that as its license application had already been years in processing, transfer to New Jersey would clearly interrupt the process. See *Shieldalloy*, 624 F.3d at 493. Further, Shieldalloy had suggested that if the Commission wished to generally transfer authority over in-state nuclear materials to New Jersey, there was nothing to prevent it from reserving the Newfield facility from any such transfer.

To this twofold claim, the NRC offered a twofold response. As to the risk of an interruption in seeming violation of criterion 25, it expressed confidence that there would be a “smooth transition” in the processing of pending licensing actions (including decommissioning applications) because New Jersey’s regulatory scheme recognized existing NRC licenses and would continue “any licensing actions that are in progress.” *Id.* at 494 (quotations removed). As to Shieldalloy’s preferred solution—excepting Newfield from the transfer—the NRC claimed that the legislative history of § 2021 showed that Congress did not contemplate its allowing “concurrent regulatory authority over licensees.” 624 F.3d at 493. We rejected both elements of the defense for reasons elaborated in our earlier opinion. *Id.* at 493-95.

Shieldalloy’s initial suit raised a further claim, which we noted but did not address because Shieldalloy had not raised it sufficiently with the Commission. See 624 F.3d at 495-97. This other claim pertained to a cost-benefit analysis principle embedded in the NRC’s regulatory program called the

ALARA principle, which, as we explain more thoroughly below, refers to the requirement that residual radiation at a site be “as low as reasonably achievable.”

The core of Shieldalloy’s ALARA claim was that the New Jersey decommissioning regime, unlike the NRC’s, requires exhumation and off-site disposal of radioactive materials even where that course of action would expose the public to higher doses of radiation than on-site disposal. Thus, Shieldalloy contended, “while New Jersey’s standards may be more stringent, they are actually less safe.” 624 F.3d at 496. And while a Commission policy statement, its Compatibility Guidance Document,² allowed transfer where a state’s standards were “more stringent,” that allowance was subject to the proviso that the “more stringent requirements do not preclude or effectively preclude a practice in the national interest without an adequate public health and safety or environmental basis related to radiation protection.” 62 Fed. Reg. 46,517, 46,520/2. The same policy statement also affirmed the NRC’s mission as being to assure that civilian use of nuclear materials “is carried out with adequate protection of public health and safety.” *Id.* 46520/1; see also *Shieldalloy*, 624 F.3d at 496. Section 2021(d)(2) itself requires the state program to be “adequate to protect the public health and safety.” 42 U.S.C. § 2021(d)(2). In light of these principles, we found that Shieldalloy’s depiction of the effects of transfer held out a “troubling prospect.” 624 F.3d at 496.

² Statement of Principles and Policy for the Agreement State Program; Policy Statement on Adequacy and Compatibility of Agreement State Programs, 62 Fed. Reg. 46,517 (Sept. 3, 1997). See *Shieldalloy*, 624 F.3d at 491 & n.2.

On remand, the NRC afforded Shieldalloy a “fresh opportunity” to comment on the transfer agreement in order to “assure a full airing of the matter.” Order at 6-7. In its submission, Shieldalloy of course pursued the issues occasioning the remand, but it also pursued the contention that the New Jersey rules were more stringent but less safe.

The NRC’s Order rejected Shieldalloy’s objections and reinstated the transfer agreement. Shieldalloy again petitions us for review. We find that, on its second attempt, the agency adequately addressed Shieldalloy’s claims arising out of criterion 25 and the parties’ conflicting interpretations of § 2021. The NRC’s response to Shieldalloy’s ALARA claim, however, appears divorced from the authorities on which it purports to draw, and accordingly we vacate the Order and remand the case again for a more responsive analysis of that issue.

* * *

We begin with the question of concurrent federal and state jurisdiction under § 2021. On remand the NRC determined that § 2021 *requires* it to accept a state’s request for a partial transfer of regulatory authority if the request satisfies the conditions laid out in § 2021(d), but *forbids* the agency from proposing partial transfers either at the request of a regulated entity or on its own initiative. In other words, the NRC reads § 2021 as a grant of authority to accept or reject, but never to modify, a proposed transfer agreement. See Order at 8-20.

Whether § 2021 straightjackets the NRC into treating state transfer applications on an “all or nothing” basis is reviewable under *Chevron USA, Inc. v. NRDC, Inc.*, 467 U.S. 837 (1984), which means that, as *Entergy Corp. v.*

Riverkeeper, Inc., 556 U.S. 208, 218 (2009), observed, a “reasonable agency interpretation prevails.”

As we mentioned in our earlier opinion, there appears to be a contradiction between § 2021(b), which provides that the NRC “is *authorized* to enter into agreements . . . with respect to *any one or more*” classes of materials, and § 2021(d), which states that the agency “*shall* enter into an agreement” under § 2021(b) provided the conditions of compatibility, adequacy and certification are met. 42 U.S.C. § 2021(b) & (d) (emphases added); see *Shieldalloy*, 624 F.3d at 495. The latter provision appears to state an imperative, whereas the former suggests some flexibility to negotiate which classes of materials will be governed by the transfer.

In its Order, the Commission reconciles these two provisions by reading § 2021(b) as a “general grant of legal authority” to hand a state authority over designated nuclear materials, and § 2021(d)’s “shall” as mandating that transfer when the other statutory criteria are met. Order at 11-14. The Commission bolsters this reading with references to the legislative history suggesting a strong congressional determination to recognize the interests of states. *Id.* at 14-15. It also plausibly construes the “any one or more” language of § 2012(b) as reflecting no more than an anticipation that agreements might cover fewer than all the three relevant categories of nuclear materials at a time. *Id.* at 16. The Commission also attributed its earlier approval of a transfer to Oklahoma of less than all the sites with materials of a specific class, see *Shieldalloy*, 624 F.3d at 493-94, to Oklahoma’s express *unwillingness* to assume authority over the specific materials, which the legislative history again suggested might be a sound basis for accepting a proposal of partial transfer. Order at 16-20.

In other words, the NRC saw § 2021 as conferring authority to *accept* but not *request* partial transfers. We can imagine contexts where this bright-line distinction would break down. Suppose, for example, the NRC rejected or made clear its intent to reject a proposed transfer agreement based solely on concerns about a single facility. Suppose the state then intuited that a partial proposal which excluded that facility would be a shoo-in and decided it was better not to throw the baby out with the bathwater? Would this not be an NRC-negotiated partial transfer in substance if not in name? But even taking into account this conceptual weakness, the Commission's interpretive exercise appears reasonable and consistent with the statutory scheme.

Shieldalloy argues that the permissive language found at § 2021(c)(4) & (j) demonstrates Congress's intent "for the NRC to retain flexibility in determining how to fashion and manage its agreement with a state." Pet'r Br. 28. But both seem to cut in favor of the Commission's view. Section 2021(j) gives the NRC discretion to suspend "all or part" of a transfer agreement in the event of an "emergency situation" or where the state has failed to live up to its responsibilities under an agreement. And § 2021(c)(4) concerns only situations where the agency has determined "by regulation or order" that the materials over which the state seeks regulatory authority pose such "hazards or potential hazards" that they must be disposed under NRC license. 42 U.S.C. § 2021(c)(4). These very narrow provisions for special treatments tend to confirm the NRC's view that it has no general authority to reject part of a state's qualifying request for transfer.

There remains Shieldalloy's argument that the Commission violated criterion 25 by failing to ensure that there would be no interruption in the processing of license applications. Of course, once the Commission has precluded

its exercise of any discretion to cut part of a transfer out of a state's request, the only remedy would be the seemingly drastic one of denying the request in full.

Indeed, if one reads criterion 25 as Shieldalloy contends it should be read, then the NRC in fact *should* have rejected New Jersey's application once it determined that a partial transfer was unavailable. The company argues, not unreasonably, that where a regulated entity has engaged in an extensive process of dialogue and collaboration with an agency in pursuit of specific licensing outcome, then a sudden relinquishment of regulatory authority to a different sovereign with a radically different regulatory framework necessarily constitutes "interference with or interruption of" the processing of its licensing application.

We certainly sympathize with Shieldalloy's frustration at having been jilted by the NRC after a decade of dogged courting. But under the extremely narrow standard by which we review an agency's interpretation of its own regulations, see, e.g., *Thomas Jefferson Univ. v. Shalala*, 512 U.S. 504, 512 (1994), we are constrained to accept the NRC's argument that it has never read criterion 25 as anything other than a "purely administrative" provision requiring the orderly transfer of records from the agency to the transferee state. Order at 30; see generally *id.* at 28-34. Nothing in the text plainly forbids the NRC from proceeding with a transfer under § 2021 even though a pending license application will meet a different fate under a state regulatory regime than it would under the federal equivalent.

* * *

Shieldalloy's ALARA argument concerns the operation of that principle in the context of a 1997 NRC final rule on the

decommissioning of licensed facilities, termed the License Termination Rule (“LTR”). 10 C.F.R. §§ 20.1401-06. The LTR applies to a broad range of NRC licenses, including those required for the operation of nuclear reactors, the possession of spent fuel and byproduct radioactive materials, and the disposal and storage of high-level radioactive wastes. See *id.* § 20.1401 (stating that the LTR applies to the decommissioning of licensed facilities under 10 C.F.R. parts 30 (byproduct material), 40 (source material), 50 (production and utilization facilities), 52 (nuclear power plants), 60 (high-level radioactive waste), 61 (land disposal of radioactive waste), 63 (waste disposal in Yucca Mountain), 70 (special nuclear material) and 72 (spent fuel and other wastes)). Shieldalloy holds a part 40 license to possess source material containing uranium and thorium at the Newfield site. *Shieldalloy Metallurgical Corporation*, NRC.GOV, <http://www.nrc.gov/info-finder/decommissioning/complex/shieldalloy-metallurgical-corporation-smc-.html>.

Under the LTR, a site can be decommissioned for either unrestricted or restricted use. 10 C.F.R. § 20.1402-03; see also *id.* § 20.1003 (definition of “decommission”). Again, unrestricted use describes a site that has been remediated and at which radiation levels have been reduced to the point where there is no need to limit public access. *Id.* §§ 20.1003 (definition of “unrestricted area”), 20.1402. Restricted sites are those that will be remediated to some point short of the conditions required for unrestricted use, but where public health and safety can be ensured through the establishment of adequate controls. *Id.* §§ 20.1003 (definition of “restricted area”), 20.1403. The regulations also put a ceiling on dose exposure in the event that the institutional controls are “no longer in effect,” *id.* § 20-1403(e), a ceiling higher than Shieldalloy’s estimate of the dose exposure in that event under its current decommissioning plan. See Order at 38-39.

Section 20.1402 of the LTR sets out the conditions under which a site will be released for unrestricted use on termination of a license. Section 20.1403 does the same for restricted release. Under § 20.1402, a licensee can pursue unrestricted release after reducing residual radiation at the site to “levels that are as low as reasonably achievable (ALARA),” and in any event no greater than 25 millirem (“mrem”). *Id.* § 20.1402.³ The prerequisites for restricted release under § 20.1403 are more elaborate, and require the licensee to arrange and set aside funds for “legally enforceable institutional controls” that will limit human exposure to no greater than 25 mrem. *Id.* §§ 20.1403(b)-(c).

In addition to these technical instructions, the LTR requires a licensee seeking restricted release to make what the NRC calls (Order at 41) an initial showing of “eligibility” set out at § 20.1403(a):

A site will be considered acceptable for license termination under restricted conditions if:

(a) The licensee can demonstrate that further reductions in residual radioactivity necessary to comply with the provisions of § 20.1402 would result in net public or environmental harm *or were not being made because the residual levels associated with restricted conditions are ALARA*. Determination of the levels which are ALARA must take into account consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal;

³ All mrem references are to increments above background radiation.

Id. § 20.1403(a) (emphasis added). The NRC characterizes the “net public or environmental” harm test alluded to in § 20.1403(a) as an “abbreviated” form of ALARA that takes into account only a subset of the costs involved in a full ALARA assessment. Order at 25-26; Resp. Br. 13-14 n.3, 59-60 n.13. The parties have focused exclusively on the ALARA test, and so shall we.

Shieldalloy argues that the NRC provides for an eligibility test for restricted release predicated on a comparative application of the ALARA principle. More specifically, its response to the Commission’s solicitation of views on remand argued that the Commission’s rules and interpretations allow a licensee to employ restricted release if it would result in a lower radiation exposure than unrestricted release (which necessarily involves a comparison of the two). Joint Appendix (“J.A.”) 712, 714-15; Pet’r Br. at 47. In other words, if we understand Shieldalloy correctly, the proper application of the emphasized language would entail a comparison between restricted and unrestricted release, and the former would win when it yielded lower risks than unrestricted. By contrast, Shieldalloy asserts, New Jersey does not contemplate any form of radiation dose comparison between restricted and unrestricted release, and may require unrestricted release even where restricted release would have been safer. On this analysis, and given the preferences for safety expressed in the statute, the Criteria Document and the Compatibility Guidance Document, Shieldalloy argues that the New Jersey rules are not “compatible” with NRC’s, as required by § 2021(d)(3).

In its Order and before us, the NRC rejects outright this reading of § 20.1403(a). It maintains that its regulations “neither explicitly nor implicitly require a comparison between the levels of protection afforded by the unrestricted and restricted decommissioning options.” Order at 37; see

also Resp. Br. at 57. It further declares that “unrestricted release and restricted release are simply not susceptible to being compared meaningfully,” Order at 37, because of the “uncertainties” associated with restricted release, *id.*

As for ALARA, the agency states that the principle’s operation is confined to comparisons of different remediation options *of the same class*—that is, for comparing two unrestricted-release proposals, or two restricted-release proposals, but never for comparing a restricted release option with an unrestricted one. Order at 40-41. The purpose of what it views as the correct understanding of ALARA, the agency avows, is twofold: First, it serves as a tool for measuring the reductions in radiation levels that it will require below the maxima set out in §§ 20.1402-03 in cases where the benefits of such additional reductions do not exceed the costs. *Id.* 41. Second, through its incorporation into § 20.1403(a) it provides “a criterion to limit the use of restricted release.” *Id.*

With respect to the precise meaning of § 20.1403(a), the agency tells us that the provision requires unrestricted release, except where “remediation to the level of 25 mrem per year for unrestricted release [set forth in § 20.1402] would not be beneficial from a cost standpoint.” Resp. Br. at 55. The agency further asserts that the ALARA principle, as used in § 20.1403(a), is the analytic prism for such a weighing of costs and benefits. Order at 25, 41. As explained in its brief, the NRC sees the role of ALARA in § 20.1403(a) as helping to ascertain whether even the *highest* radiation levels permissible for unrestricted release under § 20.1402 are attainable in a cost-beneficial manner. Resp. Br. at 59.

We are quite baffled by the NRC’s current interpretation of § 20.1403(a). The agency’s order and its brief do not quote from the provision or make any effort to engage with its text. Instead, they state in bald and conclusory fashion that the

regulation does not mean what Shieldalloy says it means. Unlike the NRC, we do not find the meaning of § 20.1403(a) self-evident. Rather, we think that its text neither precludes the reading given to the provision by Shieldalloy nor, at least without exegesis that is completely missing here, supports that proposed by the NRC.

The first sentence of § 20.1403(a) provides that a licensee is eligible for restricted release if it can prove that the remedial measures required of unrestricted release “were not being made because the residual levels associated with restricted conditions are ALARA.” 10 C.F.R. § 20.1403(a). Although the passive construction of this clause leaves us to guess *who* exactly is not making the residual reductions required for unrestricted release, we think that it can only be the licensee or its agents, since the licensee is ultimately responsible for satisfying the decommissioning requirements of the LTR. Thus § 20.1403(a) appears to stand for the proposition that a licensee is eligible for restricted release upon showing that it has performed an ALARA analysis of *restricted* release decommissioning options, and the results of that analysis have caused it not to pursue unrestricted release.

The language of § 20.1403(a) is silent as to why an ALARA analysis of restricted release would cause a licensee not to pursue unrestricted release. If we accept the NRC’s assertion that ALARA cannot be used to compare restricted with unrestricted release, Order at 40-42, however, then the text yields a key meaning: under § 20.1403(a) a licensee can qualify for restricted release without having to make any showing about unrestricted release. In other words, assuming the NRC definition of ALARA, the availability of restricted release under § 20.1403 would appear to have nothing to do with whether unrestricted release can be attained in a cost-beneficial manner, and everything to do with some property of restricted release. What that property of restricted release is

we cannot say, since the NRC's explanation of the role of ALARA in § 20.1403(a) discusses *only* its application to unrestricted release, and makes no reference to restricted release. *Id.*; see also Resp. Br. at 13-15, 54-55, 59.

Further, the understanding of § 20.1403(a) we have just sketched out (in which the critical language of § 20.1403(a) invites attention to some aspect of restricted release) jars with the NRC's insistence that it "explicitly expressed a preference for unrestricted release in adopting" the LTR: the provision appears to permit restricted release irrespective of the merits of unrestricted release. Order at 39. The NRC is correct that it has repeatedly stated it holds that preference. See, e.g., *Radiological Criteria for License Termination*, 59 Fed. Reg. 43,200, 43,216 (proposed August 22, 1994) ("The Commission expects the licensee to make every reasonable effort to reduce residual radioactivity to levels that will allow unrestricted release of the site."); *Radiological Criteria for License Termination*, 62 Fed. Reg. 39,058, 39,069 (July 21, 1997) ("The Commission continues to believe that unrestricted use is generally preferable for the reasons noted.") But such words mean little if they are not reflected in the text of the rule and the Commission's other regulatory pronouncements.

Of course, a reading of the emphasized language in the first sentence of § 20.1403(a) as conditioning eligibility for restricted release solely on some characteristic of restricted release (i.e., without the comparison with unrestricted release that Shieldalloy finds implied) seems in tension with second sentence of the provision, which states that the ALARA analysis referenced in the first sentence must account for "consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal." 10 C.F.R. § 20.1403(a). Traffic accidents related to waste disposal would seem to have little to do with

restricted release, which involves on-site disposal of radioactive materials. By contrast, traffic accidents are an important concern for licensees pursuing unrestricted release, which ordinarily requires transfer of radioactive materials to another location. Order at 37-38 (describing restricted and unrestricted release). Yet the first sentence of § 20.1403(a) speaks only of “restricted conditions” being ALARA.

Other NRC regulations and statements pertaining to ALARA only deepen the confusion. 10 C.F.R. § 20.1003, which defines key terms used in NRC regulations pertaining to protection against radiation (which regulations include the LTR), defines ALARA as “making every reasonable effort” to cut radiation exposure “as far below the dose limits . . . as is practical,” with practicality further defined as an open-ended set of “societal and socioeconomic considerations.” 10 C.F.R. § 20.1003. This definition seems to match the NRC’s claim that ALARA is a device for insisting on cost-beneficial radiation reductions below maximum dose limits (e.g., 25 mrem for unrestricted release under § 20.1402), but appears completely alien to the NRC’s reading of § 20.1403(a), under which ALARA is used to assess the cost-efficiency of attaining radiation levels *at those limits*. See Resp. Br. at 59.

Even harder to square with the NRC’s position are passages of an NRC policy statement called NUREG-1757, which the agency describes as a “comprehensive NRC guidance document” on license termination. Order 24; see “Consolidated Decommissioning Guidance,” NUREG-1757, Vol. 2 (Rev. 1, Sept. 2006) (“NUREG-1757”), available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1757/>. The document evinces a clear expectation that a licensee must compare unrestricted and restricted release in order to establish eligibility under § 20.1403(a). For example, Chapter 6 of NUREG-1757, entitled “ALARA Analyses,” contains the following paragraph:

Appendix N of this volume discusses five different possible benefits. . . . In most comparisons between alternatives in the same class (e.g., both alternatives result in unrestricted release), the only important benefit should be the collective dose averted. *In comparisons between restricted and unrestricted release*, the other benefits can become important.

NUREG-1757 at 6-3 (emphasis added).

Pursuing this cross-reference to Appendix N, we find the following passage pertaining to the “benefits” side of ALARA’s cost-benefit analysis:

Regulatory Costs Avoided

This benefit usually manifests in *ALARA analyses of restricted release versus unrestricted release decommissioning goals*. . . . When evaluating the ability of a licensee’s proposal for restricted release according to 10 CFR [§] 20.1403(a), avoiding these costs should be included in the benefits of the unrestricted release decommissioning alternative. These should not be included as costs related to the restricted release.

Id. at N-6 (emphasis added).

These passages do not appear to be the product of inattentive drafting. NRC officials invoked the same concept in a letter they sent Shieldalloy after accepting of the company’s 2006 decommissioning plan for technical review. That letter, entitled “Request for Additional Information” (“RAI”), warned Shieldalloy that overestimating the cost of unrestricted release “would bias the net harm or ALARA

comparison away from the unrestricted use option.” J.A. at 393.

These statements from NUREG-1757 and the RAI can reasonably be read to call for precisely the kind of comparative dose analysis that Shieldalloy claims is contemplated by § 20.1403(a). Yet the NRC waves off the statements as “additional technical information and guidance on the mechanics of properly performing the ALARA eligibility analysis” that should be “construed in context.” Resp. Br. at 61. Then, without any attempt at explaining what it is in the context that saps these words of their apparent meaning, the agency abruptly concludes that “[n]one of these NRC statements . . . supports Shieldalloy’s unprecedented comparative dose approach.” *Id.* at 63. As with its discussion of § 20.1403(a), the agency appears to believe that a mere declaration of the meaning of disputed text, unsupported by any analysis, satisfies our standards of review.

Furthermore, if NUREG-1757 and the RAI mean what they appear to mean, the Order’s insistence that the choice between restricted and unrestricted dispositions can never turn on a direct comparison between the two would appear to be the sort of “swerve” from prior policy that requires explanation. *Greater Boston Television v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1970); see also *Alaska Professional Hunters Ass’n v. FAA*, 177 F.3d 1030 (D.C. Cir. 1999). Here, the NRC does not seem troubled by its prior inconsistent language, nor does it even “display awareness that it is changing positions.” *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009); cf. *General Elec. Co. v. EPA*, 53 F.3d 1324, 1333-34 (D.C. Cir. 1995) (finding notice inadequate where “the regulations and policy statements are unclear, where the petitioner’s interpretation is reasonable, and where the agency itself struggles to provide a definitive reading of the regulatory requirements”); *Yakima Valley*

Cablevision, Inc. v. FCC, 794 F.2d 737, 745-46 (D.C. Cir. 1986). This failure to grapple with the past is especially troubling given the Commission’s total silence on why the uncertainties involved in restricted/unrestricted comparisons (alluded to in the Order at 37) are categorically more impenetrable than those required for comparisons between different plans of restricted release, which the Commission views as entirely permissible.

The NRC trots out the familiar proposition that deference to an agency’s interpretation of its own rule “is all the more warranted when, as here, the regulation concerns a complex and highly technical regulatory program.” Resp. Br. at 53 (quoting *St. Luke’s Hosp. v. Sebelius*, 611 F.3d 900, 905 (D.C. Cir. 2010)). But where the agency writes an opaque and ambiguous rule and then by fiat proclaims its meaning without any effort to consider its text or dispel its mysteries, the agency’s insistence on deference is misplaced. “We cannot defer to what we cannot perceive.” *Int’l Longshoremen’s Ass’n v. Nat’l Mediation Bd.*, 870 F.2d 733, 736 (D.C. Cir. 1989). Hand-waving about complexity seems especially unsuitable where the text’s opacity is all of the agency’s choosing and it concerns a complex regulatory program with immense public safety implications.

Our dissenting colleague echoes the Commission’s assertions in its Order and in its brief. See Dissent at 8-21. Thus she fully accepts the idea that § 20.1403(a), as a threshold criterion for use of a restricted release, is exclusively related to difficulties with accomplishing a satisfactory *unrestricted* release—despite the language in § 20.1403(a) itself that directs our attention to *restricted* conditions. *Id.* at 17-20. Like the Commission, our colleague fails to directly engage with the language of § 20.1403(a) in her defense of this reading. Further, the “exegesis” she points to in NUREG-1757, see *id.* at 18, is merely a mathematical

formula used to determine the lowest cost-effective radiation levels afforded by a particular remedial approach, which hardly settles the meaning of § 20.1403(a) or precludes a reading calling for a comparative-dose analysis—if anything, the formula seems to facilitate such a comparison.

Our colleague also suggests that the court has offered “its own interpretation of § 20.1403(a).” Dissent at 17. But far from substituting our “judgment for that of the agency,” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, (1983), we have merely done what courts are supposed to do with regulatory language—try to explore the validity of the agency’s interpretation. Deference does not preclude analysis. In the present case, our study of the text led to the conclusion that the Commission’s response to Shieldalloy lacked an apparent textual basis; but that finding of course does not obligate the NRC to accept *Shieldalloy’s* interpretation of § 20.1403(a). Rather, it requires only that the Commission explain itself in a way that rationally addresses the concerns we set out above.

We note finally our dissenting colleague’s contention that Shieldalloy did not properly raise its ALARA claim before the Commission. Her conviction appears to turn on Shieldalloy’s failure to (1) engage in an extensive textual analysis of § 20.1403(a); or (2) provide a “technical rationale” in support of its objections. Dissent at 4-7. As to the first, we think it unreasonable to expect Shieldalloy to have contested the Commission’s baffling interpretation of § 20.1403(a) before that interpretation made its debut in the Commission’s Order. Given the confusing wording of the provision and the more straightforward guidance found in NUREG-1757 and the RAI, we can hardly fault Shieldalloy for eschewing § 20.1403(a) in favor of an argument framed in terms of ALARA and the LTR. Of equal importance, our colleague ignores the extensive back-and-forth between Shieldalloy and the

Commission over the past decade, including the Commission's review of Shieldalloy's several decommissioning plans (cited by Shieldalloy in its comments to the agency, J.A. at 712 n.20), which spell out Shieldalloy's understanding of the ALARA principle in considerable detail. See, e.g., Decommissioning Plan for the Newfield Facility 75-92, 154, Report No. 94005/G-28247, Rev. 1 (2005), available at <http://pbadupws.nrc.gov/docs/ML0531/ML053190220.pdf>; see also Supplemental Appendix ("S.A.") at 27-44, 120-22. In light of this regulatory history, we are surprised that our colleague so readily accepts the Commission's claim that it had "largely to guess" at the nature of Shieldalloy's objections. See Order at 35; Dissent at 4.

As to Shieldalloy's failure to provide a "technical rationale" (a term which neither the Commission nor our colleague has bothered to define), we do not see how that omission hamstrung the Commission's ability to grasp objections based on the contention that the NRC rules and directives permitted a licensee to choose the least dangerous solution. As the Commission itself observed, its rejection of Shieldalloy's ALARA claim turned on the company's "fundamentally inaccurate understanding of our license termination requirements," Order at 36, and not a flawed engineering analysis. Even assuming otherwise, the reams of technical data Shieldalloy submitted to the Commission in its decommissioning plans, see, e.g., S.A. at 3-127, certainly supplied whatever quantitative detail the Commission might have needed to appreciate Shieldalloy's position.

* * *

For the reasons stated, we again find the NRC's transfer of authority to New Jersey arbitrary and capricious. We

therefore grant Shieldalloy's petition, vacate the NRC's transfer of authority, and remand for proceedings consistent with this opinion.

So ordered.

ROGERS, *Circuit Judge*, concurring in part and dissenting in part. I join the court in deferring to the interpretation of the Nuclear Regulatory Commission of its authority under the Atomic Energy Act, 42 U.S.C. § 2021, to transfer jurisdiction over Shieldalloy's Newfield site to the State of New Jersey. As the court explains, the NRC's statutory reconciliation is plausible, and also consistent with legislative history indicating Congress's desire to recognize states' interests as well as the NRC's prior state transfer approvals, including to Oklahoma. Op. at 7–9. I also join the court in concluding that the NRC's interpretation of Criterion 25 of its guidance on state transfer agreements is not arbitrary or capricious or contrary to law. Op. at 9–10.

To the extent the court concludes, however, that the NRC's transfer to New Jersey is arbitrary and capricious, and again remands the case, I respectfully dissent. The court inexplicably excuses Shieldalloy from two fundamental requirements: first, to raise its challenges to agency action with the agency so it has an opportunity to respond, and second, to state its challenges on appeal in more than a skeletal way. Because Shieldalloy has done neither, despite a remand, and because, in not deferring to the NRC's reasonable interpretation of its regulations, the court has injected a textual analysis of its own, a second remand is unwarranted. A review of the NRC's analysis on remand demonstrates, moreover, that it has offered a reasoned response to Shieldalloy's challenges, and I therefore would deny the petition for review.

I.

In remanding the case to the NRC for a second time, the court has concluded that the NRC's response upon remand fails for lack of clarity. Op. at 2. Indeed, the court cloaks its disposition vacating the transfer of authority to New Jersey in concern that the NRC has somehow jeopardized public safety.

See id. Yet the administrative record before the court indicates that any lack of clarity arises not from the NRC's lack of articulation, or evidence it has failed to protect public safety, but from Shieldalloy's repeated failure to set forth its arguments with sufficient clarity so that the NRC could respond to them.

When the court initially remanded the case to the NRC, it noted that Shieldalloy had failed to raise in its comments to the NRC that removal of Shieldalloy's radioactive materials from the Newfield site in New Jersey to a facility in Utah would result in greater harms to public health and the environment than onsite disposal. *See Shieldalloy Metallurgical Corp. v. NRC*, 624 F.3d 489, 496 (D.C. Cir. 2010). The court then observed that "the unacknowledged source of Shieldalloy's criticisms regarding ALARA [i.e., the As Low As Reasonably Achievable principle], restricted use, and various standards for decommissioning" might be the "odd" fact that the License Termination Rule, 10 C.F.R. §§ 20.1401-06, which prescribes conditions for decommissioning licensed facilities, "does not feature in the Criteria Document" that the NRC uses to assess the compatibility of state and federal regulatory programs. *Id.* at 496-97. The court today again recalls that in the first appeal Shieldalloy raised a "claim pertain[ing] to a cost-benefit analysis principle embedded in the NRC's regulatory program called the ALARA principle," *Op.* at 5-6, but that the court did not address it "because Shieldalloy had not raised it sufficiently with the Commission." *Id.* at 5.

The court has long instructed what it reaffirmed in *ExxonMobil Oil Corp. v. FERC*, 487 F.3d 945 (D.C. Cir. 2007):

A party must first raise an issue with an agency before seeking judicial review. This requirement serves at least two purposes. It ensures "simple fairness" to the agency and other affected litigants.

It also provides this Court with a record to evaluate complex regulatory issues; after all, the scope of judicial review under the APA would be significantly expanded if courts were to adjudicate administrative action without the benefit of a full airing of the issues before the agency.

Id. at 962 (citations omitted); *see also Advocates for Hwy. & Auto Safety v. Fed. Motor Carrier Safety Admin.*, 429 F.3d 1136, 1148-50 (D.C. Cir. 2005); *United Transp. Union v. Surface Transp. Bd.*, 114 F.3d 1242, 1244-45 (D.C. Cir. 1997).

On remand from this court, the NRC “decided to examine anew all of the issues surrounding transfer of the Newfield site to New Jersey and afford Shieldalloy a fresh opportunity to comment on New Jersey’s agreement-state application.” *Shieldalloy Metallurgical Corp.*, CLI-11-12, 74 NRC –, Memorandum and Order at 6–7 (Oct. 12, 2011) (“Mem.”). Both Shieldalloy and New Jersey submitted new comments. Thereafter, the NRC reinstated New Jersey’s authority to regulate the Newfield site finding it “adequate” and “compatible” with the NRC’s regulatory program “within the meaning of section 274d and our implementing agreement-state policies.” *Id.* at 20 (citing 42 U.S.C. § 2021(d)).¹ Among other things, the NRC described the regulatory framework, ALARA, the License Termination Rule, and New Jersey’s license

¹ *See Criteria for Guidance of States and NRC in Discontinuance of NRC Regulatory Authority and Assumption Thereof by States Through Agreement*, 46 Fed. Reg. 7540 (Jan. 23, 1981), as amended by 46 Fed. Reg. 36,969 (July 16, 1981) and 48 Fed. Reg. 33,376 (July 21, 1983); *Statement of Principles and Policy for the Agreement State Program; Policy Statement on Adequacy and Compatibility of Agreement State Programs*, 62 Fed. Reg. 46,517 (Sept. 3, 1997) (the latter, “1997 Policy Statement”).

termination program. *See id.* at 21–28. It recounted Shieldalloy’s “misunderstandings regarding [the NRC’s] regulatory approach to license termination and ALARA principle,” *id.* at 42, before considering, “in the proper context,” *id.*, Shieldalloy’s position, “belatedly raised before the court but not as a comment on the New Jersey agreement,” *id.* at 34, that “New Jersey’s license termination regulations are not as protective as [the NRC’s],” *id.* at 42.

Further examination of the NRC’s response on remand is discussed in Part II, *infra*. What is significant at this point is Shieldalloy’s procedural default. On remand the NRC observed:

Despite the open-ended opportunity we provided in this remand proceeding for Shieldalloy to fully articulate its position on this and other issues, it has presented its “comparative dose” position, and its related argument as to ALARA, in *summary and conclusory* fashion, leaving us largely to *guess at the technical rationale and underlying foundation for its position*. This is unfortunate, given the highly complex and technical nature of our license termination regulations. While we endeavor to respond fully to Shieldalloy’s comparative dose and related ALARA argument based on our understanding of them, we are mindful of the admonition that “the dialogue between administrative agencies and the public is a two-way street.”

Id. at 35–36 (quoting *Northside Sanitary Landfill, Inc. v. Thomas*, 849 F.2d 1516, 1520 (D.C. Cir. 1988)) (emphasis added and quotation marks omitted). The record in this court confirms that on remand Shieldalloy commented, in two short paragraphs, without providing technical support, that New

Jersey’s “[f]ailure to implement the ALARA standard would allow New Jersey to reject the decommissioning option for the Newfield Facility that would result in the lowest doses to the public and the environment.” Response to NRC’s Jan. 3, 2011 Order at 15–16. It cited only 10 C.F.R. § 20.1003, which defines ALARA. *Id.* at 15.

The court today is in the same predicament as the NRC on remand as a result of Shieldalloy’s conduct. The court states: “In other words, *if* we understand Shieldalloy correctly, the proper application of the emphasized language [in 10 C.F.R. § 20.1403(a)²] would entail a comparison between restricted and unrestricted release, and the former would win when it yielded lower risks than unrestricted.” *Op.* at 13 (emphasis added). The record shows that on remand Shieldalloy never cited 10 C.F.R. § 20.1403(a), nor argued that the regulation, part of the License Termination Rule, either requires a “comparative dose” analysis or the NRC to approve a decommissioning option (either unrestricted or restricted) based on the outcome of that analysis.

² Section 20.1403(a) provides that “[a] site will be considered acceptable for license termination under restricted conditions if:”

The licensee can demonstrate that further reductions in residual radioactivity necessary to comply with the provisions of § 20.1402 [standards for unrestricted release] would result in net public or environmental harm *or* were not being made because the residual levels associated with *restricted conditions* are ALARA. Determination of the levels which are ALARA must take into account consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal.

10 C.F.R. § 20.1403(a) (emphasis added).

Even now, in this second appeal challenging the NRC's transfer of authority to New Jersey, it is at best doubtful that Shieldalloy has properly presented the issues regarding comparative dose and ALARA. In its opening brief, Shieldalloy contends, in conclusory fashion, leaving the court to guess at its rationale, that "there is a need to compare the radiological doses that would result from the decommissioning of a facility under unrestricted release and restricted release approaches and to apply the ALARA principle to select the option that results in the lowest doses." Pet'r's Br. 43. Although not referencing 10 C.F.R. § 20.1403(a) in its comments on remand, Shieldalloy now contends, summarily, that the regulation requires a comparison between the two decommissioning approaches. At most it offers only a conclusory textual analysis of § 20.1403(a) and never explains why the regulation requires the NRC to approve one release option over another as a result of such an analysis. In similar fashion, Shieldalloy has provided no supporting technical rationale for its ALARA contention. This court has instructed: "It is not enough merely to mention a possible argument in the most skeletal way, leaving the court to do counsel's work, create the ossature for the argument, and put flesh on its bones." *Schneider v. Kissinger*, 412 F.3d 190, 200 n.1 (D.C. Cir. 2005) (citation omitted); *see also Carducci v. Regan*, 714 F.2d 171, 177 (D.C. Cir. 1983).

That aside, on appeal Shieldalloy points for the first time to the NRC's comprehensive guidance document on decommissioning, NUREG-1757, and to NRC staff requests for additional information purportedly in support of its comparative dose/ALARA contention. Additionally, only in its reply brief does Shieldalloy suggest that the NRC's explanation of § 20.1403(a) — as requiring a licensee to demonstrate that remediation to the level of adequate protection to allow unrestricted release without institutional controls would not be cost-beneficial, *see Resp'ts' Br.* at 55–56, 61 — "ignores the

second half of 10 C.F.R. § 20.1403(a) after the word ‘or’, that calls for an ALARA analysis of the restricted release option.” Reply Br. 15–16. Ordinarily, the court will not address arguments first raised in a reply brief. *See United States v. Wilson*, 605 F.3d 985, 1035 (D.C. Cir. 2010); *Students Against Genocide v. Dep’t of State*, 257 F.3d 828, 835 (D.C. Cir. 2001).

For purposes of this court’s review, one problem is that identified by the NRC on remand: Shieldalloy failed to provide the NRC with a textual analysis of § 20.1403(a) or a basis for concluding that the regulation calls for a comparative ALARA analysis or requires the NRC to approve a decommissioning option based on the outcome of that analysis. It also failed to provide technical support for its claim – a significant failure because § 20.1403(a) entails the use of ALARA, *infra* Part II.B. To that extent it has deprived the court of a record addressing fully explicated and supported objections to the NRC’s transfer order. Having had its comparative dose interpretation twice rejected by the NRC, *see* Mem. at 35, much less the court’s observation that Shieldalloy had “not raised [its cost-benefit claim] sufficiently with the Commission,” Op. at 5 (citing *Shieldalloy*, 624 F.3d at 495–97), Shieldalloy had an obligation on remand to fully present argument and data in response to the NRC’s reactions to its approach. The second problem is that on appeal Shieldalloy has not meaningfully cured these deficiencies. So neither the court nor the NRC is clear about Shieldalloy’s position (beyond opposing the transfer of authority and the unrestricted release option as less safe) even though Shieldalloy is a sophisticated corporate litigant that has had four opportunities to present its arguments – twice before the NRC and twice before this court, in addition to opportunities during the decommissioning proceedings since the early 1990s. Against this backdrop, the court’s decision to vacate the transfer order and remand the case again to the NRC is an unwarranted “windfall” for Shieldalloy.

II.

All is not lost, however; or at least it should not be. “[E]ndeavor[ing] to respond fully to Shieldalloy’s comparative dose and related ALARA argument based on [its] understanding of them,” Mem. at 35–36, the NRC stated on remand: “Shieldalloy *apparently* construes our license termination regulations as calling for a licensee to compare doses of the restricted-release and unrestricted-release decommissioning options and to choose the option that affords the lowest dose.” *Id.* at 36 (emphasis added). On appeal, Shieldalloy does not dispute this interpretation of its position and the NRC addressed the issue comprehensively, providing a detailed and reasoned explanation as to how ALARA is used in the license termination regulations and why New Jersey’s program is compatible with the federal decommissioning standards. *Id.* at 34–44.

Upon reviewing the NRC’s response on remand, Shieldalloy’s contentions on appeal fail to present grounds upon which the court can conclude that the NRC failed to offer a reasoned explanation of its complex regulatory scheme, *see Thomas Jefferson Univ. v. Shalala*, 512 U.S. 504, 512 (1994); *Gen. Elec. Co. v. EPA*, 53 F.3d 1324, 1327 (D.C. Cir. 1995), or a reasonable interpretation of its regulations, *see Auer v. Robbins*, 519 U.S. 452, 461–63 (1997), or that the transfer of authority to New Jersey is arbitrary and capricious or contrary to law, *see Motor Vehicle Mfrs. Ass’n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); 5 U.S.C. § 706(2)(A). Our review is narrow, and the agency action being challenged is entitled to a presumption of regularity, *see Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415 (1971), *abrogated on other grounds by Califano v. Sanders*, 430 U.S. 99 (1977). To appreciate the vacuous nature of Shieldalloy’s challenge requires an overview of the NRC’s

responses to Shieldalloy's comparative dose and ALARA assertions.

First, the NRC explained that Shieldalloy's apparent argument "is a fundamentally inaccurate understanding of our license termination requirements and appears to lie at the heart of Shieldalloy's claim that New Jersey's program is not as protective of the public health and safety as our program with respect to the Newfield site." Mem. at 36. The NRC noted, citing a 44-page staff request, that "this very misunderstanding . . . was the subject of a number of requests for additional information by the staff on Shieldalloy's 2006 decommissioning plan." *Id.* at 36 n.115. Stating its regulations "neither explicitly nor implicitly require a comparison of the levels of protection afforded by the unrestricted and restricted decommissioning options," the NRC pointed out that "the levels of protection of unrestricted release and restricted release are simply not susceptible to being compared meaningfully" because each option has different methods and attendant risks. *Id.* at 37. Given the "inherent complexities and uncertainties associated with restricted release," the NRC's stated preference is for unrestricted release. *Id.* at 39. Moreover, the NRC found Shieldalloy's own dose projections show the difficulty of meaningfully comparing doses.

Second, the NRC explained that the ALARA analysis in its regulation on restricted release, 10 C.F.R. § 20.1403(a), does not "compel the selection of one decommissioning option over another," *id.* at 43, but instead acts as an eligibility requirement to screen out sites that should remediate to unrestricted release, in furtherance of the NRC's preference. *Id.* at 25–26, 39–43. Because, under its regulatory scheme, adequate protection of health and safety is accomplished "through satisfaction of the dose criteria and other conditions for [a] chosen decommissioning option," *id.* at 41, and New Jersey protects

health and safety through a dose threshold that is more stringent than the NRC's, the NRC concluded that New Jersey's program is compatible with the federal regulatory scheme. I address each of these aspects of the NRC's analysis.

A.

The NRC provided a reasoned explanation as to why its regulatory scheme does not envision a dose comparison between restricted and unrestricted decommissioning options. *See* Mem. at 36–39. The NRC explained that its “regulations neither explicitly nor implicitly require a comparison of the levels of protection afforded by the unrestricted and restricted decommissioning options” “because the levels of protection of unrestricted release and restricted release are simply not susceptible to being compared meaningfully.” *Id.* at 37. In the NRC's view, dose comparison is not meaningful because “[e]ach option uses significantly different methods to achieve adequate protection and has significantly different risks and uncertainties associated with it.” *Id.*

The NRC elaborated that restricted release is “far more complex and involves significantly greater uncertainties than offsite disposal,” because it “relies on the sustained effectiveness of institutional controls over a 1000-year compliance period to restrict future access and use to meet the 25 mrem per year dose requirement.” *Id.* To wit: Engineering controls must perform numerous complex functions; monitoring and maintenance are required; sufficient long-term funding from an independent third party is also required. *Id.* For this reason, the NRC explained, its stated preference is for unrestricted release. *Id.* at 39. “Unrestricted release requires the removal of contamination onsite to the extent necessary to comply with the dose criteria of 25 mrem per year and transportation of the contaminated material to an isolated and regulated long-term disposal site.” *Id.* at 37. Acknowledging that “[s]ome

uncertainties are inherent in these activities,” *id.* at 37–38, the NRC explained, however, that they “generally involve[] well-known and quantifiable handling and associated radiological impacts on workers and the public over a short time period (one to two years),” *id.* at 38. Whereas, “dose estimates from contaminated slag left onsite [under the restricted release option] are subject to limitations in understanding the performance of a disposal system and its institutional and engineering controls over the course of the 1000-year compliance period.” *Id.*

For restricted use, the NRC explained, § 20.1403(a) provides a licensee with either of two cost-benefit approaches to demonstrate its eligibility, *see* Mem. at 25–26, what the NRC describes on appeal as either “a full cost-benefit analysis that compares all potential benefits to all potential costs (the ‘ALARA’ analysis), or an abbreviated cost-benefit analysis that compares all potential benefits to only a subset of potential costs that excludes the out-of-pocket costs of soil removal, transportation, and disposal (the ‘net public or environmental harm’ analysis).” Resp’ts’ Br. 59; *see infra* Part II.B. No such demonstration is required for unrestricted release, 10 C.F.R. § 20.1402.³ This contrast confirms the NRC’s interpretation of

³ Section 20.1402 provides:

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE [total effective dose equivalent] to an average member of the critical group that does not exceed 25 mrem . . . per year, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). Determination of the levels which are ALARA must take into account consideration of

its regulations as not envisioning a dose comparison or that such a comparison dictates the choice of decommissioning method. While the NRC's interpretation accounts for the contrasting text, Shieldalloy's position does not. Instead, in reply Shieldalloy takes the anomalous position that, in order to protect public safety, § 20.1403(a) requires the NRC to allow the decommissioning option resulting in the lowest ALARA-produced dose level – but “only when the licensee seeks to implement the restricted release option,” Reply Br. 19, not if it seeks to pursue *unrestricted* release, because the NRC “will allow th[at] option to be selected without further inquiry,” *id.* Shieldalloy ignores that the applicable dose threshold must be met, in order to provide adequate protection to the public, regardless of any ALARA analysis. Mem. at 40–41.

The NRC also addressed Shieldalloy's dose comparison position on its own terms, pointing out its flawed factual premise. The NRC found, first, that Shieldalloy's statements — that license termination using onsite disposal for the Newfield site would result in lower doses to the public than offsite disposal — “are inaccurate.” *Id.* at 34–35. Shieldalloy claimed that this proposition had not been controverted, but the NRC pointed out that insofar as Shieldalloy's comparative dose position was “reflected in its proposed 2005 decommissioning plan,” that plan was rejected by NRC staff as not being in compliance with the license termination regulations, and that the NRC staff's request for additional information on Shieldalloy's proposed 2006 plan likewise indicated rejection of Shieldalloy's comparison approach and identified related technical concerns. *Id.* at 35.

any detriments, such as deaths from transportation accidents, expected to potentially result from decontamination and waste disposal.

The NRC found, second, that “Shieldalloy’s own dose estimates for the Newfield site reflect that it is *meaningless to compare* the level of protection between unrestricted release and restricted release.” *Id.* at 38 (emphasis added). Shieldalloy asserted on remand that “terminating the license under restricted conditions by the method described in the [2009 decommissioning plan] (i.e., isolating the materials onsite under an appropriate cover) would result in doses to the decommissioning workers and the general public that are lower than those that would result from” decommissioning by Shieldalloy’s proposed method of unrestricted release. Response to Order at 13. While acknowledging that Shieldalloy’s 2009 “plan calculates an infinitesimally small dose” for restricted release assuming all controls hold, the NRC found that “when institutional controls are assumed to fail and the engineered cover is assumed to degrade, Shieldalloy’s filing shows that the dose estimate would be far greater, up to a bounding dose of 86 mrem per year” and “well in excess of Shieldalloy’s dose estimates for unrestricted release.” Mem. at 38–39. In other words, Shieldalloy’s “own dose estimates for onsite disposal assuming the uncertainty and potential failure of controls over the long term in actuality show a *higher* dose.” *Id.* at 39. On appeal, Shieldalloy rejects the NRC’s interpretation of its regulations, summarily asserting that dose comparisons are possible and meaningful, *see* Reply Br. 19–20, but it does not refute the NRC’s finding that by Shieldalloy’s own estimates, were the cover to degrade, restricted release would expose the public to a higher dose of radiation than is reflected in its unrestricted release plan.

B.

The NRC reasonably explained how ALARA functions under its decommissioning regulations. Noting that “Shieldalloy has *not set forth or explained* the basis for its apparent position,” the NRC concluded, “*perhaps* it is alluding to our ALARA-

based eligibility criterion for restricted release.” Mem. at 41 (emphasis added). Further noting “its submission is hardly clear on this point,” the NRC concluded “Shieldalloy *apparently* believes that our ALARA principle compels us to compare decommissioning options and to allow a licensee to select the lowest-dose option.” *Id.* at 40 (emphasis added). The NRC responded: “This is a fundamental misconception of our ALARA principle and appears to be the root of Shieldalloy’s misunderstanding of our approach to license termination.” *Id.* Indeed, the NRC explained that “the very premise of Shieldalloy’s position on ALARA — that our license termination rule requires a *choice* to be made between a *higher* or *lower* dose option — is erroneous.” *Id.*

First, the NRC explained that the ALARA principle, “either as a general regulatory principle or as used in our license termination rule, [does not] incorporate or call for any comparative analysis of doses from restricted and unrestricted release.” *Id.* at 40. Rather, under the rule, the NRC explained, ALARA has two purposes in license termination: to reduce doses as low as achievable *below applicable dose limits* (not to “*compar[e]* between *achievable* doses”), and to provide a criterion to limit the use of restricted release. *Id.* at 40–41. The latter purpose, “effectively, to screen out sites that should be removing contamination to achieve unrestricted use,” the NRC continued, is achieved in section § 20.1403(a) through the use of a cost-benefit analysis to determine *initial eligibility* for restricted release. *Id.* at 41. This eligibility criterion “was intended to support [the NRC’s] preference for the unrestricted-release decommissioning option.” *Id.* Licensees must act to remediate their sites to the dose threshold in order to terminate their licenses under either restricted or unrestricted release. *Id.* at 24–26. If the threshold is met by limiting access to the site and the ALARA analysis demonstrates that it would not be cost-beneficial to remove radioactive materials below the dose

threshold so that institutional controls are not required, then the site will be eligible for restricted release decommissioning; to qualify for unrestricted release, a licensee would need to undertake sufficient remediation or removal of radioactive materials so access to the site need not be limited or controlled. *Id.* at 24–26, 37, 39, 41; *see* 10 C.F.R. § 20.1003. Thus, the NRC explained:

The ALARA analysis for restricted-release eligibility purposes does not and was never intended to demonstrate whether one decommissioning option affords greater protection than another. In fact, because an ALARA analysis focuses on dose reductions *below* what we have determined to be necessary for adequate protection of the public health and safety, that analysis does not go to adequate protection at all. A licensee’s demonstration of adequate protection is accomplished, instead, through satisfaction of the dose criteria and other conditions for its chosen decommissioning option.

Id. at 41. Notably ALARA “does not compare or explicitly analyze any of the uncertainties that affect the level of protection afforded by a particular disposal option.” *Id.* at 42.

Second, the NRC interpreted the ALARA test in § 20.1403(a) not to call for comparing doses between release options, “[n]or [to] compel the selection of one decommissioning option over another.” *Id.* at 43. In its opinion, “the ALARA requirement is irrelevant to whether Shieldalloy may pursue restricted release over unrestricted release in New Jersey.” *Id.* Omission of an ALARA-based criterion for restricted-release eligibility is, the NRC opined, “immaterial to [the] adequacy or compatibility” of the New Jersey program

because adequate protection is accomplished through the dose threshold. *Id.* at 42. The NRC pointed out that New Jersey “accomplishes th[e] same objective” as the federal scheme does by the restricted-release eligibility criterion – namely, “to *limit* the use of restricted release in license termination” – “by adopting more stringent . . . as well as more conservative criteria.” *Id.* at 42–43; *see Radiological Criteria for License Termination*, 62 Fed. Reg. 39,058, 39,069 (July 21, 1997). The NRC thus reasonably concluded that New Jersey’s license termination program, which must meet only a Category C level of compatibility,⁴ was adequate and compatible.

C.

Notwithstanding the NRC’s reasoned explanation of its regulatory scheme and reasonable interpretation of its regulations, including what ALARA is, the court concludes that a remand is required, principally in light of its own textual analysis of 10 C.F.R. § 20.1403(a). *See Op.* at 10–21. Referencing the NRC’s brief on appeal, the court states that it is “baffled by the NRC’s current interpretation of § 20.1403(a)” and that it “do[es] not find the meaning of § 20.1403(a) self-evident,” but rather concludes that § 20.1403(a) neither precludes Shieldalloy’s reading “nor, at least without exegesis,” supports the NRC’s interpretation. *Op.* at 14–15 (citing Resp’ts’ Br. 55, 59).

⁴ Pursuant to the 1997 Policy Statement, *supra* note 1, Agreement States may adopt programs that provide a level of protection that is “equivalent to, or greater than, the level provided by the NRC program.” 62 Fed. Reg. at 46,524. Category C elements of Agreement State programs are required “in order to avoid conflicts, duplications, gaps, or other conditions that would jeopardize an orderly pattern in the regulation of agreement material on a nationwide basis.” *Id.*; *see also Radiological Criteria*, 62 Fed. Reg. at 39,079–80, 39,086.

Undeterred by Shieldalloy’s defaults, the court engages in a textual interpretation of § 20.1403(a), Op. at 15–17, noting that on appeal the NRC discussed ALARA’s role in § 20.1403(a) as applying only to unrestricted release, not restricted release. Op. at 16. Section § 20.1403(a) provides — following the “or” — that a site is acceptable for license termination under restricted release if “[t]he licensee can demonstrate that further reductions in residual radioactivity necessary to comply with . . . § 20.1402 [unrestricted release] . . . were not being made because the residual levels associated with *restricted conditions* are ALARA.” (emphasis added); *see supra* note 2. In light of the italicized text, the court concludes that “the availability of restricted release under § 20.1403 would appear to have nothing to do with whether unrestricted release can be attained in a cost-beneficial manner, and everything to do with some property of restricted release.” Op. at 15. Hence the court finds confusion in the text, *see id.* at 14–17, implying that the final clause should read *unrestricted* instead of *restricted*.

Ordinarily the court will defer to an agency’s reasonable interpretation of its regulations, *see Auer*, 519 U.S. 461–63, and there is every reason to do so here where the complex regulatory scheme draws on the NRC’s expertise. The court acknowledges that its own interpretation of § 20.1403(a) “seems in tension with [the] second sentence of the provision, which states that the ALARA analysis referenced in the first sentence must account for ‘consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal.’” Op. at 16 (quoting § 20.1403(a)). That tension does not exist under the NRC’s interpretation, whereby its regulations “demand that licensees . . . demonstrate that remediation to the level of 25 mrem per year for unrestricted release would not be beneficial from a cost standpoint before allowing them to pursue restricted-use (onsite) disposal.” Resp’ts’ Br. 55–56; *see also* Mem. 25–26, 41. In other words, the licensee must meet the

applicable dose threshold regardless of the ALARA analysis; that analysis, however, may reveal that release of the site without institutional controls (i.e., unrestricted release) is cost-beneficial. This accords with the NRC's interpretation that its regulations do not imply dose comparisons, and instead only § 20.1403(a) sets an eligibility requirement because restricted release "is far more complex and involves significantly greater uncertainties than offsite disposal." Mem. at 37.

The NRC's "comprehensive guidance document" on decommissioning, *id.* at 24, supports the "exegesis" offered by the NRC. In describing the equation to be used to calculate doses that are ALARA, Appendix N states that "[t]he residual radioactivity level that is ALARA is the concentration . . . at which the benefit from removal equals the cost of removal." NUREG-1757, Vol. 2, Appendix N at N-10 (Rev. 1, Sept. 2006). The calculation of these benefits includes collective doses averted from a given action and the costs include the monetary costs to the licensee. *Id.* at § 6.3 at 6-3 to 6-4. So understood in light of NUREG-1757, the reference in § 20.1403(a) to a licensee demonstrating that "further reductions . . . were not being made because the . . . levels associated with *restricted conditions* are ALARA" means that no further radioactive materials can be cost-beneficially removed, washed away, or the like so the site can be decommissioned under § 20.1402 (unrestricted release). *See id.* at N-1 to N-12; *see also* Mem. at 25-26, 41; Resp'ts' Br. 55-56, 61. This understanding of ALARA was embodied in the NRC staff requests to Shieldalloy for additional information. *See e.g.*, Request for Additional Information on Shieldalloy's 2006 proposed decommissioning plan at 21 ¶ 31. That is, the "levels associated with *restricted conditions* are ALARA," 10 C.F.R. § 20.1403(a) (emphasis added), when no more actions can be cost-beneficially taken to meet the unrestricted use criteria.

Consequently, the confusion the court identifies arising from passages of other NRC regulations and statements is dispelled. Op. 17–19 (citing the definition of ALARA, NUREG-1757, and the staff Request for Additional Information).⁵ In concluding these materials “can reasonably be read to call for precisely the kind of comparative dose analysis that Shieldalloy claims is contemplated by § 20.1403(a),” Op. at 19, the court engages in a recalibration of § 20.1403(a)’s eligibility requirement. That is not the same as demonstrating that the NRC’s interpretation is “baffling” or lacking needed “exegesis,” much less unreasonable and not entitled to deference. The suggestion of “prior inconsistent language,” *id.* at 19, fails for the same reason. Because the interpretation of § 1403(a) depends on the use of ALARA, including the equation set out in NUREG-1757, Shieldalloy’s cursory argument on remand was inadequate, despite the court’s assertions to the contrary, Op. at 22.

⁵ Neither the passages in NUREG-1757 nor the staff Request for Additional Information support Shieldalloy’s position that § 20.1403(a) requires a comparative dose analysis. Instead, those passages relate to the required ALARA analysis of restricted release, which when properly conducted, will reveal if additional remediation to meet the requirements of unrestricted release is cost-beneficial. The court’s conclusion that under the NRC’s view ALARA is used in § 20.1403(a) “to assess the cost-efficiency of attaining radiation levels *at those [dose] limits*,” Op. at 17 (emphasis in original) overlooks that the NRC has consistently stated that ALARA is used in § 20.1403(a) to assess the cost-efficiency of remediating below the applicable dose threshold for restricted release in order to meet the criteria for unrestricted release. Mem. at 40–41; Resp’ts’ Br. 55–56. This accords with the NUREG-1757 guidance in Appendix N at N-1 (“In order to terminate a license, a licensee should demonstrate that the dose criteria . . . have been met, and should demonstrate whether it is feasible to further reduce the levels . . . below those necessary to meet the dose criteria (i.e., to levels that are ALARA).”).

Inexplicably the court protests a lack of textual analysis by the NRC and the dissent, Op. at 14, 20, when, as discussed here, in fact the NRC explained, based on the plain text, that § 20.1403(a) affords a licensee two alternative ways to demonstrate its initial eligibility for restricted release. Mem. at 25–26. Further, it explained, licensees that do not demonstrate either initial eligibility or satisfaction of the remaining criteria of § 20.1403 “will not ‘be considered acceptable for license termination under restricted conditions’” and so must prepare their sites for unrestricted release, the NRC’s preferred decommissioning option because of its far more well-known and quantifiable radiological impacts. *Id.* at 26 (quoting § 20.1403); *see also id.* at 37–43. What is more, by explaining the use and function of ALARA in its license termination regulations, *id.* at 34–43, the NRC provided additional exposition of the text of § 20.1403(a), specifically what “restricted conditions *are ALARA*” means. The court ignores that the formula and related guidance in NUREG-1757, which is used to assess if a remediation activity “is ALARA,” also elucidates the clause in § 20.1403(a) that the court finds “baffl[ing],” Op. at 14; *see supra* note 2. And, in examining Shieldalloy’s own dose estimates for decommissioning, the NRC demonstrated why the text cannot reasonably be read to call for the dose comparison envisioned by Shieldalloy.

Moreover, even assuming, for purposes of argument, that the NRC’s interpretation of § 20.1403(a) as not contemplating a comparative dose analysis is unreasonable, which it is not, neither the court nor Shieldalloy offers a basis on which to conclude that the NRC’s conclusion that the regulation does not “compel the selection of one decommissioning option over another,” Mem. at 43, based on the outcome of an ALARA analysis, is unreasonable. Instead, as the NRC explained, a licensee must meet the dose threshold *regardless* of the outcome of the ALARA analysis. *Id.* at 39, 41, 43. So the NRC could

reasonably conclude that the NRC's program and New Jersey's program are not meaningfully different, let alone incompatible in regard to safety and the use of ALARA in § 20.1403(a): the New Jersey program is simply more stringent in using a 15 mrem instead of a 25 mrem threshold, which is permissible for Category C elements. *See supra* note 4.

In sum, the regulatory scheme administered by the NRC is complex, and further explanation is welcome as a general principle, but the issues raised by Shieldalloy have been adequately addressed by the NRC. This is so even though, because Shieldalloy never referred to § 20.1403(a) in comments on remand, the NRC had no occasion to explain more than its purpose and method, *but see* Op. at 14. Even on appeal Shieldalloy did not make the textual argument in its opening brief now provided by the court as the basis for another remand; neither does it offer that analysis in its reply brief. Although the court forswears that it is “substituting [its] judgment for that of the agency,” Op. at 21 (citation and quotation marks omitted), it clearly is substituting its own textual analysis for the bare assertions by Shieldalloy, *see Schneider*, 412 F.3d at 200 n.1. These circumstances — namely, Shieldalloy's default on remand, the NRC's reasonable explanation of its regulations on remand, and the court's acknowledgment that its reading of the NRC's brief and its own interpretation of § 20.1403(a) creates an internal tension, Op. at 16–17 — present an odd basis for another remand much less a determination that the NRC's transfer order is arbitrary and capricious.