October 31, 2007

MEMORANDUM TO: Nader Mamish, Deputy Director
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

FROM: Nancy Osgood, Senior Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

SUBJECT: SUMMARY OF OCTOBER 29, 2007, MEETING WITH CROFT REGARDING THE MODEL NO. SAFKEG-LS AND SAFKEG-HS TRANSPORTATION PACKAGES

Background. On October 29, 2007, a meeting was held in Rockville, Maryland, at the request of Croft Associates, Ltd., to discuss two new transportation package designs: the Model Nos. SAFKEG-LS and SAFKEG-HS. The meeting was held to discuss the designs and the package evaluation that is being prepared. No regulatory decisions were requested nor made at the meeting. The list of meeting attendees is Enclosure 1.

Discussion. The following items were discussed:

- Background. Two packages are being designed for use for shipping medical and industrial isotopes from the University of Missouri research reactor (MURR). The packages are being designed to replace DOT specification containers, the 6M and the 20WC-1 packages. The use of DOT specification containers will not be authorized after October 1, 2008.

- Package design. Croft presented the following design information about the two packages it is designing. One has "light shielding," the SAFKEG-LS, and one has "heavy shielding," the SAFKEG-HS. The designs are similar in size and in the configuration of the overpack. The heavy shielding design includes depleted uranium or tungsten shielding in the containment vessel component; whereas the light shielding design includes lead shielding in the containment vessel component. The drawing (Enclosure 2) was used in the meeting to represent the package designs. The overall size of the package is about 417 mm in diameter and 483 mm in height. The outer overpack shell is based on a keg design, with a bolted lid, filled with engineered cork pieces for impact and thermal protection. The containment vessel is of single-piece construction, with a lid closed by bolts. The lid is equipped with double EPM O-ring seals, which are leak testable. The decay heat is in the 10-15 watt range. The package is being designed to carry various isotopes in liquid and solid form. There are no lifting or tie-down devices that are a structural part of the package.

- Package evaluation. The following topics were discussed:
    - Structural evaluation. Croft plans to perform several drop tests on the package – including top end, side, and CG over top corner drop orientations. The inclusion of a "slap-down" type configuration was discussed. Croft does not plan to instrument the test specimens; however, video will be taken. The need for finite element analyses was discussed. Croft will consider the need for supplemental finite element analyses in addition to the physical tests. The crush test is not applicable to this design because of the package density.
    - Contents. The package is being designed for a wide range of isotopes produced at MURR. It was suggested that an initial list of isotopes would be included. Authorization to ship additional materials may be requested later.
    - Containment. The containment system is leak testable, and will be tested prior to each shipment after the contents are loaded. The containment vessel will be completely leak tested during fabrication. The acceptance standard will be leak tight, as defined by ANSI N14.5.
    - Shielding evaluation. The confinement of the radioactive material under normal and accident conditions was discussed. Croft plans to show that the package meets the accident conditions dose rate limits even if the material is released from the inner product containers. For normal conditions, Croft will define the confinement barrier and provide a method of assurance that it is properly closed and provides confinement adequate to limit dose rates prior to each shipment.
    - Materials. For a package using depleted uranium or tungsten, a brittle failure assessment should be included. Croft will provide materials information about the cork and its properties.

- Schedule. The application for package approval is expected to be submitted to NRC in the September 2008 timeframe.

Docket Nos. 71-9337 and 71-9338
TAC No. L24135

Enclosures: 1. Meeting Attendees
2. Package Drawing

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DATE	10/30/07		10/30/07		10/31/07	

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MEETING ATTENDEES
Meeting Between the Nuclear Regulatory Commission
and Croft Associates, Ltd.
October 29, 2007

Andrew Barto	NRC/NMSS/SFST
Mike Call	NRC/NMSS/SFST
Larry Campbell	NRC/NMSS/SFST
Allen Hansen	NRC/NMSS/SFST
JoAnn Ireland	NRC/NMSS/SFST
Natreon Jordan	NRC/NMSS/SFST
Bob Nelson	NRC/NMSS/SFST
Alexis Sotomayer	NRC/NMSS/SFST
Robert Temps (part time)	NRC/NMSS/SFST
Nancy Osgood	NRC/NMSS/SFST
David Tang	NRC/NMSS/SFST
Bob Vaughan	Croft
Michael Flagg	MU Research Reactor

Enclosure 1