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**KILPATRICK
STOCKTON LLP**
Attorneys at Law

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Attorneys at Law
Suite 900
607 14th Street, N.W.
Washington, D.C. 20005
Telephone: 202 508.5800
Facsimile: 202 508.5858
Web site: www.kilstock.com

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DOCKET NUMBER
PROPOSED RULE **PR 40**
(67FR 55175)

E-mail: csimmons@kilstock.com
Direct Dial: 202.508.5806

Via E-Mail and U.S. Mail

Secretary,
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
Attn: Rulemakings and Adjudications Staff

Re: Transfers of Certain Source Materials by Specific Licensees [RIN 3150-AG64] (67 Fed. Reg.55175, August 28, 2002).

Dear Sir or Madam:

These comments on the above captioned rulemaking are submitted on behalf of the Zirconium Environmental Committee ("ZEC"), a group of companies that engage in the production, research and development, and commercial distribution of zirconium ores and products, including zircon and zirconia.

Zircon (ZrSiO₄) and zirconia (ZrO₂) are materials which contain low levels of naturally-occurring radioactive materials (NORM), specifically, uranium (U) and thorium (Th) at concentrations below the NRC's threshold for licensable source material (<0.05% total U and Th, by weight). As such, zircon and zirconia are "unimportant quantities of source material. Zircon and zirconia are important commercial commodities that are used in industrial applications vital to the nation's economy, common defense and security, including but not limited to: aerospace, foundry, electronics, steel, ceramic, abrasives, glass, and ultra-high performance materials industries. Although zircon and zirconia are unrelated to the production or utilization of nuclear energy, a number of facilities hold Agreement State-issued materials licenses. As a result, ZEC members are directly affected by the proposed rulemaking.

I. NRC has underestimated the economic effects of the proposed rule.

NRC's cost model for the proposed rulemaking is predicated upon 114 licensees making three to six transfers of unimportant quantities of source material to exempt persons annually.¹ The unimportant quantities being transferred by these licensees are assumed to be wastes or waste-like materials such as contaminated soil, construction debris, baghouse dust, and slag-like material. Total annual costs

¹ Regulatory Analysis of Amendment to 10 C.F.R. Part 40 (Draft Report) (August, 2000) at 3.2.1.

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to these 114 licensees are projected to range from \$32,871,000 to \$232,465,000,² or a cost of \$288,342 to \$2,039,166 to each licensee.

NRC's cost model fails to account for materials licensees whose licenses are administered by the Agreement States. At this time there are 32 Agreement States to which NRC has transferred licensing authority over source material and this number is expected to increase in the future. NRC Agreement States must implement rules that are compatible with NRC's rules, including the proposed amendment to Part 40. In 2000, NRC estimated that Agreement States regulated 70% of the total number of materials licensees and that number would increase to 80% by 2003³ to almost 18,000 licensees.⁴ NRC's proposed rulemaking affects Agreement State licensees and NRC licensees equally, yet the Commission's cost model only considers costs based on a limited and shrinking pool of NRC licensees and ignores the numerically more significant population of Agreement State licensees.

Moreover, NRC's cost model assumes that unimportant quantities being transferred will be wastes and waste-like materials (slags, bag-house dust, debris, etc.) and fails to consider the vast number of commodities that contain "unimportant quantities" of source material. Zircon and zirconia are examples of materials that contain unimportant quantities of source material, yet the proposed rulemaking, if strictly construed and literally enforced, would require notification and pre-approval to thousands of transfers of these commodities annually.

A. Zircon Mines

There are two zircon mines in the State of Florida – an Agreement State – that each hold Florida materials licenses. Geologically co-existent with zircon mineral is the mineral monazite, which exceeds 0.05% U and Th by weight. The presence of monazite at the mine is the basis of Florida state-issued materials licenses, yet monazite is not transferred off-site by the mine. Zircon, on the other hand, is routinely transferred by the mine in various quantities.⁵ Under a strict construction of NRC's proposed rulemaking, *each transfer of zircon made by the mine would require notification and pre-approval*. Titanium ores (ilmenite, rutile, leucosene) of equal commercial importance would also be equally affected by the proposed rule. This amounts to thousands of transfers per year. Neither the costs to the zircon mines, the administrative costs to state licensing authorities, nor the costs to manufacturers relying on timely supply of zircon have been considered by NRC.

B. Zirconia Manufacturers

There are at least three zirconia manufacturers in the United States that hold Agreement State-issued materials licenses. Zirconia (ZrO₂) may be made from a naturally occurring mineral (baddeleyite) or may be synthesized from the mineral zircon (ZrSiO₄) by removing the silica (SiO₂) fraction. These

² *Id.* at 3.2.2.

³ 65 *Fed. Reg.* 8751 (February 22, 2000)

⁴ SECY 99-250 (October 14, 1999).

⁵ U.S. Geological Survey, *Zircon and Hafnium* (2000) According to the U.S.G.S. approximately 100,000 tons of zircon are mined annually in the United States.

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facilities hold State issued materials licenses because the mineral baddeleyite exceeds the 0.05% U and Th licensing threshold, although the zirconia product is an unimportant quantity. Zirconia is used in high-temperature refractories for iron, steel and glass manufacturing, usually in the form of articles of definite shape, such as nozzles, slide gates, or blocks. It is estimated that there were at least 2,000 to 6,000 transfers of zirconia refractory articles made in 2001, a depressed year for manufacturing industries. Because zirconia manufacturers hold a state-issued materials licenses and zirconia is an unimportant quantity transferred to an exempt person (e.g., steel mill, glass manufacturer), *each transfer of a zirconia block or article would require notification and pre-approval under the proposed rule.* Neither the costs to the zirconia manufacturers, the administrative costs to state licensing authorities, nor the costs to industries relying on zirconia refractories have been considered by NRC. Many users of zirconia refractories are small businesses and an interruption in supply or necessity to find equivalent substitute refractories would have dire economic consequences.

II. NRC's technical basis for the proposed rule is inconsistent with Information Quality Guidelines binding the Commission pursuant to Section 515 (a) of Public Law 106-554.

The Commission document, NUREG 1717, *Systematic Radiological Assessment of Exemption for Source and Byproduct Materials*, asserts that doses of up to 40mSv/yr (4,000 mrem/yr) occur primarily from inhaled dusts for workers handling zircon flour. NUREG 1717 forms the principal technical basis for the proposed transfer rulemaking:

Recent analyses show that the individual effective dose equivalents arising from exempt materials could range up to 4,000 mrem/yr for workers (zircon flour handling) and up to 200 mrem/yr for a member of the public (from pavement and building construction from phosphate slag). NRC, *Systematic Radiological Assessment of Exemption for Source and Byproduct Materials*, Table 3.2.19 (Dec. 1999) (Draft). These are substantial doses and the revisions proposed by the staff are to ensure that releases from licensed sites pursuant to § 40.51 include consideration of the dose consequences.⁶

This analysis has been confirmed to be overly conservative and unrealistic in light of industry data and more up-to-date (ICRP 68) dosimetry. NRC's Dr. Dennis Sollenberger's (NRC/OSTP) reported finding significant errors and substantial overestimates of doses relates specifically to the zircon information presented in NUREG 1717. In public meetings of the Part 40 Jurisdictional Working Group, and before the Conference of Radiation Control Program Directors (CRCPD) SR-5 (TENORM) Task Force, it was made clear that the overestimates in NUREG 1717 are the result of errors within the original documents selected, cited, and used in compiling NUREG 1717.

⁶ Commission Voting Record, SECY 00-0201 10 CFR PART 40 Amendments to Require NRC approval for transfer from licensees to exempt persons (March 29, 2002)

Dennis Sollenberger discussed his work on the analysis of NUREG-1717, "Systematic Radiological Assessment of Exemptions for Source and Byproduct Materials." Dr. Sollenberger has been analyzing the remaining information we received from the Office of Nuclear Regulatory Research, two references in the NUREG, and information NRC has received from industry representatives. Dr. Sollenberger discussed some of his preliminary findings, such as uncertainties regarding particle size, conservatism in calculations which are not realistic, error in original reference, etc. Generally, he does not believe there is a significant health and safety concern that warrants regulatory action. Dr. Sollenberger's goal is to identify where uncertainty exists and bound what is and is not good data in the references. He would also like to evaluate the results with newer ICRP dose methodology. He is talking with industry representatives, and stated that if anyone had additional information to provide, he would like to review it.⁷

Data provided to the NRC's Part 40 Group by the ZEC confirms that occupational doses from zircon dusts would not be expected to exceed a fraction of 1mSv/yr (100mrem/yr) provided minimal existing industrial hygiene regulations (OSHA) and other common guidelines (ACGIH) are met for respirable particulate in industrial settings. Note that in industrial plants performing minerals processing, ceramics manufacturing, and in foundries, the principal inhalation hazard of concern is from crystalline silica that is regulated at a permissible exposure level of 0.1 mg/m³ (8-hr TWA). None of these factors were apparently taken into account by the drafters of NUREG 1717.

The recognition that NUREG 1717 overconservative conclusions extends to the Commissioner level. In a recent meeting with the Organization of Agreement States, NRC Commissioner McGaffigan commented :

And the NUREG document that we have -- and I forget the number of it -- that really is, that's being used by the other agency that is really not very good. I mean, it piles conservatism upon conservatism upon conservatism. I think Mr. Collins from Illinois knows this inside and out. And it ends up with ridiculous guesstimates, rem, if somebody stands next to Zircon sand pile 365 days with the wind blowing, and it gets in his lungs. But the industry believes that nobody gets more than 100 millirem if they follow normal OSHA practices.

So just so that you know, at least this commissioner doesn't think that NUREG document -- and the staff -- if Carl Paperiello were here, he would tell you that NUREG document is not all that hot.⁸

Because NUREG 1717 dramatically overestimates exposures to zircon and zirconia and NRC's Part 40 Group has affirmed that the document is over-conservative and in some places erroneous, the information in NUREG 1717 is not consistent with NRC Information Quality Guidelines as required by Section 515 (a) of Public Law 106-554. Yet this document forms substantially the entire technical basis for the proposed rule, even though NRC's own analysis confirms that the document is replete with error and overconservatism. Notwithstanding the well-established principles of administrative law requiring an

⁷Meeting Summary: Part 40 Jurisdictional Working Group (March 6-7, 2002).

⁸ NRC Briefing; Meeting with Organization of Agreement States (OAS) and Conference of Radiation Control Program Directors (CRCPD) (August 21, 2002).

agency's rules to have a rational and technically sound basis, we also note that reliance on NUREG 1717 is inconsistent with the Office of Management and Budget guidelines for information quality, binding upon NRC as enacted by Section 515 (a) of Public Law 106-554. Accordingly, we hereby request the Commission to correct the information presented in NUREG 1717 in accordance with NRC Information Quality Guidelines.

At the time of this writing, the Part 40 Jurisdictional Working Group's report to the Commission, as well as all of the technical conclusions and supporting dosimetric calculations which form the basis for NRC's public statements regarding NUREG 1717 have not been publicly released. Accordingly, we reserve the right to supplement these comments once that information becomes available.

III. As applied to commodities that are "unimportant quantities," the proposed rule creates an unfair trade advantage to foreign companies.

Consider the case of a zirconia manufacturer in the domestic U.S. who holds a materials license and is therefore subject to pre-notification and approval for each transfer of refractory zirconia articles to an exempt person, such as a glass manufacturer or steel mill. Because foreign zirconia producers would not be subject to the pre-notification and approval, foreign zirconia articles could be imported as unimportant quantities without undue delay in shipping or increased transaction costs. In this regard, the proposed rule would directly undermine domestic zirconia production and favor foreign competition in an already economically stressed industry. Similarly, *any foreign producer of commodities containing any quantity of U and/or Th, as long as it's below 0.05%, would enjoy freedom from the notification, pre-approval and transactional costs affiliated with the proposed rulemaking.*

IV. NRC should narrow the focus of the proposed rulemaking.

From the Preamble to the proposed rule, the Regulatory Analysis and the Commission Voting Record, it appears that the Commission's underlying intentions are to craft a regulatory mechanism for increased regulatory oversight of *wastes* that are *derived from* specifically licensed source material and *transferred to exempt persons* for permanent disposal in a manner that is different from that contemplated by the license. Increased controls over the promiscuous disposal of wastes are laudable, and the Commission may achieve this result without unduly burdening industrial-use commodities like zircon and zirconia. First, by clarifying the phrase "derived from" to mean "source material that is derived from and directly results from the specifically licensed materials in the licensee's source material inventory," the chances of confusion arising from low-concentration, non-licensable materials (e.g., NORM) are minimized. Second, by limiting the scope of the proposed rulemaking to wastes or secondary materials that are destined for disposal, confusion and undue burdens regarding transfer of commodities is relieved.

V. Support for transfer to RCRA permitted disposal facilities.

As discussed above, there are significantly more materials licensees subject to Agreement State jurisdiction than NRC has considered in evaluating the cost effects of the proposed rule. The transactional costs of case-by-case review of transfers of unimportant quantities for disposal will be significant, both for the licensee and the reviewing agency. In this regard, imposing a requirement

for notification and pre-approval, on a case-by-case basis, for transferring unimportant quantities to a RCRA permitted landfill for permanent disposal (where the disposal facility is permitted to accept such wastes) makes no sense and imposes additional, duplicative costs and dosimetric modeling burdens on the licensee. To avoid these unnecessary burdens, and encourage appropriate disposal of unimportant quantities in wastes, we recommend NRC consider amending 10 C.F.R. 40.51(b) to facilitate disposal of unimportant quantities in RCRA-permitted landfills, provided such disposal is consistent with the terms of the disposal facility's operating permit:

(b) Except as otherwise provided in its license and subject to the provisions of paragraphs (c), (d) and (e) of this section, any licensee may transfer source or byproduct material:

(x) To any solid waste disposal facility permitted in accordance with the Resource Conservation and Recovery Act, or equivalent State permit, authorized to receive such material according to the terms of its permit.

VI. Codification of a prohibition on "dilution" should be avoided.

In response to the Commission's request for comment on whether "intentional dilution" of licensed source material should be expressly prohibited to meet concentration-based regulatory thresholds, we think this could create additional confusion on the part of licensees and state administrators by establishing an "intent-based" evaluation of a licensee's operations. Many industrial processes are intended to mix, blend and commingle various constituents to create a commodity (e.g., yttria-stabilized zirconia); while these processes are "intentional" and they result in reduction in source material concentration ("dilution") the licensee's intent is not to evade a regulatory threshold, but to manufacture a product of commercial value. Similarly, industrial operations may involve waste consolidation for ease in handling which also reduces net concentration of source material in the waste to be disposed. Introducing an "intent-based evaluation" of a licensee's operations could place licensees in the impossible position of having to justify each processing stage in their operation where source material concentration is reduced. For this reason we believe that the provisions of Section 40.14(c) requiring licensees to confine their possession and use of source material to the terms of their license adequately protect against unauthorized use, without creating additional burdens on normal operations carried out by licensees.

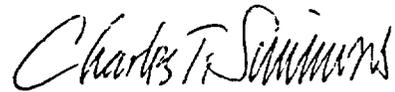
VII. Conclusions

For all of the foregoing reasons, we believe that the proposed rulemaking is premature and not based on a sufficient determination that it is necessary to protect public health and that costs to affected entities won't be unduly burdensome. The Commission needs to more fully develop the technical basis for this rule: NUREG 1717 is recognized to be overly conservative and erroneous; there is no technical support that quantifiable reductions in public or worker doses will result from the provisions of the rule; and the Commission has provided an incomplete assessment of the costs to licensees affected by this rule. For these reasons, the Commission should stay further action on this rule pending resolution of the information deficiencies in NUREG 1717 and development of a more accurate economic analysis.

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Please do not hesitate to contact the undersigned if there are any questions regarding these comments.

Very truly yours,

A handwritten signature in black ink that reads "Charles T. Simmons". The signature is written in a cursive style with a large, prominent "C" at the beginning.

Charles T. Simmons
For The Zirconium Environmental
Committee