INTEROFFICE MEMORANDUM

DATE: February 14, 1992

B&R FILE NO. 765.9

TO: T. Bittner

FROM: J. H. Templeton JHT

SUBJECT: EG&G Rocky Flats
Solar Pond/Pondcrete Stabilization Project
B&R Job No. JR-1198

REFERENCE: Temperature Change In Pondcrete/Saltcrete Blocks

As you requested, I have prepared a procedure to install thermocouples and monitor the internal block temperature change as Pondcrete and Saltcrete blocks are moved from unheated areas to heated tents.

Also attached is the required equipment list. The list was FAXed to Mr. Ernie Lombardi on February 5, 1992 to approve and send to Roy F. Weston Company for procurement.

Attachments

c: JRZ
WCH
File

TEMPERATURE CHANGE DETERMINATION IN PONDCRETE AND SALTCRETE BLOCKS

1. THERMOCOUPLE INSTALLATION

1.1 Prepare the permacon as in previous PC/SC sampling.

1.2 Move the selected three blocks into the permacon.

1.3 Open the PC triwall and pull the plastic liner away from the block.

1.4 Measure the estimated internal height of the triwall (or ½ crate), and the distance from the top of the block to the top to the triwall (or ½ crate). Determine the thickness of the block by difference, and divide by two. This yields the distance from the top of the block to the center of the block (see Fig. 1), or the "center depth".

1.5 Bend the thermocouple to form a 90° angle, so the distance from the sensing point to the underside of the bend corresponds to the center depth, as determined in 1.4.

1.6 Insert the ½" diameter auger bit in the drill and mark the center point depth on the auger bit with a piece of tape.

1.7 At the center of the block, or as close to the center as possible while still being a minimum of 8" from any sample holes, drill into the block to the center depth.

1.8 Attach the plug and wire to the thermocouple and snap on the safety clip (this prevents the thermocouple from disconnecting).

1.9 Using a spoon to scoop, or a chisel to scrape material off the top of the block, push material down the hole and around the thermocouple. One chemical operator should hold onto the wire to keep it away from the block and as free as possible of contamination.

1.10 Fold the PVC liner back over the top of the block, unspooling the wire and allowing it to be folded in with the liner. Place the top back on the triwall, with the wire exiting between the triwall side and the top. Pull the outer bag back into place, and tape it securely, with the wire exiting between the tape and the outer bag. If it is necessary to re-bag the triwall, ensure the wire is unspooled and folded in with the plastic and taped into place, allowing no possibility of a particle following the wire path out.

1.11 Cut the wire leaving approximately 5 feet of slack from the final taped joint to the end of the wire.

Thermocouple Installation, cont.)

1.12 Remove the triwall from the permacon and have an RPT check the outside surfaces.

1.13 Repeat steps 1.3 to 1.12 for the Saltcrete triwall and the Saltcrete ½ crate.

1.14 Once the blocks are outside the permacon and cleared by an RPT, an HNUS representative will attach the final plugs to the wires, and attach the ambient air thermocouple to the outside of one of the blocks.

1.15 The HNUS representative will take the initial readings, and check out the chemical operators on care and use of the meter.

1.16 Move the blocks into an unheated tent or into the north side shadow of one of the tents, whichever tend to be colder.

2. TEMPERATURE MONITORING

2.1 At the beginning of each day shift,measure the temperature at the four thermocouples and record them on the data sheet.

2.2 When the internal temperature of the blocks:
- is below 32°F, or
- matches the ambient air temperature at the attached thermocouple, or
- increases from the previous days measurement,

then move the blocks into a heated tent.

2.3 Continue taking the measurements, but increase the number taken per day to three, one at the beginning of each shift.

2.4 Once the internal temperature of a block reaches 45°F, the HNUS personnel may request the measurements to be taken more often.

2.5 Continue to take measurements until the internal block temperature is the same as the tent temperature.

2.6 The thermocouples and wires should not affect reprocessing of the blocks, so they can be left in place.

TEMPERATURE CHANGE DETERMINATION
EQUIPMENT LIST

The equipment required for the temperature change determination includes a meter, thermocouples, plugs, and wire. OMEGA Engineering Inc. distributes all of these items and the following list of equipment was taken from their Temperature catalog (Vol. 27), copywrited 1989.

QNTY	CAT #	PAGE #	DESCRIPTION	PRICE EACH	PRICE TOTAL
1	HH71T	C-18	Meter	119.00	119.00
4	TQSS-316 -U-12	A-7	Thermocouples, Type T, Copper Constantan	28.00	112.00
4	SMP-T-M	G-23	Sub-miniature Connector, Male only	1.75	7.00
4	PCLM-SMP	G-20	Cable Clamps	1.00	4.00
1 pkg	SFCL	G-8	Safety Clips	0.50	0.50
200'	TT-T-22S	H-23	Thermocouple Wire, Type T	727.50 per 1000'	145.50
			TOTAL		$388.00