Los Alamos NATIONAL LABORATORY EST.1943

Blue Sheet
Engineering Division

DCN:

This Blue Sheet applies to: ☒ Individual Policy/Procedure Listed Below **LANL review date:** 12/1/08		
Policy/Procedure No: # KSL – PMI - Procedure- 16-30-011	**Rev. No.:** 0	**Date:** 10/12/2007
Manual, Policy or Procedure Title: Positive Material Identification (PMI) with ARC-MET 930		
Reason for Revision (if complete revision is checked above) Roll over of SSS contractor activities and work to LANL/LANS		
Documents listed above will be reviewed and conformed to by: All qualified personnel to perform PMI for acceptance of welding & related fabrications.		
Description of Change: 1.0 Purpose – No Changes 2.0 Scope – – Delete – "Quality Control" 3.0 Definitions – No Changes 4.0 Responsibilities – No Changes 5.0 Methodology – No Changes 6.0 Records – Delete "Reports/records will be maintained in accordance with the KSL Records Management Process." 7.0 References – No Changes		

Date Revision Required: **12/1/10**
Changes as marked
Reviewed by: ___Kelly Bingham_____ Date: ___12-8-08____ LANL Welding Program Administrator
Approved by: ____Signature on File_____ Date: 3/31/09____ ____ Signature on File____ Date: 3/31/09____ ES - DE Group Leader ES - DE Division Leader

MSS Policy/Procedures Review Team please forward original Blue Sheet to Luci Chavez upon approval

POSITIVE MATERIAL IDENTIFICATION
WITH ARC-MET 930

16-30-011

IMPLEMENTATION

Affected Personnel: QUALITY CONTROL PERSONNEL PERFORMING MATERIAL IDENTIFICATION USING THE METOREX ARC-MET 930.

Training Determination: REQUIRED READING

Procedure Owner: Performance Assurance Division

Release Date: 10/12/07	**Next Revision Date:** 10/12/2010
Procedure Type: Operational Procedure	**Revision Number:** 0
Procedure Level: Department	**Effective Date: 10/12/07**

DOCUMENT MODIFICATION HISTORY

Rev No.	Description of Modification
0	Initial release

DOCUMENT REVIEW AND APPROVAL

Function	Name	Position Title	Date	Signature
Prepared by	Craig Rich	Quality Control Inspector	10/12/07	Signature on File
	Melissa Vigil	Technical Writer	10/12/07	Signature on File
Reviewed and Approved by	Dan Gibson	Acting Quality Control Manager/Performance Assurance Division Manager	10/12/07	R. Maestas for D. Gibson Signature on File
Final Approval by	Gary Blauert	Technical Services Director	10/12/07	Signature on File

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1.0 PURPOSE

This procedure provides the methodology for using Arc-Met 930 Optical Emission Analyzer to perform chemical analysis on materials. This analysis may be used to verify existing Certified Material Test Reports (CMTR) or produce CMTRs for materials where none exist.

2.0 SCOPE

This procedure applies to Quality Control personnel performing on-site Alloy analysis for Positive Materials Identification (PMI).

3.0 DEFINITIONS/ACRONYMS

AWS – American Welding Society

CMTR - Certified Material Test Report

ML – Management Level

NIST - National Institute of Standards and Technology

PMI - Positive Material Identification

4.0 RESPONSIBILITIES

Arc Met operators are responsible for following the requirements listed in this procedure.

5.0 METHODOLOGY

5.1 PROCEDURAL STEPS

5.1.1 Testing Materials

The following is a list of materials used for testing:

- Tungsten electrodes
- Electrode Collets
- Exhaust Fume Filters
- Probe adaptor
- Argon Gas – AWS Specification 5.32 grade SG-A
- Certificate of Analysis required for ML-1, ML-2, SS, SC, NQA-1

5.1.2 Startup

Follow the startup procedure as outlined in Arc-Met User Manual Section 2 when performing Arc-Met testing.

5.2 MEASURING SAMPLES

1. The measuring samples function is to verify composition of identified materials.
2. Follow the Measuring Samples procedure as outlined in Arc-Met User Manual Section 3 and as listed below:

a. Select a model appropriate/similar to material of interest

b. If a model does not exist for the primary Matrix Element of interest then a new Model must be created following the procedures outlined in the Arc-Met Calibrators Handbook

c. Burn a National Institute of Standards and Technology (NIST) traceable reference sample using the selected model and save the test results to record that equipment and operator function correctly.

d. Take three burns and compare results for validity. If sample size is not conducive for three (3) burns, then use a minimum of one (1) burn.

e. Save the results of valid tests

f. Report test results as outlined in Section 5.7.

5.3 ASSAY SAMPLES

1. The assay samples function is to assay samples of unknown materials.
2. Follow procedure as outlined in Arc-Met User Manual Section 4 and as listed below:

a. Select a model appropriate/similar to material of interest

b. If a model does not exist for the primary Matrix Element of interest then a new Model must be created following the procedures outlined in the Arc-Met Calibrators Handbook

c. Burn an NIST traceable reference sample using the selected model and save the test results to record that equipment and operator function correctly.

d. Where possible take three burns and compare results for validity

e. Save the results of valid tests

f. Report test results as outlined in Section 5.7.

5.4 GRADE SAMPLES

1. The grade samples function is to identify grade of a material against known standard
2. Follow procedure as outlined in Arc-Met User Manual Section 5 and as listed below:

a. Select a Grade Library appropriate to material of interest

b. If a Grade Library does not exist for the Grade of interest then a new Grade Library must be created following the procedures outlined in the Arc-Met Calibrators Handbook

c. Burn an NIST traceable reference sample using the selected Grade and save the test results as record that equipment and operator function correctly.

d. Where possible take three burns and compare results for validity

e. Save the results of valid tests

f. Report test results as outlined in Section 5.7.

5.5 IDENTIFICATION SAMPLES

1. Identification samples is a match mode of samples against a known standard (Go / No-Go)
2. Follow procedure as outlined in Arc-Met User Manual Section 6 and as listed below:

a. Burn an NIST traceable reference sample or other known standard and save the test results.
b. Save the results of valid tests
c. Report test results as outlined in the Records Section (Section 6.0).

5.6 ALIKE SAMPLES

1. Alike Samples are used to determine if samples are same heat or lot (Pass or Fail)
2. Follow procedure as outlined in Arc-Met User Manual Section 7 and as listed below:
   a. Burn an NIST traceable reference sample or other known standard and save the test results.
   b. Save the results of valid tests
   c. Report test results as outlined in Section 5.7.

5.7 TEST RESULTS

1. After each series of burns the results will be printed from the Arc-Met onboard printer.
2. A report will be written with the following information at a minimum:
   a. ARC-MET Serial number
   b. Certificate number for the gas
   c. Date
   d. Operator
   e. Alloy matrix
   f. Control sample
   g. The analysis of the sample
   h. Any other information/data required by the type of test or test method performed

6.0 RECORDS

The following customer requested records may be generated by this procedure:

- Arc-Met printouts
- Arc-Met reports

Reports/records will be maintained in accordance with the KSL Records Management Process.

7.0 REFERENCES

Arc-Met 930 User Manual

Arc-Met Calibrators Handbook

Various NIST Traceable metal samples used to establish grade libraries and provide reference for measuring samples

8.0 ATTACHMENTS

NONE