

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Kristine L. Svinicki, Chairman  
Jeff Baran  
Stephen G. Burns

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In the Matter of )

EDLOW INTERNATIONAL COMPANY )

(Export of 93.20% Enriched Uranium) )

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Docket No. 11006235

License No. XSNM3771

**CLI-17-03**

**MEMORANDUM AND ORDER**

**I. INTRODUCTION**

Dr. Alan J. Kuperman requests leave to intervene on an export license application filed by Edlow International Company.<sup>1</sup> Edlow seeks to export up to 144 kilograms of highly enriched uranium (HEU) in the form of fabricated research reactor fuel elements to Belgium—specifically to the Studiecentrum voor Kernenergie – Centre d’Etude de l’Energie Nucléaire (SCK•CEN)’s Belgian Reactor Number 2 (BR2) over a period ending in 2026. Dr. Kuperman requests an oral hearing, and he asks the NRC to limit both the duration of the export license and the amount of HEU that Edlow may export under its license. For the reasons discussed below, we deny Dr.

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<sup>1</sup> See *Petition of Alan J. Kuperman for Leave to Intervene and Request for Hearing* (August 4, 2016) (ADAMS accession no. ML16235A278) (Petition); Application to Export Enriched Uranium to Belgium, License No. XSNM3771 (May 18, 2016) (ML16158A008) (May Application), *superseded by* Application to Export Enriched Uranium to Belgium, License No. XSNM3771 (July 7, 2016) (ML16193A621) (July Application).

Kuperman's request for a hearing and direct the Office of International Programs to issue the export license with a modified license termination date in 2023.

## **II. BACKGROUND**

In May 2016, Edlow submitted to the NRC a license application to export up to 144 kilograms of HEU (enriched up to 93.20%) in the form of fabricated fuel elements to the BR2. The HEU would be fabricated into fuel elements in the United States and then shipped by Edlow to Belgium. Edlow's application explains that it plans to ship this fabricated HEU fuel in increments of less than 5 kilograms of HEU per shipment over a period of six years. Edlow requested a last shipment date of December 31, 2026, and a license termination date of December 31, 2027, to account for "fuel fabrication in support of Belgian Reactor No. 2 inventory and operational requirements."<sup>2</sup> Edlow further explained that conversion of the BR2 to low-enriched uranium fuel is expected in 2026.

On July 7, 2016, Edlow submitted an amended export license application. This July application revised the last shipment date and the proposed license termination date to December 31, 2025, and December 31, 2026, respectively. It also amended Edlow's explanation for these dates by stating that these dates are intended to account for "some margin for unforeseen delays."<sup>3</sup> Finally, the July application removed the reference to conversion. In all other respects, the July application mirrored the May application.

This proposed export would take place under the auspices of the U.S. – Euratom Agreement for Cooperation in the Peaceful Uses of Nuclear Energy, and the European Commission has confirmed that the Belgian recipient (SCK•CEN) is authorized to receive this type of nuclear material. SCK•CEN is a research center that specializes in nuclear science, with a specific focus on improving nuclear safety, managing radioactive waste, and radiation

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<sup>2</sup> May Application at 3.

<sup>3</sup> July Application at 3.

protection.<sup>4</sup> The BR2 is a materials-testing reactor that is used both to conduct research into the safety of existing nuclear power plants and produce medical radioisotopes. It operates according to a scheme of successive irradiation cycles of three to four weeks, with interim maintenance periods. The BR2 requires approximately 30 kilograms of HEU per year to operate; this export, therefore, constitutes a five-year supply of HEU. Taking into account the BR2's current inventory of HEU fuel, this export should allow the BR2 to continue operating until the end of 2023.

SCK•CEN cannot currently use low-enriched uranium (LEU) to fuel the BR2. In 1999, the Belgian Ministry of Foreign Affairs confirmed the intention to convert the BR2 once an alternative fuel source for the BR2 is available. Towards that end, the United States Government continues to work with its European counterparts to create an alternative LEU-molybdenum fuel source. That alternative LEU fuel is currently expected to be qualified by 2026, which would allow the BR2 to convert in the 2028 timeframe. Separate from this potential uranium-molybdenum fuel, it is also possible that the BR2 could convert to using LEU-silicide fuel in its reactor core. Silicide fuel has already been qualified for use in some European research reactors. But additional testing is necessary before silicide fuel could be qualified for use at the BR2. According to the Executive Branch, that testing would likely take five to seven years.

In accordance with section 126 of the Atomic Energy Act of 1954, as amended (AEA),<sup>5</sup> and 10 C.F.R. § 110.41, the NRC submitted Edlow's applications to the Executive Branch for review. On September 12, 2016, the State Department provided the NRC with the Executive Branch views. The Executive Branch concluded that the proposed export will not be inimical to the common defense and security of the United States, and those views recommended that the

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<sup>4</sup> <https://www.sckcen.be/en/About/Introduction> (last visited February 16, 2017).

<sup>5</sup> 42 U.S.C. § 2155.

NRC make all the required statutory determinations and issue the license to Edlow. The Executive Branch further recommended that the NRC shorten the duration of the requested license to December 31, 2023. And, finally, the letter recommended that the NRC and the Executive Branch consult every three years after license issuance regarding the status of conversion given the uncertainties associated with the conversion timetable. The Executive Branch supplemented its views by an additional letter dated November 14, 2016.

The NRC published a notice of opportunity to request a hearing on Edlow's July application.<sup>6</sup> Dr. Kuperman thereafter filed his intervention petition. Dr. Kuperman seeks, first, an oral hearing on Edlow's export application and, second, that the Commission limit the duration of the license and the amount of HEU that Edlow can export to SCK•CEN.<sup>7</sup> As discussed below, we deny Dr. Kuperman's hearing request. Yet we respond to his views as we consider the statutory and regulatory determinations we must make before issuing this license and treat his views as written comments under 10 C.F.R. § 110.81. We direct the Office of International Programs to issue the license with an expiration date of December 31, 2023. Finally, we request the Executive Branch to provide the NRC with periodic updates regarding the status of conversion.

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<sup>6</sup> Request for a License to Export High-Enriched Uranium, 81 Fed. Reg. 45,311 (July 13, 2016). This notice mistakenly referenced Edlow's May application, and it was subsequently corrected. Request for a License to Export High-Enriched Uranium; Correction, 81 Fed. Reg. 51,945 (August 5, 2016).

<sup>7</sup> Petition at 20-25.

### III. DR. KUPERMAN'S HEARING REQUEST

We turn first to Dr. Kuperman's hearing request.

#### A. Requirements for Obtaining a Hearing on an Export License

As we recently explained, we will allow for public participation in nuclear export licensing proceedings when we find that such participation will be in the public interest and will assist us in making the statutory determinations required by the Atomic Energy Act.<sup>8</sup>

Our regulations further provide that a hearing request must "specify, when a person asserts that his interest may be affected, both the facts pertaining to his interest and how it may be affected."<sup>9</sup> And, "[i]f a hearing request or intervention petition asserts an interest which may be affected, the Commission will consider:

- (1) The nature of the alleged interest;
- (2) How that issue relates to issuance or denial; and
- (3) The possible effect of any order on that interest, including whether the relief requested is within the Commission's authority, and, if so, whether granting relief would redress the alleged injury."<sup>10</sup>

We first consider Dr. Kuperman's assertion of an interest, and then we address whether Dr. Kuperman has shown that a hearing would be in the public interest and would assist us in making the required statutory and regulatory determinations.

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<sup>8</sup> *U.S. Department of Energy* (Export of 93.20% Enriched Uranium), CLI-16-15, 84 NRC \_\_\_\_ (Oct. 5, 2016) (slip op. at 4) (quoting 42 U.S.C. § 2155a); 10 C.F.R. § 110.84(a). Our hearing procedures are generally contained in 10 C.F.R. Part 110, Subparts H, I, and J.

<sup>9</sup> *Id.* § 110.82(b)(4).

<sup>10</sup> *Id.* § 110.84(b). As we have explained, persons without an affected interest are not as likely as persons with an affected interest to contribute to our decisionmaking, show that a hearing would be in the public interest, and assist us in making the statutory determinations. See *U.S. Department of Energy* (Plutonium Export License), CLI-04-17, 59 NRC 357, 367 (2004).

## **B. Analysis of Dr. Kuperman's Hearing Request**

Dr. Kuperman's petition addresses his interests.<sup>11</sup> Dr. Kuperman first provides biographical information describing his past and ongoing professional work on non-proliferation issues and his organization's institutional interests in the topic.<sup>12</sup> Dr. Kuperman asserts that these institutional interests related to public information and education programs concerning arms control, proliferation risks, nuclear terrorism, and the use of HEU "would be significantly and adversely impaired" unless we hold a "full, open, and independent review" of the issues.<sup>13</sup> Further, Dr. Kuperman identifies previous intervention petitions that he has filed with respect to the BR2 as a means of showing his interest in this application.<sup>14</sup>

Although Dr. Kuperman has articulated the nature of his interests, those interests do not have a sufficient nexus to the proposed export of HEU to Belgium to satisfy the other elements we consider when assessing an asserted interest that may be affected by a proceeding.<sup>15</sup> Specifically, Dr. Kuperman has not shown that issuing this export license will hinder his ability to continue his educational activities and his activities related to arms control, nuclear weapons, proliferation, terrorism, and the use of HEU—that is, he has not shown that his interest will be "affected" by this particular proceeding.<sup>16</sup> Nor has Dr. Kuperman explained how his involvement

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<sup>11</sup> Petition at 3-5.

<sup>12</sup> *Id.* at 3-4. Dr. Kuperman notes that he is the Coordinator of the Nuclear Proliferation Prevention Project, which engages in "research, debate, and public education to ensure that civilian applications of nuclear technology do not foster the spread of nuclear weapons to states or terrorist groups." *Id.* at 3.

<sup>13</sup> *Id.* at 5.

<sup>14</sup> *Id.* at 4.

<sup>15</sup> See *Transnuclear, Inc.* (Export of 93.15% Enriched Uranium), CLI-94-1, 39 NRC 1, 5 (1994) (explaining that merely asserting an "institutional interest in providing information to the public" is insufficient for showing an affected interest).

<sup>16</sup> See *Transnuclear, Inc.* (Export of 93.3% Enriched Uranium), CLI-00-16, 52 NRC 68, 72 (2000) (noting that the Commission "has long held" that merely asserting a "generalized interest

in previous BR2 licensing actions relates to his interest being affected by *this* licensing proceeding. As a result, we conclude that Dr. Kuperman has not demonstrated that he possesses an interest that may be affected by this proceeding.

Additionally, Dr. Kuperman has not demonstrated that granting the hearing or intervention would be in the public interest and would assist us in making the required statutory and regulatory determinations. We consider both factors when evaluating whether to grant a hearing or intervention.<sup>17</sup> As we recently explained in *U.S. Department of Energy*, to satisfy these factors, a petitioner must show how a hearing would bring new information to light.<sup>18</sup>

Here, although Dr. Kuperman “does not necessarily oppose the granting of the license application *for some portion* of the requested duration and amount of HEU,”<sup>19</sup> he argues that the NRC should not approve a long-term HEU export license in this proceeding.<sup>20</sup> Dr. Kuperman articulates four reasons to support his position: (1) the Commission cannot ensure that this export license will comply with all statutory requirements during the entire ten-year license term;<sup>21</sup> (2) U.S. law prohibits the Commission from issuing this export license because there is an alternative nuclear fuel that the BR2 can use right now;<sup>22</sup> (3) the Commission should limit the

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. . . in minimizing the danger from proliferation” is insufficient to show an affected interest in an export proceeding).

<sup>17</sup> 10 C.F.R. § 110.84(a).

<sup>18</sup> *U.S. Department of Energy*, CLI-16-15, 84 NRC \_\_ (slip op. at 7) (citing *U.S. Department of Energy*, CLI-04-17, 59 NRC at 369 (“[P]etitioners have already submitted detailed information as to the basis for their position. We do not believe a hearing will result in significant new information that is not already available to and considered by the Commission in making the requisite statutory determinations.”); *Transnuclear*, CLI-00-16, 52 NRC at 72 (explaining that nothing in the petitioner’s filings indicates it will be able to “present significant information not already available to and considered by the Commission”)).

<sup>19</sup> Petition at 20 (emphasis in the original).

<sup>20</sup> *Id.* at 21.

<sup>21</sup> *Id.* at 13-14, 21.

<sup>22</sup> *Id.* at 14-17, 21.

amount of material to be exported because of interception or diversion risks;<sup>23</sup> and (4) the nonproliferation risks outweigh the benefits to the applicant when approving a lengthy, multi-year export license.<sup>24</sup>

Dr. Kuperman argues that “only a public hearing in which issues related to the appropriateness of exporting HEU are fully aired and subjected to public scrutiny can serve to resolve legitimate public questions concerning both the need for granting this license application and the risks associated with such action.”<sup>25</sup> Although we acknowledge Dr. Kuperman’s extensive knowledge of nonproliferation issues and the points he makes in his petition, we find that he has not adequately identified how a hearing would generate new information for us, let alone how such information would relate to the findings that we must make.<sup>26</sup> Dr. Kuperman’s concerns with Edlow’s application are substantive. But Dr. Kuperman fails to explain how a hearing would add additional clarity to the cogent points that he already made in his petition.<sup>27</sup>

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<sup>23</sup> *Id.* at 6-7, 22.

<sup>24</sup> *Id.* at 19-20, 23.

<sup>25</sup> *Id.* at 24.

<sup>26</sup> See *Westinghouse Electric Corp.* (Nuclear Fuel Export License for Czech Republic—Temelin Nuclear Power Plants), CLI-94-7, 39 NRC 322, 334 (1994) (“Even assuming that the health and safety-related issues raised by Petitioners are matters that the Commission considers in making its export licensing determinations, we cannot conclude from Petitioners’ submissions that they would offer anything in a hearing that will generate significant new information or insight about Westinghouse’s current fuel export application. On the contrary, the submissions reflect that Petitioners would not offer any information or documentation in a hearing that is not already readily available to the Commission.”).

<sup>27</sup> Further, as we previously explained, conducting a hearing on issues “concerning matters about which the Commission already has abundant information and analyses would be contrary to one of the purposes of the NNPA, namely ‘that United States government agencies act in a manner which will enhance this nation’s reputation as a reliable supplier of nuclear materials to nations which adhere to our nonproliferation standards by acting upon export license applications in a timely fashion.’” *Transnuclear Inc.* (Export of 93.15% Enriched Uranium), CLI-94-1, 39 NRC 1, 7-8 (1994) (quoting *Westinghouse Electric Corp.* (Export to South Korea), CLI-80-30, 12 NRC 253, 261 (1980)).



For these reasons, we deny Dr. Kuperman's intervention petition and hearing request. But even though Dr. Kuperman has not met the threshold for obtaining a hearing, we nonetheless consider his views on Edlow's application as written comments on the application.<sup>28</sup> We turn next to our determination on the application.

#### **IV. STATUTORY AND REGULATORY DETERMINATIONS**

Before granting an export license for HEU, we must make the following determinations:

- The proposed export satisfies AEA § 127's nonproliferation criteria;<sup>29</sup>
- If the export is to a non-nuclear weapon state (here, Belgium), the proposed export satisfies AEA § 128's additional nonproliferation criterion;<sup>30</sup>
- If the proposed export is for HEU, the proposed export satisfies the "Schumer Amendment," which is found in AEA § 134;<sup>31</sup>
- Finally, under AEA § 57.c(2), the proposed export will not be "inimical to the common defense and security" of the United States.<sup>32</sup>

We address each in turn.

##### **A. Section 127 Criteria**

Section 127 of the AEA lists five applicable nonproliferation criteria that govern exports of special nuclear material.<sup>33</sup> None of these criteria are the subject of Dr. Kuperman's petition,

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<sup>28</sup> 10 C.F.R. § 110.81(a).

<sup>29</sup> 42 U.S.C. § 2156; *see also* 10 C.F.R. § 110.42(a)(1-5).

<sup>30</sup> 42 U.S.C. § 2157; *see also* 10 C.F.R. § 110.42(a)(6).

<sup>31</sup> 42 U.S.C. § 2160d; *see also* 10 C.F.R. § 110.42(a)(9).

<sup>32</sup> 42 U.S.C. § 2077(c)(2); *see also* 10 C.F.R. § 110.42(a)(8). Additionally, our regulations require that we find any export "of more than 0.003 effective kilograms of special nuclear material . . . would be under the terms of an agreement for cooperation." *Id.* § 110.42(a)(7). As noted above, the proposed export would be under the term of the U.S. – Euratom Agreement for Cooperation in the Peaceful Uses of Nuclear Energy.

<sup>33</sup> 42 U.S.C. § 2156; *see also* 10 C.F.R. § 110.42(a)(1-5). Section 127 lists a sixth criterion that applies only to exports of nuclear technology and is therefore not applicable to an export of nuclear material. In abbreviated form, the five criteria are:

and on the basis of the Executive Branch's views and the record, we find that these non-proliferation criteria are satisfied.

**B. Section 128 Criterion**

AEA section 128 requires that any non-nuclear-weapon state recipient have full-scope International Atomic Energy Agency safeguards with respect to all peaceful nuclear activities carried out in that state.<sup>34</sup> Belgium has placed all of its peaceful nuclear activities under International Atomic Energy Agency safeguards; we therefore find that this additional nonproliferation criterion is satisfied.<sup>35</sup>

**C. Section 134 Criteria**

Section 134(a) of the AEA requires the NRC to make the following additional findings before authorizing an application to export HEU:

- (1) there is no alternative nuclear reactor fuel or target enriched in the isotope 235 to a lesser percent than the proposed export, that can be used in the reactor;

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(1) IAEA [International Atomic Energy Agency] safeguards will be applied with respect to any such material proposed to be exported;

(2) No material proposed to be exported will be used for any nuclear explosive device or for research on or development of any nuclear explosive device;

(3) Adequate physical security measures will be maintained with respect to such material proposed to be exported and to any special nuclear material used in or produced through the use thereof;

(4) No material proposed to be exported will be re-transferred to the jurisdiction of any other nation or group of nations unless the prior approval of the United States is obtained for such re-transfer;

(5) No material proposed to be exported and no special nuclear material produced through the use of such material will be reprocessed, and no irradiated fuel elements containing such material removed from a reactor shall be altered in form or content, unless the prior approval of the United States is obtained.

<sup>34</sup> 42 U.S.C. § 2157; *see also* 10 C.F.R. § 110.42(a)(6).

<sup>35</sup> *See*

[https://www.iaea.org/sites/default/files/16/10/sq\\_agreements\\_comprehensive\\_status\\_list.pdf](https://www.iaea.org/sites/default/files/16/10/sq_agreements_comprehensive_status_list.pdf) (last visited February 16, 2017).

- (2) the proposed recipient of that uranium has provided assurances that, whenever an alternative nuclear reactor fuel or target can be used in that reactor, it will use that alternative in lieu of highly enriched uranium; and
- (3) the United States Government is actively developing an alternative nuclear reactor fuel or target that can be used in that reactor.<sup>36</sup>

The Executive Branch states that these three criteria are satisfied. Argonne National Laboratory has confirmed that there is no low-enriched uranium fuel currently available that can be used in the BR2 and, further, that the BR2 intends to convert once LEU fuel can be used. The National Nuclear Security Administration is currently cooperating with its European counterparts to develop LEU fuel for this reactor. This cooperation takes the form of the “HERACLES” consortium, which is working to develop high-density, LEU molybdenum fuel.<sup>37</sup> This molybdenum fuel should be qualified by 2026, which would allow for the BR2’s conversion around 2028.

Dr. Kuperman’s petition focuses primarily on section 134(a)’s first criterion. He argues that there is already an alternative fuel source—LEU silicide fuel—that can be used in the BR2.<sup>38</sup> Dr. Kuperman states that this fuel has replaced HEU fuel in many reactors around the world, including the Petten Reactor in the Netherlands, which he argues is comparable to the BR2.<sup>39</sup> He therefore argues that the NRC cannot make the requisite statutory finding and that the NRC cannot authorize this export until it receives assurances from SCK•CEN that it is converting to LEU silicide fuel.<sup>40</sup>

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<sup>36</sup> 42 U.S.C. § 2160d; *see also* 10 C.F.R. § 110.42(a)(9).

<sup>37</sup> The BR2’s operator— SCK•CEN—is a key member of the HERACLES group. This provides additional support for the expectation that the proposed recipient of the HEU will convert when the LEU molybdenum fuel is qualified for use.

<sup>38</sup> Petition at 14.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 16-17. Dr. Kuperman states that conversion to LEU silicide fuel should take approximately three years.

If correct, Dr. Kuperman's point that SCK•CEN could already convert to LEU silicide fuel would raise significant questions under section 134. But the Executive Branch's views provide additional clarification on this point. Specifically, the letter notes that no LEU silicide fuel assembly has been qualified to deal with the reactor conditions that are experienced at the BR2. The BR2's core geometry differs in many significant respects from the now-converted Petten reactor's core. The BR2 has a higher operating power, a different fuel assembly design, and a smaller number of fuel assemblies in its core—this results in a peak heat flux that is almost twice as high as the heat flux experienced in the Petten reactor. Existing LEU silicide fuel cannot guarantee that the BR2 would be able to maintain fuel integrity at this higher peak heat flux. To qualify LEU silicide fuel for use in the BR2, the international community would need to undertake additional testing and experiments. According to the Executive Branch, such testing would likely take at least five to seven years. Dr. Kuperman's view, therefore, that LEU silicide fuel is *already* qualified for use at the BR2 is not supported by the record before us. Accordingly, we are not persuaded that this proposed export would violate the first criterion of section 134(a).<sup>41</sup>

Dr. Kuperman, however, raises an additional issue for our consideration. He offers the broader point that "it is impossible" for the NRC to know if the Schumer Amendment will remain satisfied during the approximately ten-year duration of the proposed license.<sup>42</sup> For instance, Dr. Kuperman alludes to the possibility of an alternative, low-enriched fuel source becoming qualified before the ten-year license terminates.<sup>43</sup> To this end, Dr. Kuperman argues that the duration of the export license should—at a minimum—match the quantity of HEU fuel to be

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<sup>41</sup> 42 U.S.C. § 2160d.

<sup>42</sup> Petition at 14.

<sup>43</sup> *Id.* (noting that the Commission cannot "predict the future of European development of alternative nuclear reactor fuel.").

exported (that is, a 5-year supply of HEU should have a 5-year license duration).<sup>44</sup> He ultimately identifies three years as a reasonable license duration for this proposed export license.<sup>45</sup>

Assuming *arguendo* that the Schumer Amendment requires us to determine that all three criteria will be met during the entire license term, as Dr. Kuperman suggests, we need not resolve whether a ten-year HEU export license would necessarily violate the Schumer Amendment. Based on the circumstances presented by this case, the Executive Branch recommended shortening the duration of the requested license to December 31, 2023, so that the duration of the license roughly corresponds to the amount of material currently projected to meet operational needs.<sup>46</sup> We agree that this is a sensible approach. As noted above, there are two potential pathways to conversion for the BR2. The first is LEU molybdenum fuel, which could allow for the BR2's conversion around 2028. The second is LEU silicide fuel, which could allow for the BR2's conversion around 2022-2023. Shortening the license duration, therefore, allows us to increase our confidence that the Schumer Amendment criteria will remain satisfied through the entire license term because the BR2 will not be able to convert to LEU fuel until at least 2022.<sup>47</sup>

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<sup>44</sup> *Id.* at 18-19.

<sup>45</sup> *Id.* at 17.

<sup>46</sup> Once shortened, the license duration would be six years and ten months, from March 1, 2017, until December 31, 2023, with the amount of material to be exported constituting approximately a 5-year supply. This difference in time largely results from the fact that this HEU is being fabricated by a new fuel fabricator in the United States. The Executive Branch noted that fuel usage during the first year of the export license will likely be only a fraction of a full year's supply, as the focus during that initial year will be testing the fabricated fuel. It also accommodates the possible scenario of reduced annual fuel consumption.

<sup>47</sup> On January 2, 2017, Dr. Kuperman submitted a transcript from an October 29, 2016, session of the Belgian Chamber of Representatives, Committee on the Interior, General Affairs, and the Civil Service. Letter from Dr. Alan J. Kuperman, Nuclear Proliferation Prevention Project, to the Secretary of the NRC (ML17005A215) (the legislative session that Dr. Kuperman provided was in French—an English translation can be found at ML17011A054). During this session, a Belgian Member of Parliament asked Belgium's Minister of Interior and Security about the status

Further, given the uncertainties surrounding the two potential pathways to conversion, we request that the Executive Branch provide us with periodic updates detailing the status of the BR2's conversion efforts. We request that a status update be provided to the NRC at least once every three years and that the update discuss the status of conversion, LEU qualification efforts, fuel consumption rates at the BR2, and whether the projections of the BR2's needs for HEU have changed.<sup>48</sup>

Finally, Dr. Kuperman argues that authorizing this export license in full would undermine the general policy underlying the Schumer Amendment by exacerbating the risk that European reactors might delay conversion.<sup>49</sup> We disagree. This proposed export will not provide a disincentive for conversion efforts. As we recently observed, the Department of Energy and its European partners are fully committed to conversion and reducing HEU use in Europe.<sup>50</sup> The Euratom Supply Agency has already committed to return to the United States or downblend a quantity of excess HEU that is comparable to the amount of HEU requested by the BR2. From an HEU-minimization standpoint, therefore, this proposed export is entirely consistent with the Schumer Amendment's objective in reducing HEU use overseas.

In sum, we find that this proposed export satisfies the section 134 licensing criteria, subject to a license-termination date of December 31, 2023, instead of the requested date of December 31, 2026. Further, to facilitate our ongoing monitoring of the BR2's conversion

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of the BR2's conversion efforts. That minister replied that conversion cannot occur until "at least" 2022. He further reiterated that it "is not possible" to convert the BR2 before 2022.

<sup>48</sup> We therefore expect to receive at least two status updates from the Executive Branch before the expiration of Edlow's export license. This approach is consistent with past practice. See *Transnuclear, Inc.* (Export of 93.3% Enriched Uranium), CLI-00-16, 52 NRC 68, 73-76 (2000).

<sup>49</sup> Petition at 19, 22. Dr. Kuperman raised a similar argument in *U.S. Department of Energy*, CLI-16-15, 84 NRC at \_\_ (slip op. at 11).

<sup>50</sup> *U.S. Department of Energy*, CLI-16-15, 84 NRC at \_\_ (slip op. at 12).

efforts, we request the Executive Branch to provide status updates at least once every three years.

#### **D. Noninimicality Finding**

Finally, to issue a license, we must determine under section 57.c(2) of the AEA that the proposed export will not be “inimical to the common defense and security” of the United States.<sup>51</sup> Here, Dr. Kuperman raises two arguments that suggest inimicality concerns with this proposed export. First, he asserts that approval of the pending application could lead to an increased risk of interception by rogue actors.<sup>52</sup> Second, he maintains that this export could lead to a stockpile of HEU abroad, and that the non-proliferation risks associated with increasing amounts of HEU in international transport outweigh any benefit to the applicant and are otherwise contrary to longstanding U.S. non-proliferation objectives.<sup>53</sup>

The Atomic Energy Act’s inimicality test pre-dates the enactment of the Nuclear Non-Proliferation Act (NNPA). As explained in the NNPA’s legislative history, the addition of specific export licensing criteria did not replace or render obsolete the pre-existing inimicality test.<sup>54</sup> Yet the NNPA’s drafters noted that “in the absence of unusual circumstances,” if a proposed export satisfies the NNPA’s nonproliferation criteria, then it would likewise satisfy “the common defense and security standard.”<sup>55</sup> In *Natural Resources Defense Council, Inc. v. NRC*, Judge Wilkey noted this legislative history and explained that the Commission generally “need not look beyond the nonproliferation safeguards in determining whether the common defense

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<sup>51</sup> 42 U.S.C. § 2077(c)(2); *see also* 10 C.F.R. § 110.42(a)(8).

<sup>52</sup> Petition at 22.

<sup>53</sup> *Id.* at 22-23.

<sup>54</sup> H.R. REP. NO. 95-587, at 21 (1977).

<sup>55</sup> *Id.*

and security standard is met.”<sup>56</sup> Finally, when determining whether any “unusual circumstances” exist with respect to a proposed export, we give “great weight” to the Executive Branch’s judgments.<sup>57</sup> This approach is woven into the fabric of the NNPA itself, which requires various Executive Branch departments to be closely involved in the export licensing process and gives the President the final word on nuclear exports.<sup>58</sup> Certainly, though, the NNPA and the NRC’s regulations also require the NRC to make an independent technical finding that the export meets all applicable requirements.<sup>59</sup> With this background in mind, we turn to Dr. Kuperman’s two inimicality concerns.

First, Dr. Kuperman notes media reports that discuss putative terrorist plots that may have targeted SCK•CEN and argues that “this clear and present danger underscores the urgency of minimizing the supply of HEU to the BR-2 reactor, and ending that supply as soon as possible.”<sup>60</sup> But Dr. Kuperman does not identify any specific flaws with the BR2’s physical protection program or otherwise explain why the existing security measures are incapable of mitigating potential terrorist threats. The Executive Branch has reviewed the BR2’s physical security measures and concluded that those measures will be “adequate” to deter theft, sabotage, or other acts of intentional terrorism. In making this determination, the Department of State consulted with the Department of Defense.<sup>61</sup> We accord significant weight to the Executive Branch’s conclusion.<sup>62</sup>

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<sup>56</sup> 647 F.2d 1345, 1363 (D.C. Cir. 1981); *see also U.S. Department of Energy*, CLI-04-17, 59 NRC at 374.

<sup>57</sup> *See U.S. Department of Energy*, CLI-04-17, 59 NRC at 376.

<sup>58</sup> 42 U.S.C. § 2155.

<sup>59</sup> 42 U.S.C. § 2155; 10 C.F.R. § 110.45.

<sup>60</sup> Petition at 6-7.

<sup>61</sup> 42 U.S.C. § 2160c.

<sup>62</sup> *U.S. Department of Energy*, CLI-04-17, 59 NRC at 374.



Further—and consistent with the licensing scheme set forth in the NNPA—the NRC Staff independently assessed the security ramifications of this proposed export. Their assessment is consistent with the Executive Branch’s judgment that this export would not be inimical to the common defense and security of the United States.

Dr. Kuperman also argues that this proposed export raises stockpiling concerns and is otherwise inconsistent with U.S. non-proliferation policy. Specifically, he argues that failing to limit the duration of the license and the amount of HEU that may be exported “could imply U.S. government approval of either domestic or foreign use of substantial amounts of HEU in research or test reactors in excess of demonstrated need.”<sup>63</sup> As noted above, we are limiting the duration of this export license, which addresses Dr. Kuperman’s concern that the proposed duration of this export license did not “match” the actual amount of material to be exported.

Further, Dr. Kuperman argues generally that the NRC should only issue export licenses of “short duration.” But exports of HEU for use as fuel in research reactors (such as the BR2) tend to be more stable and predictable over longer periods of time compared to exports of HEU for use as targets to produce medical isotopes.<sup>64</sup> This explains why export licenses for targets for medical isotope production tend to be for only a year, while export licenses for research reactor fuel usually cover a multi-year period.

For all of these reasons, we find that the proposed export would not be inimical to the common defense and security of the United States.

## **VI. CONCLUSION**

For the reasons stated above, we find that a hearing in this matter would not be in the public interest and would not assist us in making the required statutory and regulatory determinations. We further determine that the proposed export satisfies all applicable

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<sup>63</sup> Petition at 22-23.

<sup>64</sup> *U.S. Department of Energy*, CLI-16-15, 84 NRC at \_\_ (slip op. at 14).

export-licensing criteria and that issuing this export license would not be inimical to the common defense and security of the United States. Accordingly, we deny Dr. Kuperman's request for a hearing and petition to intervene and direct the Office of International Programs to issue License No. XSNM3771 to Edlow for the export of up to 144 kilograms of highly enriched uranium. We further direct the Office of International Programs to limit the license duration to December 31, 2023, and we request the Executive Branch to provide written status updates regarding the status of conversion, LEU qualification efforts, fuel consumption rates, and projections of the BR2's needs for HEU at least once every three years.

IT IS SO ORDERED.

For the Commission

**NRC Seal**

***/RA/***

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Annette L. Vietti-Cook  
Secretary of the Commission

Dated at Rockville, Maryland,  
this 17th day of February 2017.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	Docket No. 11006235
	)	
EDLOW INTERNATIONAL COMPANY	)	
	)	
	)	License No. XSNM3771
(Export of 93.20% Enriched Uranium)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **COMMISSION MEMORANDUM AND ORDER (CLI-17-03)** have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Clara Sola]  
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Dated at Rockville, Maryland,  
this 17<sup>th</sup> day of February, 2017