SOUTHWEST GAS CORPORATION

ENGINEERING STAFF

MATERIAL SPECIFICATION

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Section No:	MS M-4
Page No.:	1 of 24
Issue Date:	03/01/16
Superseded Date:	03/03/15

METERS

Domestic Meter Intest and Repair Specification

1. SCOPE

This specification covers intesting, calibration and repair of diaphragm-type displacement meters, 500 cubic feet per hour capacity and under, at the facilities of Meter Repair Contractors. The meters may be standard or temperature compensating.

2. APPLICABLE DOCUMENTS

2.1 American National Standards Institute (ANSI) B-109.1, “Diaphragm-Type Gas Displacement Meters." (Under 500 cubic feet per hour capacity.)

2.2 American National Standards Institute (ANSI) Z-1.4, “Sampling Procedures and Tables for Inspection by Attributes.”

2.3 American National Standards Institute (ANSI) Z-55.1, “Specification for Gray Finishes for Industrial Apparatus and Equipment.”

2.4 Military Standard MIL-STD-105D, “Sampling Procedures and Tables for Inspection by Attributes.”

2.5 United States Department of Transportation (DOT), Code of Federal Regulations, Title 49, Part 192, “Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards.”

NOTE: Unless otherwise specified, the editions of the above documents incorporated by DOT 49 CFR 192 are applicable. Documents not incorporated by DOT 49 CFR 192 will be the most recent edition.

3. TERMINOLOGY

3.1 General

3.1.1 “Southwest Gas," "Southwest" or "SWG" wherever used in this specification and other related documents will refer exclusively to Southwest Gas Corporation.

3.1.2 The terms "approved," "as approved," "satisfactory," "as directed," "or equal" or other similar terms wherever used in this specification and other related documents will mean "as determined by Southwest Gas," unless specifically stated otherwise.

3.1.3 “Product Information Package” or “PIP” wherever used in this specification and other related documents will mean the required information that a manufacturer must submit to SWG to determine if the product is suitable for use by SWG, unless specifically stated otherwise.

4. MATERIALS AND MANUFACTURING

All materials and parts used for repair or replacement shall be new and meet or exceed the quality of the original manufacturer's part. There shall be no additional costs to SWG for any parts deemed necessary for replacement to return the meters to essentially the same performance capability as when the meters were first manufactured.

Repair parts shall be of the latest design compatible with the existing meter parts. All materials used in meter repairs that are not of the original manufacturer's specifications shall cause the Meter Repair Contractor to accept liability. SWG is to be advised of any exceptions to these requirements. SWG reserves the right to request certification for all parts used in meter repairs.

5. PERFORMANCE REQUIREMENTS

The meters returned to SWG after intesting, calibration and repair, in accordance with this specification, shall have the same performance capability as when the meters were first manufactured and will meet the requirements in the table below:

<table>
<tr><th colspan="5">FINAL METER PERFORMANCE REQUIREMENTS</th></tr>
<tr><th>TEST TYPE</th><th colspan="3">CRITERIA</th><th>REQUIREMENTS</th></tr>
<tr><td>Pressure Test</td><td colspan="3">According to Section 3.4 of ANSI B109.1</td><td>No Leakage</td></tr>
<tr><td rowspan="5">Proof Test</td><td rowspan="2">Class</td><td colspan="2">Flow Rate</td><td rowspan="4">±0.5% Error</td></tr>
<tr><td>Check</td><td>Open</td></tr>
<tr><td>Class 175</td><td>50 cfh</td><td>175 cfh</td></tr>
<tr><td>Class 250</td><td>60 cfh</td><td>250 cfh</td></tr>
<tr><td>Class 400</td><td>85 cfh</td><td>420 cfh</td></tr>
<tr><td colspan="3">Open/Check Difference</td><td>#1%</td></tr>
<tr><td rowspan="2">Differential Test
(At Check Rate)</td><td colspan="3">Classes 175 and 250</td><td><0.42 in. WC</td></tr>
<tr><td colspan="3">Class 400</td><td><0.50 in. WC</td></tr>
<tr><td rowspan="3">Low Flow Registration
(Pilot Flow at 1.5 in. WC)</td><td colspan="2">Class</td><td colspan="2">Flow Rate</td><td rowspan="3">Accuracy of ±10%</td></tr>
<tr><td colspan="2">175 and 250</td><td colspan="2">.25 cfh</td></tr>
<tr><td colspan="2">400</td><td colspan="2">1.0 cfh</td></tr>
</table>

TABLE M-4.1

5. PERFORMANCE REQUIREMENTS (Cont'd)

5.1 Meters received by Meter Repair Contractors will fall into two main categories:

5.1.1 Normal Processing (NP) – Meters will be intested by the repair vendor, checked against the Criteria for Pass Through and Calibration in Table M-4.3 and passed through (RA repair) or calibrated (RB repair) accordingly. Meters that do not meet the pass through or calibration criteria will receive a RC, RD, or RE repair as necessary to meet the tolerances in Table M-4.1.

5.1.2 Repair Required With Intest (RRW), Repair Required Without Intest (RRWO) – Meters will be intested if required and will receive a RC, RD or RE repair as necessary to meet the tolerances in Table M-4.1.

METER TEST AND REPAIR COMBINATIONS							
CATEGORY	INTEST		REPAIR VENDOR ACTION				
	By Repair Vendor	By SWG	RA	RB	RC	RD	RE
Normal Processing	□		□	□	□	□	□
Repair Required W/WO	with intest	without intest			□	□	□

TABLE M-4.2

5. PERFORMANCE REQUIREMENTS (Cont'd)

5.1.3 The table below describes the criteria for Repair Codes RA and RB. All other meters will require repair or condemnation.

FINAL METER PERFORMANCE REQUIREMENTS			
REPAIR CODES	**CRITERIA**	**TOLERANCE**	
Pass Thru – Must Meet All Requirements Below			
RA Pass Through	Open and Check Error Maximum Deviation from Zero	±0.5%	
	Open/Check Difference	#1%	
	External Leaks	None	
Calibration Only – Must Meet Requirements Below			
RB Calibration Only	Open and Check Error Maximum Deviation from Zero	±3%	
	Open/Check Difference	#2%	
	Maximum Inlet/Outlet Differential Pressure During the Check Rate Proof Test	Classes 175 – 250	Class 400
		.42 in. WC	.50 in. WC
	Low Flow Registration (slow fire) Accuracy of ±10% at flow rate of 1.5 in. WC	Flowrate .25 cfh	Flowrate 1.0 cfh
	External Leaks	None	
***NOTE: Any meter that fails to meet the above requirements will require repair or condemnation.**			

TABLE M-4.3

5.1.4 Meter condemnation or scrapping of meters should only occur if the cost of repair exceeds $35 for Class 175 through Class 250 meters and $76 for Class 400 meters. Damage to replaceable castings or water in a meter normally would not be considered a reason for condemnation, unless the supplier/manufacturer can show that these repairs would exceed the cost ceiling.

5. PERFORMANCE REQUIREMENTS (Cont'd)

5.1.5 Table M-4.4 describes the repair procedures applicable to each repair code.

REPAIR PROCEDURES					
RA	**RB**	**RC Top Repair**	**RD Partial Repair**	**RE Complete Repair**	**Procedure Description**
□	□	□	□	□	Clean the index, index cover or window as required.
□	□	□	□	□	Clean and strip foreign matter from the outside of the meter.
□	□	□	□	□	Leak test and paint the meter.
	□	□	□	□	Pilot flow (slow fire), differential test, calibrate and prove the meter.
		□	□	□	Remove top, disassemble, clean and inspect all parts above the table.
		□	□	□	Reface valves and valve seats. Test diaphragms, case and stuffing box for leaks.
		□	□	□	All worn parts above the table are to be replaced, including all gaskets, bushings and screws.
			□	□	Disassemble and check diaphragms and align or adjust component parts.
			□	□	Inspect inside of case. All worn or defective parts, including all gaskets, shall be replaced.
			□	□	Repair all internal leaks. All defective parts, including all gaskets, shall be replaced.
			□	□	Replace defective flag rod glands as necessary.
				□	Replace diaphragm and all associated gaskets and components

TABLE M-4.4

5. PERFORMANCE REQUIREMENTS (Cont'd)

5.2 Meter indexes not requiring replacement will be returned with the same index and index read as received. Indexes that require replacement shall be replaced with pointer type indexes, either a new index reading all zeros or a recycled index that has been re-zeroed.

5.2.1 There shall be four reading dials with the first reading dial to read 1000 cubic feet per revolution.

5.2.2 Non-reading circles (test hands) shall be either 2 cubic feet and 1/2 cubic foot or 1 cubic foot and 1/4 cubic foot as specified by each of the SWG divisions.

5.3 Each meter will be equipped with a new or recycled ERT managed in accordance with Appendix C of this specification.

5.4 Connections on any top casting requiring replacement shall be replaced with the following:

CONNECTIONS		
CLASS	**CONNECTION**	**C TO C DIMENSION**
175	1A Sprague	6"
250	1A Sprague	6"
400	30 Lt.	8¼"

TABLE M-4.5

5.5 Security seals shall be installed on all meters prior to being returned to SWG. The preferred meter sealing method shall be the red posi-cap security seal system. Other security seal methods must be approved by SWG.

SECURITY SEAL LOCATIONS		
	INDEX COVER	**HAND HOLE PLATE**
Sprague/Schlumberger 175 & 250 Classes	Both screws	
Equimeter/Rockwell	One on each side	11 o'clock
American	One on each side	11 o'clock

TABLE M-4.6

5. PERFORMANCE REQUIREMENTS (Cont'd)

5.6 The exterior of the meters shall be cleaned and painted to provide a near new appearance. The exterior finish coat shall be industrial Gray No. 49 per ANSI Z-55.1 and shall meet the performance requirements for corrosion and chemical resistance of ANSI B-109.1. The meter cleaning and paint application procedures and a description of the specific painting products to be used shall be submitted with the Meter Repair Contractor's quote.

- Meters shall have the inlet and outlet covered with protective caps.
- Meters shall be washed to remove foreign material such as oil, tar, dirt, and debris.
- Meter inlet and outlet threads shall be cleaned.
- The company and manufacturers badge shall be cleaned or buffed to ensure legibility.
- The meter shall be mechanically cleaned to remove excess paint and imperfections that would interfere with achieving a smooth quality finish. As much of the factory finish should be left on the meter as possible.

6. DOCUMENTATION AND RECORDS

6.1 A list shall be prepared for each meter repair order. The following information for each meter shall be recorded:

- Meter model/size
- Meter serial number and/or SWG company number from the badges on meters, as received
- When applicable, intest proofs at capacity and check rates stated as percent error
- Repair code
- Failure code
- After final repairs are made, proofs at capacity and check rates stated as percent error
- Reason for condemnation, if applicable
- Credit for salvage value, if condemned. Meters that are found to require condemnation during the repair process, shall have an "F" placed in the Type of Repair column on the electronic data record
- Southwest Gas Corporation's "Material Return for Repair" return number

6. DOCUMENTATION AND RECORDS (Cont'd)

6.2 A copy of the above information shall be attached to the packing slip and another copy shall be mailed to the shipping address shown on Southwest Gas Corporation's purchase order.

6.3 The "Material Return for Repair" number shall be the reference number used on the data file and other information for tracking. Appendix A to this specification contains the basic format of the required data file to enable data to be transferred into the SWG electronic meter history system.

6.4 SWG will provide with each shipment of meters a data file with the basic meter information for the meters in the shipment in the format as described in Appendix A. The Meter Repair Contractor shall:

- Update this file with the required meter test/repair data in conformance with the Appendix A data format.
- Repair any errors encountered in the data file and shall provide an exception report of the discrepancies found and the corrections made.
- Be responsible for the accuracy of the data returned to SWG.
- Return the data file on the media and in the manner required by the location receiving the meters.

7. INSPECTION

7.1 Successful review of the Product Information Package (PIP) as well as any future reference by SWG to the Seller's part number or internal code number in any future contract or purchase, will mean only that no conflict with the specification was found and will not relieve the Seller from meeting all the requirements of this specification.

7. INSPECTION (Cont'd)

7.2 SWG retains the option to inspect the manufacture and testing of any and all materials, products or systems referenced in this specification that are sold to SWG.

7.3 SWG will make appropriate inspections, evaluations and tests of any and all materials, products or systems supplied to this specification. SWG will have the right, at their option, to reject any material which fails to conform to this specification. Any such rejection may take place at the Meter Repair Contractor's facility, the supplier's warehouse or any subsequent delivery location, before or after SWG assumes possession. Notice of the rejection will be made promptly to the Meter Repair Contractor by SWG. The defective product will be replaced or returned for credit at the Meter Repair Contractor's expense.

7.4 Any changes in the testing or repair of meters or any other materials, products or systems described in this material specification for return or sale to SWG must be approved by SWG's Engineering Staff. **Failure to obtain SWG's approval may be cause for rejection and disqualification as an approved Meter Repair Contractor.**

7.5 Repaired meters will be accepted only if the records specified in Section 6 are received and those records verify conformance with this specification. In addition, SWG may make any inspections to determine conformance of repaired meters to this specification. Any Quality Acceptance Sampling done will conform with Military Standard MIL-STD-105D, 29 April 1963, (ANSI Z-1.4, 1971), using General Inspection Level II in Table I and using the following Acceptance Quality Levels (AQLs):

ACCEPTANCE QUALITY LEVELS		
Attribute	**AQL**	**Inspection Tolerance**
Proof, Open Rate	2.5	0.00 ± 0.8 percent error
Proof, Check Rate	2.5	0.00± 0.8 percent error
Differential, Maximum	2.5	
Slow Fire (Pilot Flow)	2.5	
Leaks	1.0	
Exterior Finish	4.0	

TABLE M-4.7

7. INSPECTION (Cont'd)

7.6 A one-time correlation between the Meter Repair Contractor and SWG provers will be performed. The Meter Repair Contractor will ship 10 meters to be used for correlation from the first shipment of repaired meters received from Tucson. Tucson will then use these meters to correlate their provers with the Meter Repair Contractor's equipment. The same meters will then be shipped to Phoenix, Las Vegas and Victorville to be used for a one-time correlation of their provers. A second or future correlation of provers will only be performed should a discrepancy in accuracy occur during the SWG quality control process with a specific division's load of meters. The second and future correlations will only be performed on the division's provers where the discrepancy was identified.

8. CERTIFICATION

The manufacturer's or supplier's certification shall be furnished to Southwest. This certification shall state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that requirements have been met. When requested, or specified in the purchase order or contract, a report of test results will be provided.

Upon the request of Southwest, the certification of an independent third party indicating conformance to the specification may be considered at Southwest's expense.

Certification of meter testing equipment by a recognized governing agency must be provided to SWG by the Meter Repair Contractor.

9. SAFETY DATA SHEETS

In accordance with law, the seller will supply Material Safety Data Sheets for all applicable items supplied under this specification to the following:

1) The Receiving Location

2) Southwest Gas Engineering Staff

3) Southwest Gas Corporation
Corporate Safety
Mail Station LVA-120
P.O. Box 98510
Las Vegas, NV 89193-8510

10. PRODUCT MARKING

10.1 Meters that require rebadging shall be rebadged using the manufacturer's badge number. The badges should be original manufacturer's badges or an acceptable Meter Repair Contractor's badge. As an alternative, the SWG company badge number may be used where applicable. Additionally, meters will be tagged with a tag bearing the last two numbers of the year of the repair, plus suitable initials to identify the Meter Repair Contractor making the repair. A second tag will be applied bearing the upper-case letters "RA," "RB", "RC", "RD" or "RE" that will denote the repair classification defined in Table M-4.4. In place of a tag, an adhesive sticker with the aforementioned repair information may be used. The sticker should be placed inside the index case compartment, and whenever possible, be visible from the outside. The sticker should not be placed on the index cover.

10.2 Meters that are received for intest or repair and have a sequence number of 001 or greater are to be rebadged with numbers supplied to the Meter Repair Contractor by SWG. The cost of this service for SWG shall be as quoted by the Meter Repair Contractor. Meters that require rebadging will further be identified by a "Y" in the Rebadge Code column of the electronic data record. The number used on the rebadged meter is to be entered into the Rebadge No. column of the electronic data record by the Meter Repair Contractor.

11 . PACKAGING AND PACKAGE MARKING

11.1 Meters shall be packaged for safe delivery so that no damage occurs during shipment.

11.2 Meters shall be delivered to the location specified on the “Material Return for Repair” form.

11.3 Meters are to be palletized so as not to exceed a maximum of five layers per pallet. Meters are to be secured with either stretch wrapping material or a banding that will preclude the meters from shifting on the pallet while in transit. Meters are to be stacked in even height levels per layer to allow a more stable stacking. Pallets used for shipping shall be returned to SWG.

11.4 SWG will mark each pallet shipped to the meter repair contractor as follows to identify the type of repair that is to be performed on the meters.

11.4.1 **NP** – Meters that require normal processing are to be marked with a NP on the stretch wrap and on the paperwork included with the pallet.

11.4.2 **RRW, RRWO** – Meters that require repair with or without intest are to be marked with RRW or RRWO on the stretch wrap and on the paperwork included with the pallet.

APPENDIX A

This document should help you understand the information contained in each meter record in the meter file that will be used for processing. Accordingly, it will also address whether or not the contractor should provide this information or if it has already been provided. Additionally, in cases where certain fields are required, the description will specify as such. Below is a sample record taken from the sample file that was sent to you. The file is, as it should appear when it is returned to Southwest Gas with the repaired meters. Through the table there will be references made to this particular sample record to enhance comprehension as well as visual breakdown of the record at the end of this document.

Important Note: All information that could be included in the record is not necessarily there. In cases where the information does not apply to a certain situation, such as Condemned Code, it is important that the space used for that information is still there. This is because the records are in a 163 byte fixed format and are read according to the placement of the information.

FIELD (TYPE)	TYPE	DESCRIPTION
1. Pallet No.	8 Characters Alphanumeric Position 1-8	In the sample record: LV19001R Pallet number refers to the ID given to the pallet that contained that particular meter. This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly transmitted.
2. Owner District Number	3 Characters Alphanumeric Position 9-11	In the sample record: 210 The owner number is the ID of the district that actually lays ownership to the meter. This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted. REQUIRED FOR PROCESSING
3. Processing District	3 Characters Alphanumeric Position 12-14	In the sample record: 211 The processing district is an associated SWG Meter Shop. This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted. REQUIRED FOR PROCESSING
4. Meter Number	8 Characters Alphanumeric Position 15-22	In the sample record: 04800637 This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted. REQUIRED FOR PROCESSING

APPENDIX A

(Cont'd)

FIELD (TYPE)	TYPE	DESCRIPTION
5. Sequence Number	3 Digits Position 23-25	In the sample record: 000 This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted.
6. Redbadge Code	1 Character	In the sample record: N/A This is flag for whether or not the meter had to be rebadged. The only acceptable values for this field are either blank for NO, or the code "Y" for YES.
7. Redbage No.	8 Character Alphanumeric Position 27-34	In the sample record: N/A Fill with information only if REDBADGE CODE ="Y" Otherwise leave data exactly as defined when transmitted. This information is only required if the meter has been rebadged.
8. Meter Description	16 Characters Alphanumeric Position 35-50	In the sample record: AM AC 250 This describes the make of the meter and is associated with the meter code. This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted. REQUIRED FOR PROCESSING
9. Meter Code	3 Characters Alphanumeric Position 51-53	In the sample record: 021 Three character code that coincides with the meter description. This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted. REQUIRED FOR PROCESSING
10. New Meter Code	3 Characters Alphanumeric Position 54-56	In the sample record: N/A In cases where the meter code is accurate. Contractor will provide the accurate code here. Required for processing only if METER CODE is incorrect.
11. Removal Code	2 Character Alphanumeric Position 57-58	In the sample record: E Code is used to describe the reason the meter was removed from its location. This information is already provided to you from SWG Meter Shops and should not be modified, but returned exactly as transmitted. REQUIRE FOR PROCESSING.

APPENDIX A

(Cont'd)

FIELD (TYPE)	TYPE	DESCRIPTION
12. Special Condition Code	2 Character Alphanumeric Position 59-60	In the sample record: N/A This field is here for possible use. Not required for processing, but space must still be allocated.
13. Test Location Code	3 Character Alphanumeric Position 61-63	In the sample record: 903 This information is already provided to you by SWG Meter Shops and should not be modified, but returned exactly as transmitted. This test location code refers to the meter repair contractor. National Meter is 913. REQUIRED FOR PROCESSING
14. Meter Reading- In	7 Character Numeric Position 64-70	In the sample record: 0000000 It is the initial meter index reading. The repair contractor should provide this information. Field will be filled with zeros if no "in read" is available, otherwise the date is up to 7 numeric characters preceded by zeros as fill characters if the field is not completely filled.
15. Positive/Negative Sign	1 Character Position 71	In the sample record: "-" Limited to "+" or "-" as the only valid entries in this field. REQUIRED FOR PROCESSING IF INTEST.
16. Percent Error In, Open	5 Characters Alphanumeric Position 72-76	In the sample record: 001.4 A 3 digit numeric code, one decimal point and a 1 digit numeric character after the decimal point make up this 5 character field. Data, prior to the decimal point, is preceded by zeros as fill characters if the field is not completely filled.
17. Positive/Negative Sign	1 Character Position 77	In the sample record: "-" Limited to "+" or "-" as the only valid entries in this field. REQUIRED FOR PROCESSING IF INTEST.
18. Percent Error In, Check	5 Characters Alphanumeric Position 78-82	In the sample record: 001.2 A 3 digit numeric code, one decimal point and a 1 digit numeric character, after the decimal point make up this character field. Data prior to the decimal point is preceded by zeros as fill characters if the field is not completely filled. PROVIDED BY THE METER REPAIR CONTRACTOR. REQUIRED FOR PROCESSING IF INTEST.

APPENDIX A

(Cont'd)

FIELD (TYPE)	TYPE	DESCRIPTION
19. Meter Reading Out	7 Character Numeric Position 83-89	In the sample record:0000000 The field will be filled with zeros if no "in read" is available, otherwise data is up to 7 numeric characters preceded by zeros as fill characters if the field is not completely filled.
20. Positive/Negative Sign	1 Character Position 90	In the sample record: "-" Limited to "+" or "-" as the only valid entries in this field. REQUIRED FOR PROCESING IF OUTTEST
21. Percent Error Out, Open	5 Characters Alphanumeric Position 91-95	In the sample record: 001.0 The 3 digit numeric code, one decimal point and a 1 digit numeric character after the decimal point make up this 5 character field. Data prior to the decimal point is preceded by zeros as fill characters if the field is not completely filled.
22. Positive/Negative Sign	1 Character Position 96	In the sample record: "-" Limited to "+" or "-"as the only valid entries in this field.
23. Percent Error Out, Check	5 Characters Alphanumeric Position 97-101	In the sample record: 000.0 A 3 digit numeric code, on decimal point and a 1 digit numeric character, after the decimal point make up this 5 character field. Data prior to the decimal point is preceded by zeros as fill characters if the field is not completely filled. PROVIDED BY METER REPAIR CONTRACTOR REQUIRED FOR PROCESSING IF OUTTEST
24. Repair Code	1 Character Alphanumeric Position 102	In the sample record: B Type of repair (see valid list of codes and code combinations). The repair code is used in combination with the condition code to represent what is being done to the meter. PROVIDED BY METER REPAIR CONTRACTOR REQUIRED FOR PROCESSING
25. Condition Code	2 Character Alphanumeric Position 103-104	In the sample record: 12 Code for condition (See valid list of codes and code combinations). The condition code is used in combination with the repair code to represent what is being done to the meter. PROVIDED BY METER REPAIR CONTRACTOR REQUIRED FOR PROCESSING

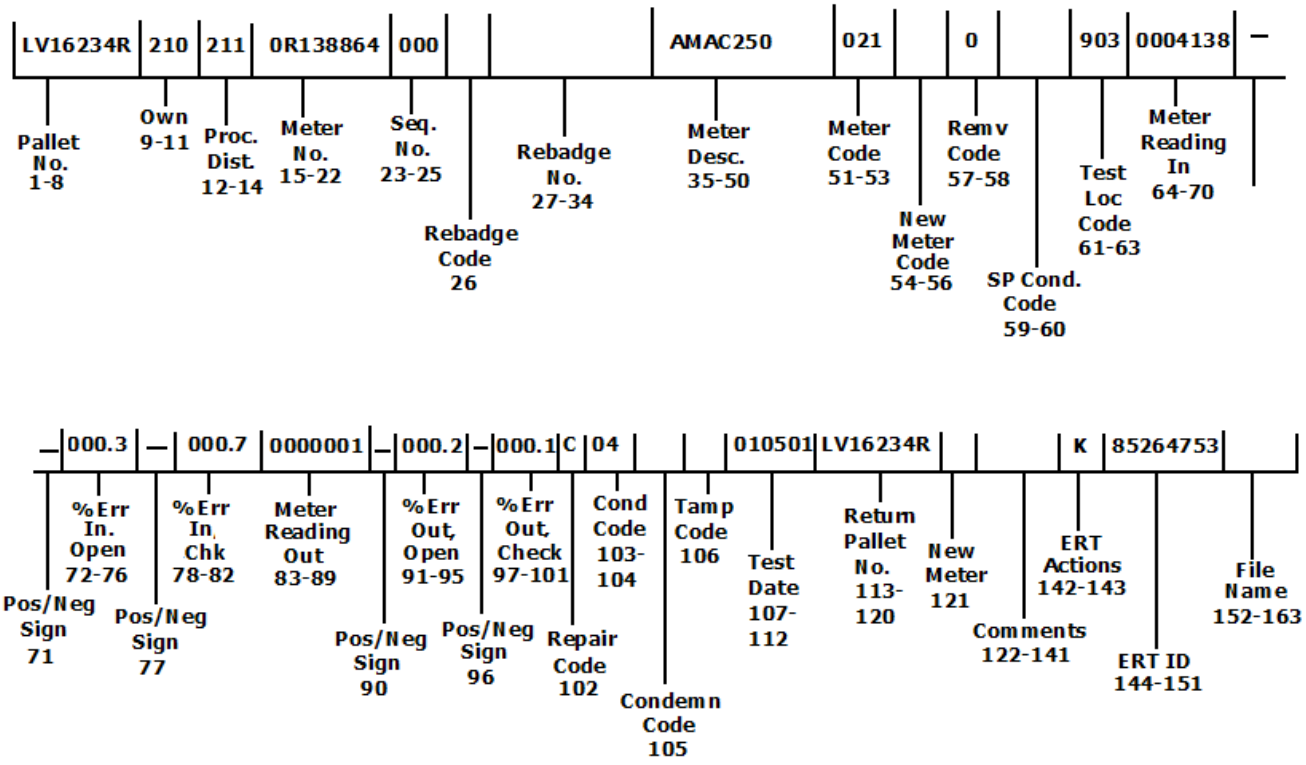
APPENDIX A

(Cont'd)

FIELD (TYPE)	TYPE	DESCRIPTION
26. Condemned Code	1 Character Alphanumeric Position 105	In the sample record: N/A Provided by the Repair Contractor for a condemned or retired meter. Only valid entries are a blank for NO or a "Y" for YES. REQUIRED FOR PROCESSING ONLY IF CONDEMNED
27. Tampering Code	1 Character Alphanumeric Position 106	In the sample record: N/A This is provided by a contractor for a meter that has obviously been tampered with. Only valid entries are blank for NO or a "Y" for YES. REQUIRED FOR PROCESSING ONLY IF TAMPERED WITH.
28. Test Date	6 Character Alphanumeric Position 107-112	In the sample record: 010424 The format is YYMMDD. The date of test. PROVIDED BY THE METER REPAIR CONTRACTOR
29. Return Pallet Number	8 Characters Alphanumeric Position 113-120	In the sample record: 00000360 Pallet number used by the meter repair contractor to return meters to SWG (in most cases, this is the same number as the Pallet No. used to send the meters.) PROVIDED BY THE METER REPAIR CONTRACTOR
30. New Meter	1 Character Position 121	In the sample record: N/A Provided by the contractor for a meter that is new. Only valid entries are a blank for NO or a "Y" for YES. REQUIRED FOR PROCESSING ONLY FOR NEW METERS.
31. Comments	20 Character Alphanumeric Position 122-141	In the sample record: N/A This section is used for any contractor comments regarding repairs.
32. ERT Actions	2 Character Position 142-143	In the sample record: N/A Record the type of ERT actions (see valid codes for ERT actions).
33. ERT ID	8 Character Numeric Position 144-151	In the sample record: N/A ID number of the ERT that is attached to the meter.
34. File Name	12 Characters Alphanumeric Position 152-163	In the sample record: N/A This space is used to hold the name of the file that keeps the meter records. The contractor does not provide this information. This space is utilized by SWG.
Note: Last revision by Leanne Fang 05/30/2008		

APPENDIX A

(Cont'd)



APPENDIX B

DATA CODES

METER REMOVAL CODES	
CODE	**DESCRIPTION**
A	Family Sample
B	Family Exchange
E	Other
N	New
0	No Customer
1	Large Meter Change
2	Damaged Case
3	Didn't Pass Gas Test
4	Didn't Register
5	Broken Index
6	Change Meter Size
7	Leaking
8	High Bill
9	Low Bill

TABLE M-4.8

APPENDIX B

(Cont'd)

DATA CODES

REPAIR CODES	
CODE	**DESCRIPTION**
A	No Adjustment/Pass Thru
B	Adjust Only
C	Top Repair Only
D	Partial/Bottom Repair
E	Total Rebuild
F	Junked
G	No Test/Send to Repair
H	In Test/Send to Repair
N	New
Q	Quality Control
NOTE: G and H are only used by the repair manufacturer/supplier when an "intest only" disk is requested.	

TABLE M-4.9

APPENDIX B

(Cont'd)

DATA CODES

CONDITION CODES	
CODE	**DESCRIPTION**
01	Leak Damage
02	Water Damage
03	N/Pass Gas
04	Bad Index
05	Bad Index Drive
06	Other DNR
07	Lowlite
08	Index Dry Leak
09	Gasket Leak
10	Hi Differ
11	Outtest FI
12	Normal Intest
13	Outtest Only

TABLE M-4.10

APPENDIX C

METER REPAIR VENDORS-METER AND ERT PROCEDURES

July 23, 2008

METER ACTIONS	ERT ACTIONS
A. Intested Only- Sent to Repair	1. Add an ERT
B. Repaired and Outtested	2. Keep ERT Sent by SWG
C. Junked	3. Replace ERT
D. Rebadged	4. Delete ERT

SWG Test Shop and Repair Vendor Procedures

A. When preparing shipments to be sent, the SWG test shop should:
   1. Identify the number of meters that are eligible for ERTs and do not yet have one attached. That number of unattached ERT devices is to be included in the shipment so that the vendor can add the ERTs. These unattached devices should not be added to CSS inventory prior to going to the vendor.

   2. If it is known that the MSA was removed because of an ERT malfunction, the ERT should be “divorced” from the meter both physically and in CSS screen 25-13 prior to shipping. Standard faulty equipment/warranty procedures should be followed. If the ERT is to be returned to the manufacturer or junked, use CSS screen 25-14 to move the ERT location “I”.

   3. If the meter already has an ERT, it will no longer be necessary to “divorce” the devices in CSS screen 25-03 before building pallets in screen 25-51 (except for the ERT malfunction scenario above). The meter number and the associated ERT number will be sent together in the MTP file.

APPENDIX C

(Cont'd)

B. Repair Vendor will update ERT activity as well as meter activity while processing a shipment.

1. If a meter is eligible for an ERT and does not yet have one, the vendor should physically attach the ERT, program the ERT and update the file with the ERT function code of "A" and the ID number. This should be done in conjunction with the repair/outtest procedures. If creating an Intest Scores Only file or if junking a meter, function code"A" will be invalid.

2. If a meter already has an ERT:

   a. If the meter is intested only, repaired and/or rebadged and will be returned to SWG, the file should have an ERT function code of "K" and ERT ID. No changes are required.

   b. If the ERT must be removed to complete repairs, the same ERT IE must be restored/programmed when the repair is complete.

   c. If the file does not have record of the ERT, the code "K" and the ERT ID should be added to the file.

   d. If the meter is junked, the ERT device should be removed from the meter and returned to SWG. The file should be updated with an ERT function code of "D: and ID number should be retained. Any other use of code "D" is invalid.

   e. If, during the repair/outtest procedures, the existing ERT must be exchanged for a new ERT device:
      1) The old ERT should be returned to SWG.
      2) The file should be updated with a comment about the reason for the exchange, the ERT function code should be changed to a "C: and the new ERT ID entered in the ID field.

APPENDIX C

(Cont'd)

2. If a meter already has an ERT: (Cont'd)
   f. ERTs removed from a SWG meter:
      1) ERTs that are less than 7 years will be reused to add to division meter.
      2) ERTs that are older than 7 years will be returned to SWG.

   g. The ERT read and the mechanical index read correlation will be confirmed at the time of intest for all ERTed meters.

3. The Vendor will provide a quarterly inventory of the ERTs on hand.

C. When receiving shipments back from the vendor, the SWG test shop should:
   1. Perform normal QC procedures for the meters.
      a. If meters do not pass QC, the file sent by the vendor should be entered into MTP which passes the results to CSS. This step should be completed prior to releasing the physical devices for new installations. Errors involving meter or ERT identification numbers may need to be physically verified.
      b. If meters pass QC, the file sent by the Vendor should be entered into MTP which passes the results to CSS. This step should be completed prior to releasing the physical devices for new installations. Errors involving meter or ERT identification numbers may need to be physically verified.
      c. If no errors are detected, CSS processes will add the test scores and move the meters and ERTs removed from junked meters or those replaced with a new ERT will be moved to the test shop, Location B, for the Division Meter Shop.

   2. Perform QC/Inspection Procedures for the unattached ERTs returned by the vendor.
      a. If the ERT is approved to re-use, use CSS screen 25-14 to put the ERT back into inventory, Location "A".
      b. If the ERT is not functional, use CSS screen 25-14 to move the ERT to inactive status, Location "I". Standard faulty equipment/warranty procedures should be followed.