

**Ideal Source Quality Assurance, LLC**  
**409 Vandiver, B4, Suite 201**  
**Columbia MO 65202**

Mar. 6, 2013

Director,  
Office of Federal and State Materials  
& Environmental Management Programs  
U.S. Nuclear Regulatory Commission  
Washington D.C. 20555-0001

Dear sir,

Attached are two copies of the Material Transfer Report for the year 2013 for Ideal Source Quality Assurance, LLC. In the course of this year a large quantity of irradiated blue topaz was released as exempt material, and our sorting and testing procedures were steadily improved.

We look forward to working with the NRC in providing to the U.S. market a steady supply of tested and certified blue topaz, and thank you for providing guidance and for vigorous enforcement of the existing regulations.

Yours sincerely,



William B. Yelon, Ph.D.  
RSO

## **Materials Transfer Report**

**Submitted by**

**Ideal Source Quality Assurance, LLC**

**License number 24-32675-02E**

030-37567

**William B. Yelon, Ph.D.**

**Submitted Mar. 6, 2013**

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

b)

1. Type and quantity of material transferred:

During the 2012 calendar year Ideal Source Quality Assurance (ISQA) tested 17 shipments of irradiated blue topaz for release in the United States according to the procedures described in license 24-32675-02E. Of these, 13 were selected after sorting in Poland and followed the 5% random sampling of parcels established in the license. In addition, 4 small shipments of unknown origin were submitted to ISQA, in their entirety, for testing. These 4 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.

All stones 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 4 “special release” shipments were returned to their owners with the appropriate certificates (printed on security paper). 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 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:	333,807.2 gm
Special shipments:	5,600.4 gm.
Total:	339,407.6 gm.

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 2<sup>nd</sup> 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.

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 <sup>54</sup>Mn, <sup>182</sup>Ta, <sup>46</sup>Sc, and <sup>58</sup>Co. Traces of <sup>134</sup>Cs and <sup>65</sup>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 <sup>182</sup>Ta concentrations exceeding 1000 Bq/g. Decay times for each individual parcel was determined by the initial concentration of these isotopes.

At the time of transfer, the average activity of these gemstones was (typically), <sup>54</sup>Mn 3-10 Bq/g and <sup>182</sup>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.

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.

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