

## OFFICE MEMORANDUM

TO : File

DATE: September 27, 1977

FROM : W. V. Abeele, H-8 *WA*

SUBJECT : MONTHLY REPORT

SYMBOL : H8-77-715

0883 Report

The month of September was spent mostly in gathering the tools and materials necessary for a proper joint calibration of the moisture and density gauges. The plan involves the calibration of uncased holes of 51mm, 60mm, 64mm, 76mm, 102mm, 113mm, and 127mm diameter. It also includes the calibration of holes cased with PVC and an O.D. of 60mm and 113mm, cased with steel and an O.D. of 76mm, 102mm, and 127mm and cased with aluminum with an O.D. of 51mm, 64mm, and 76mm. The testing of each case is going to be performed at ten different moisture contents.

In the past, some moisture tests have been performed but the results may be somewhat inaccurate due to density measurement problems. Nevertheless a regression analysis was performed and the results are tabulated below.

It can readily be observed that the c.v. of the counts is very low, which is an indication of the excellent repeatability of the measurements taken. It can also be observed that the reliability increases with a decrease in hole diameter and lack of materials with a high neutron capture cross-section (as PVC!!)

<u>%H<sub>2</sub>O by Vol.</u>	<u>CALC.-OBS.</u>	<u>Count Ratio</u>	<u>Coeff. of Variation (%)</u>
1)PVC, O.D.=113mm (4"PVC)			
1.68	0.84	0.074	2.5
3.82	-0.80	0.078	1.5
4.94	1.27	0.103	1.7
7.10	0.51	0.114	1.3
10.35	-0.20	0.134	0.9
11.46	0.61	0.149	1.2
17.77	-0.24	0.192	0.6
20.45	-2.03	0.199	0.9
24.33	-2.86	0.223	0.3
26.71	2.92	0.287	0.9



TO: File

-2-

DATE: September 27, 1977

<u>% H<sub>2</sub>O by Vol.</u>	<u>CALC.-OBS.</u>	<u>Count Ratio</u>	<u>Coeff. of Variation (%)</u>
2) PVC O.D. = 60mm (2" PVC)			
1.68	1.36	0.076	1.3
3.82	-0.49	0.081	1.9
4.94	1.09	0.129	0.4
7.10	0.16	0.151	0.4
10.35	-0.60	0.195	0.9
11.46	0.36	0.232	0.9
17.77	-0.48	0.329	0.6
20.45	-2.48	0.341	0.9
24.33	-1.75	0.423	0.6
26.71	2.84	0.547	0.1
3) OPEN HOLE D = 76mm (3")			
1.68	0.47	0.086	0.8
3.82	-0.14	0.116	0.8
4.94	0.20	0.145	0.8
7.10	-0.17	0.180	1.5
10.35	-1.14	0.225	1.1
11.46	0.37	0.277	0.6
17.77	1.16	0.417	0.4
20.45	-0.55	0.436	0.1
24.33	-0.22	0.519	0.8
26.71	N.A.	N.A.	N.A.

WVA:tj

cc: W. R. Hansen  
 D. R. Jackson  
 J. C. Rodgers  
 M. A. Rogers  
 W. J. Smith  
 L. K. Trocki  
 M. L. Wheeler  
 T. C. Stevens