Materials Transfer Report

Submitted by

Ideal Source Quality Assurance, LLC

License number 24-32675-02E

William B. Yelon, Ph.D.

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This report itemizes topaz gemstones and diamonds transferred for use under 10 CFR §30.14.

b)

1. Type and quantity of material transferred:

During the 2015 calendar year Ideal Source Quality Assurance (ISQA) tested 32 shipments of irradiated blue topaz for release in the United States according to the procedures described in license 24-32675-02E. Of these, 2 were selected after sorting in Poland and followed the 5% random sampling of parcels established in the license. The remaining 30 parcels were tested in the ISQA facility on a single stone basis, having been specially cut from rough previously sent to Bangkok. These 30 parcels are listed below as "special release".

Since the introduction of new analysis software, based on the net counts above (a well measured) background, in ten energy windows, and matrix calculations to identify the isotopes responsible, no significant failures of the counting procedures have been found in the statistical sampling carried out by ISQA. In a few cases a (small) outlier, with activity exceeding 2 times the NRC specified limit, has been found in the ISQA tests. The frequency of such outliers has been fewer than 1 stone per 1000 (of stones of similar mass) as required by the NRC. Full documentation of the ISQA testing, with data for every parcel sampled, is stored and available for inspection, either electronically or in hard copy.

The two "regular" shipments were sent to the offices of Ostro Minerals, Ltd, at 62 Grosvenor St. London, England or returned to the Maria Reactor in Poland, where the neutron treatments took place. The 30 "special release" shipments were delivered directly to their buyers (on behalf of Ostro) with the appropriate certificates (printed on security paper) or returned to the Bangkok office of Ostro Minerals. The inventory of cleared stones is maintained in a data base in the ISQA office along with a table of certificates indicating the size, shape and quantity of each parcel sold. This data base is now linked to the Ostro Mineral office in London, such that appropriate certificates can be generated at the time of sale by Ostro and delivered to the

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customer with the merchandise. All transfers are reported to the ISQA office and the data base is backed up on a weekly basis.

The shipments consisted of:

Regular shipments:	108395.5 gm
Special shipments:	5408.9 gm.
Total:	113804.4 gm.

In addition, 25 small parcels of diamonds totaling 144.54 gm were tested and approved. No trace of radioactivity was detected in these parcels, as required under amendment 3 of the license. After testing, they were sent to the final customers, with certificates, specifying the approved quantities and their nature (diamonds).

b) At the time of introduction of the byproduct material, the topaz gemstones were the property of:

Topaz International Enterprises LTD
325 Waterfront Drive,
Omar Hodge Building 2nd Floor,
Wickham Cay, Road Town,
Tortola,
British Virgin Islands

And of distributors acting on behalf of TIE

Topaz International Enterprises is the parent (holding company) of Ostro Minerals which is the successor company to Topaz Minerals AG, previously located in Zurich Switzerland. It remains under Ostro family control after the death of its owner and founder Max Ostro, in May 2010.

The diamonds were treated by Prism Gems, 31 W. 47th St. Suite 901, New York, New York, at their electron irradiation facility in New Jersey. Prism Gems is controlled by Ashit Gandhi.

c) Because of the geological nature of the topaz gemstones, the initial concentrations of byproduct material varied both with respect to the origin of the gemstones and within gemstones from a single origin. After an initial decay period, during which the short-lived byproduct materials were not characterized, the principal isotopes were ^{54}Mn, ^{182}Ta, ^{46}Sc, and ^{58}Co. Traces of ^{134}Cs and ^{65}Zn were also detected in a small minority of stones. Activities of these isotopes varied from zero to a few hundred Bq/g. A few outliers, easily detected in the sorting procedure may even have ^{182}Ta concentrations exceeding 1000 Bq/g. Decay times for each individual parcel were determined by the initial concentration of these isotopes.

At the time of transfer, the average activity of these gemstones was (typically), ^{54}Mn 3-10 Bq/g and ^{182}Ta 0-3 Bq/g. The activity of the other isotopes was less than 1 Bq/g. In general, the average sum-of-ratios for each parcel was less than 0.33, i.e. one third of the levels allowed by NRC regulation. Records maintained by ISQA (as well as at the irradiation facility) provide the average activities for each individual parcel of stones, as determined by high resolution Ge counting. The ISQA tests of selected parcels, using NaI(Tl) detection, are in excellent agreement with the Ge testing in Poland. Detailed records of the testing results are maintained by ISQA.

With regard to the tested diamonds, due to the low electron energy used for their treatment, no activity was expected, and none was observed. This indicates that they have not been exposed to neutrons prior to electron treatment. As with the topaz testing, detailed records of testing are maintained in the ISQA offices.

Reports of material transfers will be maintained permanently at ISQA headquarters. Reports of the average activities for all parcels shipped from Poland under the ISQA license will also be maintained (on computer and on hardcopy) in the ISQA office. Reports of all parcels tested will be preserved in similar form in the ISQA office.