



# NDG Service and Maintenance Report

Serial #: 66812

Make: Troxler

Model: 3440

Work Order #: 51712

Date: 19-Aug-2024

## Safety Inspection

Checked Replaced

Shield Block Operational

Source Rod - cracks, wear

### Transportation Case

RAD II Sticker

UN Sticker

Air Cargo Sticker

Lid Cable

Latch

Strike

## Sealed Source Certificates

Cs-137 Expiration Date

Am-241/Be Expiration Date

## Wear Parts

Scraper Ring

Bumper

Wiper Seal

### Gaskets

Topshell

Scaler

Battery Pack

## Operational

Gauge Condition

General Gauge Cleaning

Gauge Internals Cleaned

Electronics Damage/Corrosion

Gauge Operational

# Certificate of Calibration



OSCAR 2  
Idaho Falls



3998 Commerce Circle  
Idaho Falls, ID 83401  
Ph: 208 523-5557  
www.qaltek.com

2521.01  
Calibrated On Site At:

Customer: Snyder & Associates - Marryville

Att.: JR Bradshaw

Address: 212 N Buchanan

City: Maryville

State: MO Zip: 64468

Phone: 816-364-5222

Serial Number: 66812

Mfg: Troxler

Model: 3440

Ref. #: W51712-262947

Calibration/Ver. Date: 19-Aug-2024

## Nuclear Density Gauge

Calibration/Ver. Due Date: 19-Aug-2025

### Basic Information

Density Standard Count	1922
Moisture Standard Count	667

### Soil Mode Density As Found

	Mg DC	Mg WD PCF [109.856]	Error PCF	Pass/Fail/Out of Service	Mg/Al DC	Mg/Al WD PCF [135.717]	Error PCF	Pass/Fail/Out of Service	Al DC	Al WD PCF [161.345]	Error PCF	Pass/Fail/Out of Service
BS	792.5	110.4	0.544	Pass	522.5	135.9	0.183	Pass	358	161.7	0.355	Pass
2	3237	110.2	0.344	Pass	2082	135.7	0.017	Pass	1295	161.5	0.155	Pass
4	3300	110.2	0.344	Pass	2013	135.5	0.217	Pass	1159	161.7	0.355	Pass
6	2663	110.3	0.444	Pass	1476	136.3	0.583	Pass	812	161.3	0.045	Pass
8	1846	109.6	0.256	Pass	946	135.8	0.083	Pass	477	161.4	0.055	Pass
10	1146	110.2	0.344	Pass	545	135.5	0.217	Pass	258	161.1	0.245	Pass
12	673	110.0	0.144	Pass	290	136.1	0.383	Pass	131	161.6	0.255	Pass

As Found Tolerance +/-2 PCF

### Moisture Density As Found

	Moisture Counts	Moisture Density PCF	Error PCF	Pass/Fail/ Out of Service
Low Moisture on Mg Block [0]	14	0.0	0	Pass
High Moisture on Poly Block [34.11]	416	32.8	1.31	Pass

As Found Tolerance +/-1 PCF at 0, +/-1.5 PCF at 30

### Gauge Constants

	A	B*1000	C	E	F
BS	2.89505461248	1.1791371624	-0.04879857538		
2	9.473433083450001	0.90799662388	0.23273338973		
3	0	0	0		
4	11.17681026774	0.97224677608	0.30285907554		
5	0	0	0		
6	16.20405274469	1.38604382249	0.0282669633		
7	0	0	0		
8	15.26951907722	1.55779386835	0.02431641083		
9	0	0	0		
10	13.54179944618	1.76932824309	0.00565403918		
11	0	0	0		
12	13.97923028318	2.10846679046	-0.00804877406		
E & F				0.02098950525	1.1030881278

### Soil Mode Density As Left

	Mg WD PCF [109.856]	Error PCF	Mg P/F	Mg/Al WD PCF [135.717]	Error PCF	Mg/Al P/F	Al WD PCF [161.345]	Error PCF	Al P/F
BS	109.6	0.256	Pass	135.5	0.217	Pass	160.5	0.845	Pass
2	109.4	0.456	Pass	136.2	0.483	Pass	161.3	0.045	Pass
4	109.5	0.356	Pass	136.5	0.783	Pass	161.3	0.045	Pass
6	109.9	0.044	Pass	135.3	0.417	Pass	161.4	0.055	Pass
8	110.4	0.544	Pass	135.9	0.183	Pass	161.1	0.245	Pass
10	109.6	0.256	Pass	135.8	0.083	Pass	162.0	0.655	Pass
12	109.4	0.456	Pass	134.9	0.8169	Pass	160.6	0.745	Pass

As Left Tolerance +/-1 PCF

**Moisture Density As Left**

	Moisture Density PCF	Error PCF	Pass/Fail
Low [0]	0.0	0	Pass
High [34.11]	33.9	0.21	Pass

As Left Tolerance +-1 PCF at 0, +-1.5 PCF at 30

**Soil Mode Gauge Estimated Uncertainty and Precision**

	Mg WD PCF [109.856]	Mg/AI WD PCF [135.717]	AI WD PCF [161.345]	Maximum Uncertainty	Precision @125 pcf @1min
BS	1.4	1.1	1.3	1.4	0.63
2	0.81	0.9	1.2	1.2	0.29
3	--	--	--	--	0
4	1.3	1.6	1.2	1.6	0.26
5	--	--	--	--	0
6	1.3	1.1	1.1	1.3	0.25
7	--	--	--	--	0
8	0.82	1	1.3	1.3	0.27
9	--	--	--	--	0
10	0.73	1.1	1.3	1.3	0.32
11	--	--	--	--	0
12	1.4	1.1	1.1	1.4	0.38

**Soil Mode Gauge Moisture Estimated Uncertainty and Precision**

	Low [0]	High [34.11]	Maximum Uncertainty	Precision @10 pcf
Moisture	0.39	1.1	1.1	0.24

**Notes**

Cal. Procedure: CP-PRO-601 Rev. 12

**Calibration Standard Blocks Used:**

	Serial #	Manufacturer	Date Calibrated	Gravimetric Density	Soil Normalized Density
Low density block	QTA-2-Mag/M (OS2)	Qal-Tek	15-Jul-2024	111.19	109.856
Medium density block	QTA-2-Mag/AI/M (OS2)	Qal-Tek	16-Jul-2024	139.34	135.717
High density block	QTA-2-AI/M (OS2)	Qal-Tek	16-Jul-2024	167.37	161.345
Poly	QTA-21-POLY (OS2)	Qal-Tek Associates	22-Sep-2023	34.11	34.11

Date of Service / Report Issued: 19-Aug-2024

Service Technician: Cory Gneiting

*Cory Gneiting*

Qal-Tek Associates uses the simple acceptance/simple rejection decision rule to determine in-tolerance and out-of-tolerance conditions as defined by JCGM 106:2012.

Uncertainty of measurement was estimated at the 95% confidence level, (k=2.26).

Uncertainty has been determined based on a properly operating instrument, by a qualified technician, using calibration standards of known values traceable to national and/or international standards.

All reference standards used are traceable to NIST. Qal-Tek Associates maintains a quality system (Quality Assurance Management Plan) that meets or exceeds the requirements set forth in the following documents: ANSI / NCSL Z540-1 1994 and ISO / IEC 17025. Calibrations performed per ASTM D:7759-21 guidelines. This Certificate of Calibration shall not be reproduced except in full, without the written approval of Qal-Tek Associates.

Results relate only to item calibrated.

**Expected Future Standard Counts - Troxler : 3440 : 66812**

	Lower Limit	Upper Limit	Moisture Standard
August 2024	1903	1941	667
September 2024	1901	1940	
October 2024	1898	1936	
November 2024	1894	1932	
December 2024	1890	1929	
January 2025	1887	1925	
February 2025	1883	1921	
March 2025	1880	1918	
April 2025	1876	1914	
May 2025	1873	1911	
June 2025	1869	1907	
July 2025	1866	1903	
August 2025	1862	1900	