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U.S. Nuclear Regulatory Commission, Region IV
1600 E. Lamar Blvd.
Arlington, Texas 76011
Attn: Director, Division of Nuclear Material Safety

Subject: Missing 38.49 mCi Special Form Am-241/Be (Solid Americium Oxide with Beryllium) source from Clients Nuclear Density Gauge
From: NDG Service Licensee# 11-27610-01
Date: April 11th, 2022

On March 8th, 2022 around 3:30pm a Qal-Tek Associates (QTA service licensee) radiation technician identified and contacted the RSO of a loose Am-241/Be source cap in a clients Troxler gauge (model 3440 sn: 29884) during servicing.

The service licensee picked up the gauge from the client on June 29, 2021 after the client stated "low readings". From about July 1st, 2021 to March 8th, 2022 the service licensee NDG radiation technician troubleshooted the gauge component by component from most to less likely by: checking the HV, ordering a replacement baseboard, then a new scaler board, checked the radiation detection tubes, reordered another baseboard since sometimes they are faulty with no success the technician asked for advice from a more seasoned technician. This technician after reviewing prior actions taken, performed a complete potential issue analysis and found the loose Am-241/Be source cap. The technician immediately contacted the QTA RSO. The RSO immediately responded and met with the technicians to verify dose readings from the Am-241/Be source with a gamma detector to identify the 60 keV gamma field with no discernable result. The RSO asked the technicians to remove the Am-241/Be cap. Upon removal, a contamination wipe was performed, which confirmed no contamination present. The RSO asked the technician to then remove the source holder at which point it was identified that no Am-241/Be source was present. QTA immediately performed visual and radiation surveys (using 2 different gamma and a neutron detector) of the gauge, shipping case, work area then QTA expanded the survey to include a full survey of B3 NDG building inside and out, and transport van. It was determined that the Am-241/Be source was not at the service providers facility.

During the search effort statements were collected from both NDG technicians. The QTA RSO contacted the client's site RSO on March 8th to communicate the discovery of no Am-241/Be source in their gauge. The client's site RSO referred the QTA RSO to the clients Corporate RSO to share the discovery. The QTA RSO also shared to the clients Corporate RSO that the size of this source (radionuclide/activity) would trigger an immediately reportable event and would be calling the national response center shortly and recommended to the NDG owner's Corporate RSO to take further action by contacting the Utah radiation control group.

The next day March 9th, further questioning of the NDG troubleshooting technician occurred and sharing of information with the client's corporate RSO (i.e. client NDG user statement, picture of loose source

cap and holder in NDG from client's NDG user, screenshot of picture texted to service provider technician that worked on the gauge, copy of service providers Nuclear Density Material Service Request).

NRC Region IV contacted the service provider RSO on the morning of March 9th requesting a phone conference. The phone conference centered around; NDG service route and frequency, was the NDG surveyed before transport, were any abnormalities noted by transporter when NDG was inspected in shipping case, was the gauge in the van until it reached the service providers final destination, gauge info., how missing source was discovered, trouble-shooting steps over the 9 months it was with the service provider, technicians statement summary, measures taken to find source at service provider's location, and shared information between client and service provider RSO's.

Utah Radiation Control contacted the service provider RSO on March 16th to gather further documentation (i.e., service providers trip list, sales order/work order for receipt record, survey records of the NDG, Case, Van, facility and condition of gauge upon receipt at client's location).

The service licensee took immediate action to train staff on the new potential for loose Am-241/Be source caps. It was found that this issue is more common than historically known and QTA upon discovery took immediate action to incorporate training and service duties. QTA has trained their NDG staff and management to now check for and report loose Am-241/Be caps on Troxler NDG's that don't have the CRAM foil label over the source cap. In addition to training the service licensee is updating their procedure to check for loose caps across their operations and if found, to apply red loctite® and tighten the cap back down before returning to the client. QTA RSO has coordinated with inspectors to begin tracking and trending the frequency and scope of loose cap occurrences.

As of April 11th, after several extensive search efforts shortly after discovery, the source has not been found at the service providers facility. Based on investigations and existing information, specifically related to the in-place source cup upon arrival at QTA, we believe the source was lost prior to our possession.

Sincerely,

Michael Albanese
Qal-Tek Associates, RSO