# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
# QUALITY ASSURANCE
# SURVEILLANCE REPORT

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SURVEILLANCE SCOPE:

Calibration of Heat Treatment Temperature Monitoring Equipment IWPE Task 3

REFERENCE DOCUMENTS: N/A

STARTING DATE: 11/4/91 ENDING DATE: 11/5/91

QA REPRESENTATIVE: R. D. Brient

PERSONS CONDUCTING TEST / EXAM / ACTIVITY:

A. Nagy - SwRI Division 06

SATISFACTORY FINDINGS:

See Attached

UNSATISFACTORY FINDINGS:

None

NONCONFORMANCE REPORT NO.: N/A

ATTACHMENTS:

None

RECOMMENDATIONS / ACTIONS

N/A

APPROVED: _____
CENTER DIRECTOR OF QUALITY ASSURANCE

DATE: 11/6/91

DISTRIBUTION:
ORIGINAL - CENTER QA DIRECTOR
ORIGINATOR
PRINCIPAL ENGINEER G. CRAGNOLINO
ELEMENT MANAGER P. NAIR
J. Russell / A. Chowdhury

SATISFACTORY FINDINGS:

1. Two thermocouples (ThermoSensor Brand, p/n 1K34-V-60-M), to be used for IWPE Task 3 heat treatment activities were calibrated using Temptron Freezing Point Apparatus. The internal standards are NBS reference materials:

Tin, freezing point 449.39 degrees F., NBS # 42F
Aluminum, freezing point 1220 degrees F., NBS # 44E
Copper, freezing point 1984.1 degrees F.

The calibration points span the range of heat treatment temperatures to be used.

2. The thermocouples (one is a spare) were individually connected to the same data acquisition system to be used for the heat treating; Doric Digitrend 235, s/n 10429, so the thermocouple and data logger were calibrated as a system.

3. The procedure used involved slowly heating the reference material, internally controlled by the freezing point apparatus, to about 25 degrees higher than the freezing point (melting), then allowing the material to slowly cool. Due to the Heat of Fusion, the temperature of the reference material levels off for 5 or more minutes before resuming cooling. The level temperature indicates the freezing point, which is compared to the thermocouple read-out for the calibration. During this calibration, temperatures were printed-out every minute, providing a cooling profile and a clear indication of the freezing point temperature plateau.

4. For the thermocouple calibrated, errors appeared to be approximately 1 degree low at 450, 4 low at 1220, and 8 low at 2000 degrees F..