

## Moisture Density Gauge Accident Report

Date of Accident: 10/26/2019

- (i) Nick Zolnowsky (SPN and Associates Gauge Operator) was operating the Troxler 3430 on site taking density tests on S. Main St between W Havens Ave and W Elm Ave. on a jobsite in Mitchell, SD. He started to take a density test and left the nuclear density gauge to prepare for the next test about 30' away. There was no construction equipment in the immediate area. The majority of the work was being completed about a half a block away. A wheeled skid loader drove down the street and began to do some minor grading. The skid loader then backed over the gauge.

Nick then secured the area with caution tape but was not able to stop the skid loader. Nick then called Jacob Sonne (SPN and Associates Gauge Operator) and made him aware of the circumstance. Jacob went to the office and picked up his dosimetry badge on the way to the site. Jacob contacted Brandon Smid (SPN and Associates dba Helms & Associates RSO).

Once entering the job site and verifying that the area was clear Jacob called Troxler Laboratories emergency number to inform them that the sliding block was stuck open so that the source rod was only being shielded in the upward and outward direction, but not the downward direction. The probe was extended in the ground during the incident.

The Troxler Representative informed him that they had "pigs" available that could be used to encapsulate the source rod preventing further exposure to radiation, but it would take a couple days to get to the site. He suggested to call the NRC emergency number. Jacob called the NRC emergency number and discussed the issue with multiple individuals on a conference call. The representative suggested following the emergency protocols, to which Jacob replied that the next step would be informing local authorities of the situation and arranging for a radiation survey to determine if the device was emitting higher radiation than shown in the radiation profile contained in the Troxler User Manual. Jacob called the local fire department (Mitchell Fire Department) and Davison County Emergency Management informing them of the situation. They did not come to the site. He then completed a radiation survey with the use of a Ludlum Measurements, Inc. Model 44-9 Survey meter and determined that in the current state, the meter was not emitting radiation greater than that of the radiation profile shown in the Troxler User Manual.

He attempted to determine the extent of the damage to the gauge. In that attempt, the source rod fell out of the top of the gauge. With the rod in his hand he made sure to point it away from his body. He then placed it on the ground in the taped off area and removed the gauge body as he noticed that the slide block on the gauge was not closed. He moved the body of the gauge and removed the bottom plate. As he did this, the slide block closed. He then replaced the plate and reentered the area. He replaced the source rod back into the shielding. A portion of the index rod housing was cut off in order to fit it inside the transportation

container. The survey meter was then used at a distance of 1 meter on all sides of the transport case. The values were below the Transport Index value on the transport case (0.3).

The gauge was loaded and secured in the work truck and sent back to the office. The survey meter was then again used to determine the radiation at both the area of the incident and the skid loader. All measurements were 0.0 or negligible.

The nuclear gauge was then shipped to Troxler Laboratories and we are awaiting further information.

- (ii) The location of the incident was on a jobsite in Mitchell, SD. The location was on S. Main St. between W. Havens Ave. and W. Elm Ave.
- (iii) Am-241 & Cs-137
- (iv) October 26, 2019 at approximately 8:56 am
- (v) We will reevaluate our emergency procedures and add in some clarifications. Our emergency procedures were followed after the incident. They should however be updated with a few more details. We will also hold field training exercises with our gauge users in an effort to further educate all users.
- (vi) The radiation exposure to the general public is likely to be nonexistent. One user did handle the source rod, without shielding due to an equipment malfunction. The personal dosimetry badge was worn at the time. We have not received results at the time of this report.

Respectfully submitted by:

A handwritten signature in dark ink, appearing to read 'B. D. Smid', written in a cursive style.

Brandon D. Smid, P.E., R.S.O.