



METER DATA FILE FORMAT SPECIFICATION NEM12 & NEM13

Document ID: ME_MA001v007

Prepared by: Metering & Settlements

Date: December 2004

Effective Date 20th July 2005

Table of Contents

1	INTRODUCTION	7
2	METER DATA FILE FORMAT SPECIFICATION	7
2.1	Scope	7
2.1.1	Scope Exclusions	7
2.2	Intellectual Property	7
2.3	Related Information	7
2.4	Terminology and Definitions	7
3	TECHNICAL INFORMATION	8
3.1	Version Details	8
3.2	File Details	8
3.2.1	General	8
3.2.2	Compression.....	8
3.2.3	File Naming Standard	8
3.3	File Data	9
3.3.1	Relationship to MSATS data	9
3.3.2	Date and Time	9
3.3.3	Interval Data	9
3.3.4	Indexed Reads for Type 5 Interval Meters	10
3.3.5	Spaces.....	10
3.3.6	Nulls.....	10
3.3.7	Commas	10
3.3.8	Field contents	10
3.3.9	End of line delimiter	10
3.3.10	Data Grouping	11
3.3.11	Reason Code	11
3.4	Relationship to B2B transactions	11
3.5	Provision of sample test files	11
3.6	“Use” Column Usage	11
4	INTERVAL METER READING FILE SPECIFICATION AND VALIDATION (NEM12)	12
4.1	Blocking cycle	12
4.2	Header Record (100)	12
4.3	NMI Data Details Record (200)	13
4.4	Interval Data Record (300)	14
4.5	Interval Event Record (400)	16
4.6	B2B Details Record (500)	18
4.7	End of Data (900)	19
5	BASIC METER DATA FILE SPECIFICATION AND VALIDATION (NEM13)	20
5.1	Blocking cycle	20
5.2	Header Record (100)	20
5.3	Basic Meter Data Record (250)	21
5.4	B2B Details Record (550)	25
5.5	End of Data (900)	26
6	APPENDIX A – TRANSACTION CODES FLAGS	27
7	APPENDIX B – FORMAT& UNIT OF MEASURE FIELD DETAILS	28
7.1	Format of differing types of data.....	28
7.2	Allowed Values in the UOM field	28
8	APPENDIX C - QUALITY FLAGS	30
9	APPENDIX D - METHOD FLAGS	31
10	APPENDIX E - REASON CODES	32
11	APPENDIX F – SUMMARY OF FILE FORMAT & BLOCKING	36
12	APPENDIX G - EXAMPLE INTERVAL DATA FILE (NEM12)	37
12.1	Actual Interval - Remote read meter	37
12.2	Substituted Interval - Remote read meter	37
12.3	Interval data – Type 5 Forward Estimate	38

12.4	Multiple NMIs and Datastreams, Remote read meter – (All Actual data)	41
12.5	Remote Interval data – Multiple QualityMethod/ReasonCode Combination	43
12.6	Metering data with Configuration Change – Type 5	44
12.7	Transfer occurs on the NSRD for type 5 meter	46
12.8	Meter Change: Type 6 to Type 5	47
13	APPENDIX H – EXAMPLE CONSUMPTION DATA FILE (NEM13)	49
13.1	Actual read values	49
13.2	Normal Meter Read with forward estimate	49
13.3	Meter read and meter change	49
13.4	Historical data values	50
13.5	Transfer Read	50
14	APPENDIX I: EXAMPLE OF USE OF THE REGISTER READ FIELDS	52

Document History

1	January 1998	NEMMCO	Original NEM01 specification
2	January 1999	NEMMCO	Amended NEM01 specification
3	21/9/2001	NEMMCO	NEM02 & NEM03 formats for FRC.
4 DRAFT	January 2004	NEMMCO and National B2B Meter Data Workstream	<p>Created new formats for interval (NEM12) and basic (NEM13) metering data. The new formats reorganise the fields into fewer record types, and include additional fields to provide better support for Type 5 meters and to provide additional meter configuration information.</p> <p>Revision of the data stream identifier fields to remove the current inconsistency of use (<i>RegisterID</i>, <i>NMISuffix</i>, and <i>MDMDataStreamIdentifier</i> fields).</p> <p>Addition of new fields to the NEM12 format for consistency with the NEM13 format (<i>TransCode</i>, <i>RetServiceOrder</i>).</p> <p>Revised approach to the presentation of interval data to reduce the size of the file. Instead of time stamping each interval reading, which adds considerably to the file size, the new file structure sequentially lists each reading (<i>IntervalValue1 . . . n</i>) for each day (<i>IntervalDate</i>).</p> <p>Addition of meter configuration information (<i>DirectionIndicator</i>).</p>
5 DRAFT	May 2004	NEMMCO and National B2B Meter Data Workstream	<p>Various editorial changes to clarify requirements and ensure consistency between the various changes.</p> <p>Added aggregated datastreams to exclusions (1.1.2).</p> <p>Removed B2B documents from list of Related Information (1.3).</p> <p>Added section clarifying .csv and .zip file requirements (2.1.2.1).</p> <p>Added a rule regarding the use of <i>ParticipantID</i> for agents (2.1.2.3, 2.3.1.2, 2.3.2.2).</p> <p>Expanded and reworded the examples in the Date and Time section (2.1.3.1).</p> <p>Added rules for 30 minute interval data (2.1.3.2).</p> <p>Added a rule regarding Nulls in the NEM13 Quantity field (2.1.3.4).</p> <p>Added <i>MeterSerialNumber</i> to NEM12 (2.3.1.3).</p> <p>Amended presentation of <i>QualityMethod</i> and moved it from the 300 record to the 400 record (2.3.1.5).</p> <p>Amended the <i>TransCode</i> values (2.3.1.7, 2.3.2.5, Appendix A).</p> <p>Added Quality Methods and Reason Codes for current and previous reads (2.3.2.4).</p> <p>Allowed <i>TransCode</i> and <i>RetServiceOrder</i> for both current and previous reads (2.3.2.5).</p> <p>Moved <i>UOM</i> details to Appendix B.</p> <p>Amended Reason Flags to remove duplications while retaining existing number series (Appendix E).</p>

6 DRAFT	July- November 2004	NEMMCO and National B2B Meter Data Workstream	Following the 3 rd round of Code consultation the following changes were made. Clarified the relationship between data provided in the MDFF file that is available in MSATS (3.3.1). Added an <i>IndexRead</i> field for Type 5 meters (3.3.4 & 4.6). Change the <i>RetServiceOrder</i> field name to <i>RequestID</i> . Clarified the rules regarding the use of Reason Codes (3.3.11). Clarified various field definitions and associated usage rules for fields or records.
7 DRAFT	December 2004	NEMMCO and National B2B Meter Data Workstream	Added <i>UpdateDateTime</i> to 250 Record (5.3) and to examples in Appendix G Changed the <i>RequestID</i> back to <i>RetServiceOrder</i> at request of B2B National Work Group.

Interpretation

The following keywords are to be interpreted throughout this document as described below.

Must, Required and **Shall** mean that the definition is an absolute requirement of this specification.

Must not and **Shall not** mean that the definition is an absolute prohibition of this specification.

Should or **Recommended** mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

Should Not or **Not Recommended** mean that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.

May or **Optional** mean that an item is truly optional. One business may choose to include the item because a particular marketplace requires it or because the business considers that it enhances the product while another business may omit the same item. An implementation, which does not include a particular option, must be prepared to interoperate with another implementation, which does include the option, though perhaps with reduced functionality. In the same vein, an implementation which does include a particular option must be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides).

Documentation Conventions

Italics are used to identify fields within the file, such as *TransCode* or *VersionHeader*.

Disclaimer

This document is provided on the following basis:

- To the extent that this document expresses any views of NEMMCO, those views represent NEMMCO's current views only and NEMMCO reserves the right to alter its views and its acts and omissions based on those views at any time without notice:
- To the extent permitted by law, NEMMCO and its employees are not liable for any liability, loss damage, costs or expenses suffered or incurred by any person in relation to or in conjunction with any actions taken or not taken in reliance on this document or for any error or omission from (in each case whether arising by negligence or otherwise) this document.
- NEMMCO is the owner of the copyright in this document, however NEMMCO consents to the reproduction of this document by participants in the electrical supply industry for the purpose of considering issues associated with the National Electricity Market on the condition that in each case this document is reproduced in its entirety including without limitation this disclaimer.

1 INTRODUCTION

As required under the rules for the National Electricity Market, Metering Data Providers (MDPs) are to provide Participants with metering data.

The purpose of this document is to define the standard format for the provision of metering data by MDPs to Participants.

2 METER DATA FILE FORMAT SPECIFICATION

2.1 Scope

This specification defines the Meter Data File Format (MDFF) to be used by MDPs for the provisioning of both basic and interval metering data to Participants.

The MDFF can be used for metering data held in “standalone” files and for metering data held as CSV data blocks in other defined formats (eg aseXML B2B transactions).

2.1.1 Scope Exclusions

This specification excludes:

- Delivery of the MDFF file using a B2B transaction;
- NMI discovery;
- Network tariffs and other billing information; and
- Aggregated datastreams.

2.2 Intellectual Property

This document is considered to be public domain in terms of usage. However, NEMMCO, representing Participants, will control any future modifications etc. with all official versions to remain under NEMMCO’s copyright and ownership.

2.3 Related Information

Metering Data Provider Service Level Requirements

NEM Metering Substitution Estimation and Validation Procedures (Document No: MT_MA1680)

National Metering Identifier (NMI) Procedures (Document No: ME_GN059)

Standing Data for MSATS (NEMMCO Document No: MT_MA1785)

2.4 Terminology and Definitions

“Interval data” means the engineering units of measure for the individual periods recorded by a meter or data logger (i.e. data from a Types 1-5, and 7 metering installation).

“Basic data” means accumulated consumption and/or demand data (i.e. data from a Type 6 metering installation).

References to the “data quality field” include the fields *QualityMethod*, *CurrentQualityMethod* and *PreviousQualityMethod*.

“Participant” means Retailers, Distribution Network Service Providers (DNSPs), Transmission Network Service Providers (TNSPs), Generators and MDPs.

“Historical Data” means data inserted into the MDP systems prior to the industry implementation of this specification.

3 TECHNICAL INFORMATION

3.1 Version Details

The file format for interval data is “NEM12”. The *VersionHeader* field in the 100 Header Record indicates this information.

The file format for basic data is “NEM13”. The *VersionHeader* field in the 100 Header Record indicates this information.

3.2 File Details

3.2.1 General

A ‘NEM12’ file or a ‘NEM13’ file is a single .csv data block.

The .csv data block must only contain a single 100-900 record set.

NEM12 and NEM13 records cannot be included in the same .csv data block.

Only one .csv data block may be included in a .zip file.

3.2.2 Compression

Data files will be delivered as compressed files with a “.zip” extension.

The file must be zipped using the 'zlib' standard (using software such as PKZIP).

Files must not be password-protected.

3.2.3 File Naming Standard

The file name is not case sensitive.

The following file Naming Convention will be adopted.

VersionHeader#Unique ID#From#To.zip

Example = nem12#0123456789012345#mda1#retail1.zip

Where

VersionHeader - 5 alphanumeric characters - “NEM12” or “NEM13”.

VersionHeader must match the *VersionHeader* in the 100 Header Record(s).

Unique ID – Up to a maximum of 36 alphanumeric characters.

This must be a unique identifier.

From - A valid Participant ID.

To - A valid Participant ID. This is the Participant receiving the file. Where this Participant is receiving the file as an agent of another Participant, the other Participant will be identified in the *ParticipantID* field of the NEM12/13 file. Refer 4.2 and 5.2.

The Participant ID is as published in MSATS.

Extension = .zip (See Compression rules above, refer 3.2.2).

3.3 File Data

3.3.1 Relationship to MSATS data

Due to timing delays with the updating of MSATS, recipients of MDFFF files should be aware the information provided in the MDFFF file may not match MSATS at the time of receipt. Recipients should rely on the information provided being the most accurate at the time of sending of the data, and expect that MSATS will subsequently be updated accordingly.

3.3.2 Date and Time

All components of the DateTime fields are two digits.

Date(8) format means a reverse notation date field (i.e. CCYYMMDD) with no separators between its components (century, years, months or days). All components of the date must be given as double digits. The "8" indicates that the total field length is always 8 characters. eg. "20030501" is the 1st May 2003.

DateTime(12) format means a reverse notation date-time field (i.e. CCYYMMDDhhmm) with no separators between its components (century, years, months, days, hours, minutes). All components of the date-time field must be given as double digits. The "12" indicates that the total field length is always 12 characters. eg. 200301011534 is 15:34 on 1st January 2003.

DateTime(14) format means a reverse notation date-time field (i.e. CCYYMMDDhhmmss) with no separators between its components (century, years, months, days, hours, minutes, seconds). All components of the date-time field must be given as double digits. The "14" indicates that the total field length is always 14 characters. eg. 20030101153445 is 15:34.45 on 1st January 2003.

The time standard for the end of the day is 00:00 of the following day.

3.3.3 Interval Data

Interval Data is presented in time sequence order, with the first interval for a day being the first interval after midnight for the interval length that is programmed into the meter. Refer to the *IntervalLength* field in 4.3.

For 15 minute data:

- The first interval (1) for a meter programmed to record 15 minute interval data would relate to the period ending 00:15 of the *IntervalDate*.
- The last interval (96) for a meter programmed to record 15 minute interval data would relate to the period ending 00:00 of the *IntervalDate+1*.

For 30 minute data:

- The first interval (1) for a meter programmed to record 30 minute interval data would relate to the period ending 00:30 of the *IntervalDate*.
- The last interval (48) for a meter programmed to record 30 minute interval data would relate to the period ending 00:00 of the *IntervalDate+1*.

3.3.4 Indexed Reads for Type 5 Interval Meters

An Index Read is the value of accumulative energy recorded for an interval data stream since the meter's index register was last reset. Index Reads are only valid for active energy data streams. That is, data streams where the Units of Measure values are either Wh, kWh or MWh.

The Index Read is retrieved from a meter's register at the date/time of the meter reading.

When a Type 5 meter is read, the Index Read for the accumulated energy register(s) is collected. This reading must be provided as the *IndexRead* in the 500 Record for the date of the reading, which is provided in the *ReadDateTime* field.

The Retailer must not raise a validation query with the MDP relating to any Index Read value. Consumption based queries should be based on the interval data not the Index Read values.

The *IndexRead* must be exclusive of meter multipliers. This value must be in the format displayed on the meter and, where available, include any leading or trailing zeros.

Metering Data Providers must provide the *IndexRead* within the NEM12 file associated with initial provision (or resend for the current period) of Type 5 metering data following a successful actual read event (that is, the MDP has collected the cumulative register reading). The provision of any *IndexRead* for any other *ReadDateTime* event, such as the provision of Historical Data or previously provided data, must be bilaterally agreed between the relevant Participants.

3.3.5 Spaces

Fields must not include leading or trailing spaces.

3.3.6 Nulls

Where no interval values exist (*IntervalValue*) the field must contain a Zero (0) value and have a Quality Flag value of "N" (Null) in the data quality field (*QualityMethod*).

A Null value is not allowed in the *Quantity* field of the NEM13 file.

3.3.7 Commas

A comma is required between all fields, even if the field is Null.

Commas are not permitted as valid characters in any data field – whatever the data type.

3.3.8 Field contents

The values in a field are not case sensitive, except where allowed values are specified as an enumerated list in the record definition tables (refer 4 and 5).

3.3.9 End of line delimiter

All record lines must end in a carriage return and line feed (CRLF).

3.3.10 Data Grouping

All NMI Suffixes associated with a NMI for a single read event/date should be included in the same 100-900 event block.

3.3.11 Reason Code

The following rules apply to the use of Reason Codes.

- A Reason Code must be provided for all intervals and consumption values where the Quality Flag value is “S” or “F” (ie not “A”, “V”, “E”, or “N”).
- A Reason Code value must be provided for actual reads (Quality Flag value of “A”) for intervals where the meter has recorded power outages or time resets (Reason Flag = 79 or 89) and the information is stored in the metering database. Other Reason Codes may be provided where the Quality Flag value is “A”.
- Multiple Interval Event Records (400 record) are allowed for each Interval Data Record (300 record) where more than one *ReasonCode* is applicable to the day’s readings.
- There can only be one *QualityMethod* and one *ReasonCode* that can apply for an individual interval.
- Where more than one *ReasonCode* applies to an interval, the MDP should provide the one considered more critical for the Retailer.

3.4 Relationship to B2B transactions

This specification is based on the delivery of the MDFF file as a standalone file.

If aseXML transactions are used, the delivery method must conform with the relevant approved B2B technical specification(s).

3.5 Provision of sample test files

NEMMCO will make “Valid” Test Files available on the NEMMCO web site (www.nemmco.com.au) for use by organisations in developing and testing their systems.

3.6 “Use” Column Usage

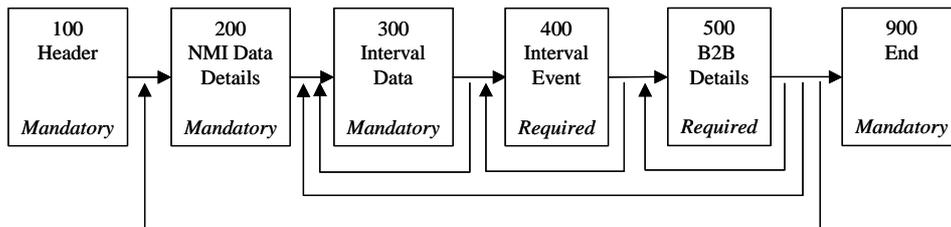
The following key to the codes used in the Use column of all Record data tables in sections 4 and 5.

- | | |
|------------|--|
| Key | M = Mandatory (must be provided in all situations). |
| | R = Required (must be provided if this information is available). |
| | N = Not required (not required and may be ignored by the Recipient if provided). |

4 INTERVAL METER READING FILE SPECIFICATION AND VALIDATION (NEM12)

4.1 Blocking cycle

The blocking of the records must be in accordance with the following diagram; i.e. in the order of 100,200,300,400,500,900 records.



If any data changes in the 200 Record, a new 200 Record must be provided for the subsequent 300 Record. For example, if the *UOM*, *IntervalLength* or *NMISuffix* changes.

The 400 & 500 Records are Required in certain circumstances.

Refer to Appendix F (section 11) for details of the blocking cycle for this file.

4.2 Header Record (100)

Example: *RecordIndicator*, *VersionHeader*, *DateTime*, *FromParticipant*, *ToParticipant*

100 ,NEM12 , 200301011534 ,MDP1 ,Retailer1

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	Header record indicator. 1 per message (100-900 record set). A 100 record must have a matching 900 record. Allowed value: 100
<i>VersionHeader</i>	VarChar(5)	M	Version identifier. Details the version of the Data Block and hence its format. Allowed value: NEM12
<i>DateTime</i>	DateTime (12)	M	File creation date / time.
<i>FromParticipant</i>	VarChar(10)	M	Valid Participant ID as published in MSATS of the Participant that generated the file. This will usually be the MDP.
<i>ToParticipant</i>	VarChar(10)	M	Valid Participant ID as published in MSATS. The Participant who is entitled to the data. This is not the agent of that Participant.

4.3 NMI Data Details Record (200)

Example: *RecordIndicator,NMI,NMIConfiguration,RegisterID,NMISuffix,MDMDataStreamIdentifier, MeterSerialNumber,UOM,IntervalLength,NextScheduledReadDate*

200 , VABD000163 , E1Q1 , 1 , E1 , N1 , METSER123 , kWh , 30 , 20040120

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	NMI Data Details record indicator. Allowed value: 200
<i>NMI</i>	Char(10)	M	NMI for the SupplyPoint. Does not include check-digit or NMI suffix.
<i>NMIConfiguration</i>	VarChar(240)	M	String of all <i>NMISuffixes</i> applicable to the NMI The <i>NMIConfiguration</i> must represent the actual configuration of the site. Where there is a NMI configuration change, all active channels on any part of the day must be provided.
<i>RegisterID</i>	VarChar(10)	M/R/ N	Interval Meter Register identifier. Defined the same as the RegisterID field in the CATS_Register_Identifier table. The value should match the value in MSATS. E.g. "1", "2", "E1", "B1". The <i>RegisterID</i> is: <ul style="list-style-type: none"> ▪ Mandatory for Type 5 metering data when the sender of the MDFF file is the nominated MDP in MSATS; ▪ Required when providing Historical Data; and ▪ Not Required for Types 1-4 or when sending the data to another MDP (eg meter churn data).
<i>NMISuffix</i>	Char(2)	M	As defined in the National Metering Identifier Procedures (Document No: ME_GN059vxxx). E.g. "E1", "B1", "Q1", "K1"
<i>MDMDataStreamIdentifier</i>	Char(2)	M/N	Defined per the Suffix field in the CATS_NMI_DataStream table, .e.g. "N1", "N2" The value must match the value in MSATS The field must be provided if the metering data has or would be sent to NEMMCO's MDM system by the sender. The field is Not Required when sending the data to another MDP.

Field	Format	Use	Definition
<i>MeterSerialNumber</i>	VarChar(12)	M/N	Faceplate Serial Number as per MSATS Data Model. This should be the old meter serial number on the <i>IntervalDate</i> when the meter is replaced. Therefore, the recipient of this information should not dispute the validity of the configuration for interval data provided on a meter change date. Not required for Type 7 meters, logical meters, Historical Data, or where multiple meters are summated to form a single RegisterID.
<i>UOM</i>	VarChar(4)	M	Unit of measure of data. See Appendix B (section 7) for the list of allowed values for this field.
<i>IntervalLength</i>	Numeric(2)	M	Time in minutes of each interval period: 1, 5, 10, 15, or 30. Note: While interval periods of 1, 5 or 10 minutes are not currently used in the NEM, these periods are allowed by the specification on the basis that they may be introduced in the future.
<i>NextScheduledReadDate</i>	Date(8)	M/N	This date is the next future read date. This field is Not Required for remotely read meters. This field is Not Required where the meter will not be read again (eg meter removed, NMI abolished, MDP will no longer be the MDP).

4.4 Interval Data Record (300)

Example: *RecordIndicator, IntervalDate, IntervalValue1 . . . IntervalValueN, QualityMethod, ReasonCode, ReasonDescription, UpdateDateTime, MSATSLoadDateTime*

300,20030501,50.1, . . . ,21.5,V,,,20030101153445,20030102023012

The use of 'V' as the quality method in this example indicates the Quality Methods, Reason Codes or Reason Descriptions vary across the day and will be provided, for each interval, in the 400 records that would immediately follow this record. See 4.5 for details on the use of the 400 records.

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	Interval Data record indicator. Allowed value: 300

Field	Format	Use	Definition
<i>IntervalDate</i>	Date(8)	M	Interval date.
<i>IntervalValue1</i> ... <i>IntervalValueN</i>	Numeric(sx.y) Refer Section 7.1 for details on the format of this number.	M	<p>Interval metering data. The number of values provided must equal 1440 divided by the <i>IntervalLength</i>. This is a repeating field with individual field values separated by comma delimiters.</p> <p><u>Allowed value rules:</u></p> <p>If no data – i.e. Null, then set the relevant <i>IntervalValue</i> field to zero “0” and set the respective Quality flag in the <i>QualityMethod</i> field to “N”.</p> <p>A negative value should not normally occur and should be treated as an exception requiring investigation.</p> <p>The value may contain decimal places. Exponential values are not allowed.</p>
<i>QualityMethod</i>	VarChar(3)	M	<p>Summary of the Data Quality & Substitution / Estimation Flags for all <i>IntervalValues</i> contained in this Record.</p> <p>The <i>QualityMethod</i> applies to all <i>IntervalValues</i> in this Record. Where multiple <i>QualityMethods</i> or <i>ReasonCodes</i> apply to these <i>IntervalValues</i>, a Quality Flag of “V” must be used.</p> <p>Format: In the form QM, where Q= 1 char Quality Flag and M = 2 char Method Flag.</p> <p><u>Allowed values:</u></p> <p>See Quality and Method Tables (refer sections 8 and 9).</p> <p>If Quality Flag = “A”, “N” or “V” then no Method Flag is required.</p>
<i>ReasonCode</i>	Numeric(3)	M/N	<p>Summary of the reasons for Substitute/Estimate for all <i>IntervalValues</i> contained in this Record.</p> <p>The <i>ReasonCode</i> applies to all <i>IntervalValues</i> in this Record.</p> <p>Not Required if Quality Flag = “A”, “N”, or “E”. The field must not be populated if Quality Flag = “V”.</p> <p><u>Allowed values:</u> Refer section 10 Appendix E</p>
<i>ReasonDescription</i>	VarChar(240)	N/M	<p>Description of Reason Code.</p> <p>Mandatory where the <i>ReasonCode</i> is “0”.</p>

Field	Format	Use	Definition
<i>UpdateDateTime</i>	DateTime(14)	M/N	<p>The latest date/time that any updated <i>IntervalValue</i> or <i>QualityMethod</i> for the <i>IntervalDate</i>. This is the MDP's version date/time that the data was created or changed. This date and time applies to data in this 300 record.</p> <p>Where all intervals for an <i>IntervalDate</i> are Forward Estimates, the time component of this field must be "00:00:01". When only part of the day are Forward Estimates, this field is the latest date/time of the intervals that are not Forward Estimates.</p> <p>This field is not required if the <i>IntervalValues</i> for the entire day are Nulls.</p>
<i>MSATSLoadDateTime</i>	DateTime(14)	R	This is the date/time stamp the MSATS system returns recording when metering data was loaded into MSATS. This date is in the acknowledgement notification sent to the MDP by MSATS.

Note 1: Multiple 300-500 record blocks are allowed within a single 200 record.

Note 2: 300 records must be presented in date sequential order. For example, with a series of readings for a period, the current record is the next incremental *IntervalDate* after the previous record. Or, where data for individual, non-consecutive days is sent, the *IntervalDate* for each 300 record is later than the previous one.

4.5 Interval Event Record (400)

Example: *RecordIndicator, StartInterval, EndInterval, QualityMethod, ReasonCode, ReasonDescription*

400 , 1 , 28 , S14 , 32 ,

Where the same *QualityMethod* and *ReasonCode* apply to all *IntervalValues* in the 300 Record, the *QualityMethod*, *ReasonCode* and *ReasonDescription* in the 300 Record must be used. If either of these fields contains multiple values for the *IntervalValues*, the *QualityMethod* in the 300 record must be set to "V" and the 400 Record must be provided.

The *StartInterval* / *EndInterval* pairs must be presented in ascending record order. The *StartInterval* / *EndInterval* period must cover an entire day without gaps or overlaps. For example, (based on a 30 minute interval length):

400 , 1 , 26 , A , ,
 400 , 27 , 31 , S53 , 9 ,
 400 , 32 , 48 , E52 , ,

Refer 3.3.10 for further rules regarding the use of this record.

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	Interval Event record indicator. Allowed value: 400
<i>StartInterval</i>	Numeric(4)	M	The first interval number that the <i>ReasonCode/QualityMethod</i> combination applies to. The <i>StartInterval</i> must be less than or equal to the <i>EndInterval</i> .
<i>EndInterval</i>	Numeric(4)	M	The last interval number that the <i>ReasonCode/QualityMethod</i> combination applies to.
<i>QualityMethod</i>	VarChar(3)	M	Data Quality & Substitution / Estimation Flag for data. The <i>QualityMethod</i> applies to all <i>IntervalValues</i> in the inclusive range defined by the <i>StartInterval</i> and <i>EndInterval</i> . Format: In the form QM , where Q = 1 char Quality Flag and M = 2 char Method Flag. <u>Allowed values:</u> See Quality and Method Tables (refer sections 8 and 9). If Quality Flag = "A" or "N" then no Method required. The Quality Flag of "V" cannot be used in this Record.
<i>ReasonCode</i>	Numeric(3)	M/N	Reason for Substitute/Estimate. The <i>ReasonCode</i> applies to all <i>IntervalValues</i> in the inclusive range defined by the <i>StartInterval</i> and <i>EndInterval</i> . Not required if Quality Flag = "A", "N" or "E" <u>Allowed values:</u> Refer section 10 Appendix E.
<i>ReasonDescription</i>	VarChar(240)	N/M	Description of Reason Code. Mandatory where the <i>ReasonCode</i> is "0". The <i>ReasonDescription</i> applies to all <i>IntervalValues</i> in the inclusive range defined by the <i>StartInterval</i> and <i>EndInterval</i> .

4.6 B2B Details Record (500)

Example: *RecordIndicator, TransCode, RetServiceOrder, ReadDateTime, IndexRead*

500 , S , RETNSRVCEORD1 , 20031220154500 , 001123 . 5

This Record is mandatory where a manual read has been performed or attempted.

Only valid 500 records associated with the current reading period must be provided. For example, a 500 record associated with a substitute reading will become invalid if actual readings subsequently replace the substituted readings.

This Record must be repeated where multiple *TransCodes* or *RetServiceOrders* apply to the day.

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	B2B Details record indicator. Allowed value: 500
<i>TransCode</i>	Char(1)	M	Indicates why the recipient is receiving this meter reading data. See Appendix A (section 6) for a list of allowed values for this field. The Transaction Code value of "O" must be used when providing Historical Data and where this information is unavailable.
<i>RetServiceOrder</i>	Varchar(15)	R	The Retailer's Service Order Number associated with the reading event for that day (where the reading is directly associated with a <u>ServiceOrderRequest</u>). This information must only be provided to the Retailer who issued the <u>ServiceOrderRequest</u> .
<i>ReadDateTime</i>	DateTime(14)	M/R/ N	Actual Date /time of the meter reading. The date/time the transaction occurred or, for a substitution (Quality Flag = "S" or "F"), when the reading event should have happened. The time component of the <i>ReadDateTime</i> should be the actual time of the attempted read. If this is not available the value of the time component must be 00:00:01. The <i>ReadDateTime</i> is Required when providing Historical Data and Not Required for forward estimates.

Field	Format	Use	Definition
<i>IndexRead</i>	Varchar(15)	R/N	<p>The reading from the register holding the accumulative energy for an interval data stream (e.g E1, E2, B1) as captured at the <i>ReadDateTime</i>.</p> <p>The MDP must provide the data (for a Type 5 meter only) if the MDP has collected the cumulative register reading, which would also be used as part of the interval data validation process by the MDP.</p> <p>See 3.3.4 for the rules on this field.</p>

4.7 End of Data (900)

Example: *RecordIndicator*

900

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	<p>This is the end of record indicator for the record set commencing with the previous 100 record.</p> <p>Allowed Value: 900</p>

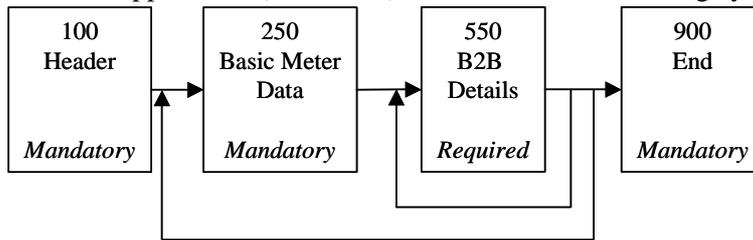
5 BASIC METER DATA FILE SPECIFICATION AND VALIDATION (NEM13)

5.1 Blocking cycle

The blocking must be in accordance with the following diagram i.e. in the order of 100,250,550,900 records.

The 550 Record is Required in certain circumstances.

Refer to Appendix F (section 11) for details of the blocking cycle for this file.



5.2 Header Record (100)

Example: *RecordIndicator,VersionHeader,DateTime,FromParticipant,ToParticipant*

100,NEM13,200301011534,MDP1,Retailer1

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	Header record indicator. 1 per message (100-900 record set). A 100 record must have a matching 900 record. Allowed value: 100
<i>VersionHeader</i>	VarChar(5)	M	Version identifier. Details the version of the Data Block and hence its format. Allowed value: NEM13
<i>DateTime</i>	DateTime(12)	M	File creation date / time.
<i>FromParticipant</i>	VarChar(10)	M	Valid Participant ID as published in MSATS of the Participant that generated the file. This will usually be the MDP.
<i>ToParticipant</i>	VarChar(10)	M	Valid Participant ID as published in MSATS. The Participant who is entitled to the data. This is not the agent of that Participant.

5.3 Basic Meter Data Record (250)

Example:

RecordIndicator, NMI, NMIConfiguration, RegisterID, NMISuffix, MDMDataStreamIdentifier, MeterSerialNumber, DirectionIndicator, PreviousRegisterRead, PreviousRegisterReadDateTime, PreviousQualityMethod, PreviousReasonCode, PreviousReasonDescription, CurrentRegisterRead, CurrentRegisterReadDateTime, CurrentQualityMethod, CurrentReasonCode, CurrentReasonDescription, Quantity, UOM, NextScheduledReadDate, UpdateDateTime, MSATSLoadDateTime

250,1234567890,1141,01,11,11,METSER66,E,000021.2,20031001103230,A
 ,,000534.5,20040201100030,E64,77,,343.5,kWh,20040509,
 20040202125010,20040203000130

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	Basic Meter record indicator. Allowed value: 250
<i>NMI</i>	Char(10)	M	NMI for the Supply Point. Does not include check-digit or NMI suffix.
<i>NMIConfiguration</i>	VarChar(240)	M	String of all applicable <i>NMISuffixes</i> for the NMI. The <i>NMIConfiguration</i> must represent the actual configuration of the site.
<i>RegisterID</i>	VarChar(10)	M	Basic Meter Register identifier. Defined the same as the RegisterID field in the CATS_Register_Identifier table. The value should match the value in MSATS. E.g. "1", "2".
<i>NMISuffix</i>	Char(2)	M	As defined in the National Metering Identifier Procedures (Document No: ME_GN059vxxx). E.g. "11", "41".
<i>MDMDataStreamIdentifier</i>	Char(2)	M/N	Defined per the Suffix field in the CATS_NMI_DataStream table, e.g. "11", "12". The value must match the value in MSATS The field must be provided if the metering data has or would be sent to NEMMCO's MDM system.
<i>MeterSerialNumber</i>	VarChar(12)	M	Faceplate Serial Number as per MSATS Data Model.

Field	Format	Use	Definition
<i>DirectionIndicator</i>	Char(1)	M	<p>A code to indicate whether this register records “Import” or “Export”.</p> <p><u>Allowed values:</u> “I” = Import to Grid, “E” = Export from grid</p> <p>“Import” means that energy normally flows from the Supply Point to the Grid.</p> <p>“Export” means energy normally flows from the Grid to the Supply Point.</p>
<i>PreviousRegisterRead</i>	Varchar(15)	M	<p>Previous Register Read.</p> <p>Example of values: 1234567.123 or 0012456.123.</p> <p>Values must include any leading zeros and trailing zeros as per the physical dial format.</p> <p>Values must be exclusive of meter multipliers.</p> <p>The ‘Previous’ reading is the earlier of the two readings provided. A forward estimate cannot be provided in the <i>PreviousRegisterRead</i> field.</p> <p>Refer section 14 for examples of the use of this field.</p>
<i>PreviousRegisterReadDateTime</i>	DateTime(14)	M	<p>Actual Date/time of the meter reading.</p> <p>The date/time the transaction occurred or, for a substitution (Quality Flag = “S” or “F”), when the reading event should have happened.</p> <p>The time component of the <i>PreviousRegisterReadDateTime</i> should be the actual time of the attempted read. If this is not available the value of the time component must be 00:00:01.</p>
<i>PreviousQualityMethod</i>	VarChar(3)	M	<p>Data Quality & Substitution / Estimation Flag for <i>PreviousRegisterRead</i>.</p> <p>Format: In the form QM, where Q= 1 char Quality Flag and M = 2 char Method Flag.</p> <p>Allowed values:</p> <p>See Quality and Method Tables (refer sections 8 and 9).</p> <p>If Quality Flag = “A” then no Method Flag is required.</p>

Field	Format	Use	Definition
<i>PreviousReasonCode</i>	Numeric(3)	M/N	Reason for Substitute/Estimate for <i>PreviousRegisterRead</i> . Refer to 3.3.11 for more details. Allowed values: Refer 10 Appendix E. Not Required where the Quality Flag = "A" or "E".
<i>PreviousReasonDescription</i>	VarChar(240)	N/M	Description of Reason Code for <i>PreviousRegisterRead</i> . Mandatory where the <i>PreviousReasonCode</i> is "0".
<i>CurrentRegisterRead</i>	Varchar(15)	M	Register Read. Example of values: 1234567.123 or 0012456.123. Values must include any leading zeros and trailing zeros as per the physical dial format. Values must be exclusive of meter multipliers. The 'Current' reading is the later of the two readings provided. It has no specific relationship to the present; for example, it may be in the future if the reading is a forward estimate.
<i>CurrentRegisterReadDateT ime</i>	DateTime (14)	M	Actual Date/time of the meter reading. For forward estimates, the date should be equal to or greater than the <i>NextScheduledReadDate</i> , with a time component of 00:00:00 (ie, date(8) + 000000). The date/time the transaction occurred or, for a substitution (Quality Flag = "S" or "F"), when the reading event should have happened. The time component of the <i>CurrentRegisterReadDateT ime</i> should be the actual time of the attempted read. If this is not available the value of the time component must be 00:00:01. Refer section 14 for examples of the use of this field.

Field	Format	Use	Definition
<i>CurrentQualityMethod</i>	VarChar(3)	M	Data Quality & Substitution / Estimation Flag for <i>CurrentRegisterRead</i> . Format: In the form QM , where Q = 1 char Quality Flag and M = 2 char Method Flag. Allowed values: See Quality and Method Tables (refer sections 8 and 9). If Quality Flag = "A" then no Method Flag is required.
<i>CurrentReasonCode</i>	Numeric(3)	M/N	Reason for Substitute/Estimate for <i>CurrentRegisterRead</i> . Refer to 3.3.11 for more details. Allowed values: Refer section 10 Appendix E. Not Required where the Quality Flag = "A" or "E"
<i>CurrentReasonDescription</i>	VarChar(240)	N/M	Description of Reason Code for <i>CurrentRegisterRead</i> . Mandatory where the <i>CurrentReasonCode</i> is "0".
<i>Quantity</i>	Numeric(sx.y) Refer Section 7 for details on the format of this number.	M	The computed quantity, after the application of any multiplier value and taking account of any meter roll over. For time integrated values (e.g. watt hours or var hours) this is measured between the <i>CurrentRegisterRead</i> and <i>PreviousRegisterRead</i> (<i>CurrentRegisterRead</i> value less <i>PreviousRegisterRead</i> value corrected for the register multiplier). For non-integrated values, it is the <i>CurrentRegisterRead</i> corrected for the register multiplier. A negative value should not normally occur and should be treated as an exception requiring investigation.
<i>UOM</i>	VarChar(4)	M	Unit of Measure for the <i>Quantity</i> value. See Appendix B (section 7) for the list of allowed values for this field.
<i>NextScheduledReadDate</i>	Date(8)	M/N	This date is the next future read date. This field is Not Required where the meter will not be read again (eg meter removed, NMI abolished, MDP will no longer be the MDP).
<i>UpdateDateTime</i>	DateTime(14)	M	The latest date/time for the updated <i>CurrentRegisterRead</i> or <i>CurrentQualityMethod</i> . This is the MDP's version date/time that the data was created or changed. This date and time applies to data in this 250 record.

Field	Format	Use	Definition
<i>MSATSLoadDateTime</i>	DateTime(14)	R	This is the <i>Date/time</i> stamp the MSATS system returns recording when metering data was loaded into MSATS. This date is in the acknowledgement notification sent to the MDP by MSATS

5.4 B2B Details Record (550)

Example: *RecordIndicator, PreviousTransCode, PreviousRetServiceOrder, CurrentTransCode, CurrentRetServiceOrder*

550 , N , , A ,

This record is not required if both the *PreviousTransCode* and *CurrentTransCode* are "N" and there are no service orders corresponding to the *PreviousRegisterRead* or *CurrentRegisterRead* readings.

This record must be repeated where multiple *TransCodes* or *RetServiceOrders* apply to the *PreviousRegisterRead* or *CurrentRegisterRead*.

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	B2B Details record indicator. Allowed value: 550
<i>PreviousTransCode</i>	Char(1)	M	Indicates why the <i>PreviousRegisterRead</i> was collected. See Appendix A (section 6) for a list of allowed values for this field. The Transaction Code value of "O" must be used when providing Historical Data and where this information is unavailable.
<i>PreviousRetServiceOrder</i>	Varchar(15)	R	The Retailer's Service Order Number associated with the <i>PreviousRegisterRead</i> reading (where the reading is directly associated with a <u>ServiceOrderRequest</u>). This information must only be provided to the requesting Retailer.
<i>CurrentTransCode</i>	Char(1)	M	Indicates why the <i>CurrentRegisterRead</i> was collected. See Appendix A (section 6) for a list of allowed values for this field. The Transaction Code value of "O" must be used when providing Historical Data and where this information is unavailable.

Field	Format	Use	Definition
<i>CurrentRetServiceOrder</i>	Varchar(15)	R	The Retailer's Service Order Number associated with the <i>CurrentRegisterRead</i> reading (where the reading is directly associated with a <u>ServiceOrderRequest</u>). This information must only be provided to the requesting Retailer.

5.5 End of Data (900)

Example: *RecordIndicator*

900

Field	Format	Use	Definition
<i>RecordIndicator</i>	Numeric(3)	M	This is the end of record indicator for the record set commencing with the previous 100 record. Allowed Value: 900

6 APPENDIX A – TRANSACTION CODES FLAGS

References to Service Orders in the table below refer to work done by a Service Provider as the result of a Retailer's ServiceOrderRequest or at its own initiation.

TransCode	Action	Comments
A	Alteration	Any action involving the alteration of the metering at a site. This includes New Connections and Add/Alts Service Orders.
C	Meter Reconfiguration	Meter Reconfiguration Service Order. This includes Off-Peak (controlled load) timing changes. This does not apply to the removal of the meter.
G	Re-energisation	Re-energisations Service Order.
D	De-energisation	De-energisations including De-energisation for Non-payment Service Order.
E	Forward Estimate	For all Forward Estimates.
N	Normal Read	Scheduled Read. Also includes substitutions associated with a scheduled read.
O	Other	Include Meter Investigation & Miscellaneous Service Orders. This value is used when providing Historical Data and where the <i>TransCode</i> information is unavailable.
S	Special Read	Special Read Service Order.
R	Removal of meter	This is used for meter removal or supply abolishment. This excludes situations involving a meter changeover or where a meter is added to an existing configurations (these are considered to be alterations).
T	Transfer	Obsolete – Only to be used for “Historical Data”. Indicates when a read is supplied to a Participant as a result of the completion of a Transfer Request.

7 APPENDIX B – FORMAT & UNIT OF MEASURE FIELD DETAILS

7.1 Format of differing types of data

UOM Type		Format
M...	Mega (Million)	Numeric(s15.6)
k...	Kilo (Thousand)	Numeric(s15.3)
pF	Power Factor	Numeric(s15.2)
Wh, varh, VAh, var, VA, V, A, W		Numeric(s15)

These formats apply to the data shown in the *IntervalValue* (300 Record) and *Quantity* (250 Record) fields.

Other data types do not have specific defined format.

7.2 Allowed Values in the UOM field

The allowed values for UOM are not case sensitive.

Allowed Values	Description	Integrated
MWh	Megawatt hours	Yes
kWh	Kilowatt hours	Yes
Wh	Watt hours	Yes
Mvarh	Megavar hours	Yes
kvarh	Kilovar hours	Yes
varh	var hours	Yes
Mvar	Megavar	No
kvar	Kilo var	No
var	var	No
MW	Megawatts	No
kW	Kilowatts	No
W	Watts	No
MVAh	Mega VA hours	Yes
kVAh	KiloVA hours	Yes
VAh	VA hours	Yes
MVA	MegaVA	No
kVA	KiloVA	No
VA	VA	No

Allowed Values	Description	Integrated
kV	kiloVolts	No
V	Volts	No
kA	Current kiloAmps	No
A	Current Amps	No
pF	Power Factor	No

8 APPENDIX C - QUALITY FLAGS

Quality Flag	Meaning of Quality Flag	Relationship with other fields
A	Actual Data recovered from Metering installation or data logger.	No Method Flag applies if this Quality Flag value is used. A ReasonCode is optional if this Quality Flag value is used.
E	Estimated Data. (ie Forward Estimate)	A Method Flag is mandatory if this Quality Flag value is used. No ReasonCode applies if this Quality Flag value is used.
F	Substitutions that are considered to be of a permanent or final nature and will not be replaced by actual data.	A Method Flag is mandatory if this Quality Flag value is used. A ReasonCode is mandatory if this Quality Flag value is used.
N	For intervals or periods that are NULL (i.e. no data exists).	This value is not permitted in NEM13 files. The <i>IntervalValues</i> must be set to "0" if this Quality Flag value is used. No Method Flag applies if this Quality Flag value is used. No ReasonCode applies if this Quality Flag value is used.
S	Substituted Data.	A Method Flag is mandatory if this Quality Flag value is used. A ReasonCode is mandatory if this Quality Flag value is used.
V	Variable Data. This is not a formal quality flag held against individual data items. This value may only be used as part of the <i>QualityMethod</i> field in the 300 Record.	No Method flag applies if this Quality Flag value is used. No ReasonCode applies if this Quality Flag value is used.

9 APPENDIX D - METHOD FLAGS

This table should be used in conjunction with the NEMMCO document “NEM Metering Data Substitution Estimation and Validation Procedure for Metering Types (1-7)”.

Method Flag	Meaning of Method Flag
11	Type 11
12	Type 12
13	Type 13
14	Type 14
15	Type 15
16	Type 16
17	Type 17
18	Type 18
51	Type 51
52	Type 52
53	Type 53
54	Type 54
55	Type 55
56	Type 56
61	Type 61
62	Type 62
63	Type 63
64	Type 64
65	Type 65
71	Type 71
72	Type 72
73	Type 73
74	Type 74

10 APPENDIX E - REASON CODES

Reason Code	Reason Code Description	Obsolete [If Yes, only to be used when providing Historical Data.]
0	Free Text Description	No
1	Meter/Equipment Changed	No
2	Extreme Weather/Wet	No
3	Quarantine	No
4	Savage Dog	No
5	Meter/Equipment Changed	Yes
6	Extreme Weather/Wet	Yes
7	Unable To Locate Meter	No
8	Vacant Premise	No
9	Meter/Equipment Changed	Yes
10	Lock Damaged/Seized	No
11	In Wrong Walk	No
12	Locked Premises	No
13	Locked Gate	No
14	Locked Meter Box	No
15	Access - Overgrown	No
16	Noxious Weeds	No
17	Unsafe Equipment/Location	No
18	Read Below Previous	No
19	Consumer Wanted	No
20	Damaged Equipment/Panel	No
21	Switched Off	No
22	Meter/Equipment Seals Missing	No
23	Meter/Equipment Seals Missing	Yes
24	Meter/Equipment Seals Missing	Yes
25	Meter/Equipment Seals Missing	Yes
26	Meter/Equipment Seals Missing	Yes
27	Meter/Equipment Seals Missing	Yes
28	Damaged Equipment/Panel	Yes
29	Relay Faulty/Damaged	No

Reason Code	Reason Code Description	Obsolete [If Yes, only to be used when providing Historical Data.]
30	Meter Stop Switch On	No
31	Meter/Equipment Seals Missing	Yes
32	Damaged Equipment/Panel	Yes
33	Relay Faulty/Damaged	Yes
34	Meter Not In Handheld	No
35	Timeswitch Faulty/Reset Required	No
36	Meter High/Ladder Required	No
37	Meter High/Ladder Required	Yes
38	Unsafe Equipment/Location	Yes
39	Reverse Energy Observed	No
40	Timeswitch Faulty/Reset Required	Yes
41	Faulty Equipment Display/Dials	No
42	Faulty Equipment Display/Dials	Yes
43	Power Outage	No
44	Unsafe Equipment/Location	Yes
45	Readings Failed To Validate	No
46	Extreme Weather/Hot	No
47	Refused Access	No
48	Timeswitch Faulty/Reset Required	Yes
49	Wet Paint	No
50	Wrong Tariff	No
51	Installation Demolished	No
52	Access - Blocked	No
53	Bees/Wasp In Meter Box	No
54	Meter Box Damaged/Faulty	No
55	Faulty Equipment Display/Dials	Yes
56	Meter Box Damaged/Faulty	Yes
57	Timeswitch Faulty/Reset Required	Yes
58	Meter Ok - Supply Failure	No
59	Faulty Equipment Display/Dials	Yes
60	Illegal Connection/Equipment Tampered	No

Reason Code	Reason Code Description	Obsolete [If Yes, only to be used when providing Historical Data.]
61	Meter Box Damaged/Faulty	Yes
62	Damaged Equipment/Panel	Yes
63	Illegal Connection/Equipment Tampered	Yes
64	Key Required	No
65	Wrong Key Provided	No
66	Lock Damaged/Seized	Yes
67	Extreme Weather/Wet	Yes
68	Zero Consumption	No
69	Reading Exceeds Estimate	No
70	Probe Reports Tampering	No
71	Probe Read Error	No
72	Meter/Equipment Changed	Yes
73	Low Consumption	No
74	High Consumption	No
75	Customer Read	No
76	Communications Fault	No
77	Estimation Forecast	No
78	Null Data	No
79	Power Outage Alarm	No
80	Short Interval Alarm	No
81	Long Interval Alarm	No
82	CRC Error	No
83	RAM Checksum Error	No
84	ROM Checksum Error	No
85	Data Missing Alarm	No
86	Clock Error Alarm	No
87	Reset Occurred	No
88	Watchdog Timeout Alarm	No
89	Time Reset Occurred	No
90	Test Mode	No
91	Load Control	No

Reason Code	Reason Code Description	Obsolete [If Yes, only to be used when providing Historical Data.]
92	Added Interval (Data Correction)	No
93	Replaced Interval (Data Correction)	No
94	Estimated Interval (Data Correction)	No
95	Pulse Overflow Alarm	No
96	Data Out Of Limits	No
97	Excluded Data	No
98	Parity Error	No
99	Energy Type (Register Changed)	No

11 APPENDIX F – SUMMARY OF FILE FORMAT & BLOCKING

NEM12 File Format

Record	Fields	Blocking
100	RecordIndicator VersionHeader DateTime FromParticipant ToParticipant	←
200	RecordIndicator NMI NMIConfiguration RegisterID NMISuffix MDMDataStreamIdentifier MeterSerialNumber UOM IntervalLength NextScheduledReadDate	
300	RecordIndicator IntervalDate IntervalValue1 IntervalValue2 ... IntervalValueN QualityMethod ReasonCode ReasonDescription UpdateDateTime MSATSLoadDateTime	
400	RecordIndicator StartInterval EndInterval QualityMethod ReasonCode ReasonDescription	
500	RecordIndicator TransCode RetServiceOrder ReadDateTime IndexRead	
900	RecordIndicator	

NEM13 File Format

Record	Fields	Blocking
100	RecordIndicator VersionHeader DateTime FromParticipant ToParticipant	←
250	RecordIndicator NMI NMIConfiguration RegisterID NMISuffix MDMDataStreamIdentifier MeterSerialNumber DirectionIndicator PreviousRegisterRead PreviousRegisterReadDateTime PreviousQualityMethod PreviousReasonCode PreviousReasonDescription CurrentRegisterRead CurrentRegisterReadDateTime CurrentQualityMethod CurrentReasonCode CurrentReasonDescription Quantity UOM NextScheduledReadDate UpdateDateTime MSATSLoadDateTime	
550	RecordIndicator PreviousTransCode PreviousRetServiceOrder CurrentTransCode CurrentRetServiceOrder	
900	RecordIndicator	

100,NEM12,200312221300,MDA1,Ret1

200,NNNN123456,E1Q1,001,E1,N1,METSER123,kWh,30,20031225

300,20031219,18.023,19.150,17.592,24.155,18.568,22.304,19.222,19.032,19.090,22.237,24.350,22.274,20.193,16.615,19.575,20.391,16.459,20.527,21.438,19.327,21.424,16.656,17.616,18.416,16.666,19.961,18.120,18.023,18.588,21.759,17.841,19.548,18.486,21.391,15.656,16.634,16.377,14.246,17.451,15.742,18.038,18.470,14.936,17.987,15.751,19.750,16.202,14.733,A,,20031220203500,20031221003500

300,20031220,17.695,18.972,16.847,20.662,20.694,20.278,17.550,18.275,20.220,21.073,22.586,23.091,22.053,18.649,21.463,21.536,18.642,21.843,22.837,18.894,20.759,18.974,18.714,18.357,16.858,20.079,20.648,19.761,20.035,22.139,20.196,19.199,16.695,20.547,15.331,16.888,17.213,15.653,16.840,16.958,17.133,18.711,17.288,19.315,14.873,18.728,16.901,13.580,V,,20031220203500,20031221003500

400,1,31,A,,

400,32,48,E52,,

500,N,,20031220154500,0012300.5

300,20031221,17.695,18.972,16.847,20.662,20.694,20.278,17.550,18.275,20.220,21.073,22.586,23.091,22.053,18.649,21.463,21.536,18.642,21.843,22.837,18.894,20.759,18.974,18.714,18.357,16.858,20.079,20.648,19.761,20.035,22.139,20.196,19.199,16.695,20.547,15.331,16.888,17.213,15.653,16.840,16.958,17.133,18.711,17.288,19.315,14.873,18.728,16.901,13.580,E52,,20031220203500,20031221003500

300,20031222,17.695,18.972,16.847,20.662,20.694,20.278,17.550,18.275,20.220,21.073,22.586,23.091,22.053,18.649,21.463,21.536,18.642,21.843,22.837,18.894,20.759,18.974,18.714,18.357,16.858,20.079,20.648,19.761,20.035,22.139,20.196,19.199,16.695,20.547,15.331,16.888,17.213,15.653,16.840,16.958,17.133,18.711,17.288,19.315,14.873,18.728,16.901,13.580,E52,,20031220203500,20031221003500

300,20031223,17.695,18.972,16.847,20.662,20.694,20.278,17.550,18.275,20.220,21.073,22.586,23.091,22.053,18.649,21.463,21.536,18.642,21.843,22.837,18.894,20.759,18.974,18.714,18.357,16.858,20.079,20.648,19.761,20.035,22.139,20.196,19.199,16.695,20.547,15.331,16.888,17.213,15.653,16.840,16.958,17.133,18.711,17.288,19.315,14.873,18.728,16.901,13.580,E52,,20031220203500,20031221003500

300,20031224,17.695,18.972,16.847,20.662,20.694,20.278,17.550,18.275,20.220,21.073,22.586,23.091,22.053,18.649,21.463,21.536,18.642,21.843,22.837,18.894,20.759,18.974,18.714,18.357,16.858,20.079,20.648,19.761,20.035,22.139,20.196,19.199,16.695,20.547,15.331,16.888,17.213,15.653,16.840,16.958,17.133,18.711,17.288,19.315,14.873,18.728,16.901,13.580,E52,,20031220203500,20031221003500

300,20031225,17.695,18.972,16.847,20.662,20.694,20.278,17.550,18.275,20.220,21.073,22.586,23.091,22.053,18.649,21.463,21.536,18.642,21.843,22.837,18.894,20.759,18.974,18.714,18.357,16.858,20.079,20.648,19.761,20.035,22.139,20.196,19.199,16.695,20.547,15.331,16.888,17.213,15.653,16.840,16.958,17.133,18.711,17.288,19.315,14.873,18.728,16.901,13.580,E52,,20031220203500,20031221003500

200,NNNN123456,E1Q1,002,Q1,,METSER123,kvarh,30,20031225

300,20031219,17.461,15.155,15.300,15.321,17.020,18.691,16.538,13.949,13.289,13.694,16.042,15.171,16.654,14.146,15.064,14.781,14.549,19.439,16.321,16.178,15.854,16.860,15.504,15.779,14.767,17.256,19.324,17.850,14.264,19.835,16.563,15.520,20.235,15.911,18.250,17.259,18.752,16.221,18.408,15.992,16.429,14.313,18.305,15.305,18.933,15.293,18.905,18.616,A,,20031220203500,

300,20031220,15.919,15.843,16.357,16.098,18.796,20.468,16.087,13.070,14.247,14.205,18.302,15.664,15.039,14.909,14.564,15.832,14.717,18.474,13.728,16.217,16.401,19.270,15.112,15.407,14.566,18.966,18.927,16.996,16.484,16.796,18.751,17.390,19.635,16.498,17.434,20.203,18.581,16.188,18.056,17.229,16.914,15.165,19.389,15.905,19.451,14.848,18.240,17.117,V,,20031220203500,

400,1,31,A,,

400,32,48,E52,,

300,20031221,15.919,15.843,16.357,16.098,18.796,20.468,16.087,13.070,14.247,14.205,18.302,15.664,15.039,14.909,14.564,15.832,14.717,18.474,13.728,16.217,16.401,19.270,15.112,15.407,14.566,18.966,18.927,16.996,16.484,16.796,18.751,17.390,19.635,16.498,17.434,20.203,18.581,16.188,18.056,17.229,16.914,15.165,19.389,15.905,19.451,14.848,18.240,17.117,E52,,20031220203500,

300,20031222,15.919,15.843,16.357,16.098,18.796,20.468,16.087,13.070,14.247,14.205,18.302,15.664,15.039,14.909,14.564,15.832,14.717,18.474,13.728,16.217,16.401,19.270,15.112,15.407,14.566,18.966,18.927,16.996,16.484,16.796,18.751,17.390,19.635,16.498,17.434,20.203,18.581,16.188,18.056,17.229,16.914,15.165,19.389,15.905,19.451,14.848,18.240,17.117,E52,,20031220203500,

300,20031223,15.919,15.843,16.357,16.098,18.796,20.468,16.087,13.070,14.247,14.205,18.302,15.664,15.039,14.909,14.564,15.832,14.717,18.474,13.728,16.217,16.401,19.270,15.112,15.407,14.566,18.966,18.927,16.996,16.484,16.796,18.751,17.390,19.635,16.498,17.434,20.203,18.581,16.188,18.056,17.229,16.914,15.165,19.389,15.905,19.451,14.848,18.240,17.117,E52,,20031220203500,

300,20031224,15.919,15.843,16.357,16.098,18.796,20.468,16.087,13.070,14.247,14.205,18.302,15.664,15.039,14.909,14.564,15.832,14.717,18.474,13.728,16.217,16.401,19.270,15.112,15.407,14.566,18.966,18.927,16.996,16.484,16.796,18.751,17.390,19.635,16.498,17.434,20.203,18.581,16.188,18.056,17.229,16.914,15.165,19.389,15.905,19.451,14.848,18.240,17.117,E52,,20031220203500,

400,25,48,E52,,

500,A,,20040417122500,

900

12.6 Metering data with Configuration Change – Type 5

Historical data provided for a participant request relating to NMI NCDE007777 for a period where a meter change occurred at 12:25pm on 10/8/2004. The new meter installed had a changed configuration.

The old meter (METSER123) has two registers that measure:

- Export Wh (E1)
- Export varh (Q1)

The Wh data is sent to MSATS on the N1 data stream suffix.

The new meter (METSER456) has two registers that measure:

- Export Wh (E1)
- Import Wh (B1)

The net Wh data is sent to MSATS on the N1 data stream suffix.

100,NEM12,200408121327,MDA1,Ret1

200,NCDE007777,E1Q1,1,E1,N1,METSER123,kWh,30,

300,20040809,18.023,19.150,17.592,24.155,18.568,22.304,19.222,19.032,19.090,22.237,24.350,22.274,20.193,16.615,19.575,20.391,16.459,20.527,21.438,19.327,21.424,16.656,17.616,18.416,16.666,19.961,18.120,18.023,18.588,21.759,17.841,19.548,18.486,21.391,15.656,16.634,16.377,14.246,17.451,15.742,18.038,18.470,14.936,17.987,15.751,19.750,16.202,14.733,A,,20040812013500,20040812100035

200,NCDE007777,E1Q1,2,Q1,,METSER123,kvarh,30,

300,20040809,17.461,15.155,15.300,15.321,17.020,18.691,16.538,13.949,13.289,13.694,16.042,15.171,16.654,14.146,15.064,14.781,14.549,19.439,16.321,16.178,15.854,16.860,15.504,15.779,14.767,17.256,19.324,17.850,14.264,19.835,16.563,15.520,20.235,15.911,18.250,17.259,18.752,16.221,18.408,15.992,16.429,14.313,18.305,15.305,18.933,15.293,18.905,18.616,A,,20031220203500,

200,NCDE007777,E1Q1B1,1,E1,N1,METSER123,kWh,30,20040902

300,20040810,18.023,19.150,17.592,24.155,18.568,22.304,19.222,19.032,19.090,22.237,24.350,22.274,20.193,16.615,19.575,20.391,16.459,20.527,21.438,19.327,21.424,16.656,17.616,18.416,16.666,19.961,18.120,18.023,18.588,21.759,17.841,19.548,18.486,21.391,15.656,16.634,16.377,14.246,17.451,15.742,18.038,18.470,14.936,17.987,15.751,19.750,16.202,14.733,V,,20040812013500,20040811120035

400,1,23,A,, <- Reads from Old Meter

900

13 APPENDIX H – EXAMPLE CONSUMPTION DATA FILE (NEM13)

13.1 Actual read values

100,NEM13,200401101030,MDA1,Ret1

250,VABC005890,11,1,11,11,METSER123,E,006342.8,20031005093055,A,,
,007654.9,20040107100333,A,,1312.1,kWh,20040407,
20040108100333,20040108091133

900

13.2 Normal Meter Read with forward estimate

100,NEM13,200401101030,MDA1,Ret1

250,VDEF005890,1141,1,11,11,MET12345,E,000888,20040108103055,A,,
000999,20040408000000,E64,,111,kWh,20040408,
20040409000000,20040109103023

550,N,,E,

250,VDEF005890,1141,2,41,41,MET5678,E,0000950,20040108103055,A,,
0010015,20040408000000,E64,,65,kWh,20040408,
20040409000000,20040109103023

550,N,,E,

900

13.3 Meter read and meter change

This example shows a site with two meters (MET12333 and MET2555), one of which was replaced after being destroyed (MET12333).

The meter that was not destroyed has a demand register with a multiplier (ie. current read has no relationship to previous read within the 250 record). Note that the *RegisteredID* on the new meter (MET5678) does not match that of the meter it replaced.

100,NEM13,200309211030,MDA1,Ret1

250,NABC001492,7111,A1,11,11,MET12333,E,000777,20030820103030,A,,
,001000,20030920000001,F64,28,,233,kWh,,
20030921000001,20030922093738

550,N,,R,

250,NABC001492,7111,A2,71,71,MET2555,E,000545,20030820103030,A,,
000877,20030920145427,A,,8.77,kvar,20031108,
20030921145427,20030922093738

550,N,,A,

250,NABC001492,7111,A2,71,71,MET2555,E,000877,20030920145427,A,, ,
000745,20031108000000,E64,, ,7.45,kvar,20031108,
20031109090500,20030922093738

550,A,,E,

250,NABC001492,7111,A3,11,11,MET5678,E,000000,20030920000001,A,, ,
000450,20031108000000,E64,, ,450,kWh,20031108,
20031109090000,20030922093738

550,A,,E,

900

13.4 Historical data values

The first 250 record shows that Historical Data is being provided and the previous read is known to have occurred on a date that was not part of the normal scheduled reading cycle, but the MDP system does not know the actual *TransCode* to apply. In this case, the 550 record will indicate the read is not a normal read (ie. on the scheduled cycle) by the use of the 'O' *TransCode*.

The second 250 record shows that Historical Data is being provided and the previous read was tagged by the MDP system at the time with a *TransCode* of 'T', even though this *TransCode* is obsolete it can still be provided for Historical Data.

100,NEM13,200401101030,MDA1,Ret1

250,NABC001492,11,A1,11,11,MET12333,E,000555,20030420153330,A,, ,0
00777,20030620103030,A,, ,222,kWh,20040315,
20030621103030,20030622103030

550,O,,N,

250,NABC004444,11,2,11,11,MET5678,E,000000,20030920000000,A,, ,000
250,20031122145040,A,, ,250,kWh,20040315,
20031123145040,20031124132017

550,T,,N,

900

13.5 Transfer Read

This example shows an "opening read" for a site with single meter with two registers that was re-energised as a result of a service order from the Retailer.

Data provided to New Retailer.

100,NEM13,200309011030,MDA1,Ret1

250,NABC001492,4111,1,11,11,MET12333,E,000777,20030820103030,A,, ,
001000,20030920000000,E64,, ,223,kWh,20031108,
20030921000000,20030822093738

550 ,G ,SO134567 ,E ,

250 ,NABC001492 ,4111 ,2 ,41 ,41 ,MET12333 ,E ,000545 ,20030820103030 ,A , , ,
000877 ,20030820000000 ,E64 , , ,332 ,kWh ,20031108 ,
20030821000000 ,20030922093738

550 ,G ,SO134567 ,E ,

900

Data provided to Old Retailer.

The old retailer would initially be provided with a forecast to the next scheduled read date, given the transfer will not have completed at the time the re-energisation read is sent. Note that the retail service order number being provided to the Old Retailer is the Old Retailer's number when they requested the de-energisation of the NMI. The re-energisation service order number is not sent to the Old Retailer as they are not the originator of the service order.

100 ,NEM13 ,200308231030 ,MDA1 ,Ret0

250 ,NABC001492 ,4111 ,1 ,11 ,11 ,MET12333 ,E ,000777 ,20030720153445 ,A , , ,
000777 ,20030820103030 ,A , , ,0 ,kWh ,20031108 ,
20030821103030 ,20030822093738

550 ,D ,SO987654 ,G ,

250 ,NABC001492 ,4111 ,1 ,11 ,11 ,MET12333 ,E ,000777 ,20030820103030 ,A , , ,
001000 ,20030920000000 ,E64 , , ,223 ,kWh ,20031108 ,
20030921000000 ,20030822093738

550 ,G , ,E ,

250 ,NABC001492 ,4111 ,2 ,41 ,41 ,MET12333 ,E ,000545 ,20030720153445 ,A , , ,
000545 ,20030820103030 ,A , , ,0 ,kWh ,20031108 ,
20030821103030 ,20030822093738

550 ,D ,SO987654 ,G ,

250 ,NABC001492 ,4111 ,2 ,41 ,41 ,MET12333 ,E ,000545 ,20030820103030 ,A , , ,
000877 ,20030920000000 ,E64 , , ,332 ,kWh ,20031108 , 20030921000000 ,
20030922093738

550 ,G , ,E ,

900

14 APPENDIX I: EXAMPLE OF USE OF THE REGISTER READ FIELDS

The tables below show examples of how the Current and Previous Register Read fields are populated for a basic metered site. The scenario also includes a transfer of the site to a new retailer on Date 3.

There are 4 steps to the scenario:

Step 1: The initial reading for the site, with an actual read (A_1) and forward estimate (E_1) associated with the reading on Date 1.

Step 2: Provision of actual readings (A_1 , A_2) for the first period (Date 1-2) and the new forward estimate readings (E_2) for the next meter reading period (Date 2-3).

Step 3: A substitute reading (S_2) is provided for the reading on Date 2, (e.g. reading error). A new actual meter reading (A_3) is provided relating to Date 3 as well as forward estimate readings (E_3) for the next period (Date 3-4).

The Date 3 meter reading is also used to facilitate transfer to the new Retailer.

Step 4: The Substitute (F_1) for Date 2 is changed to a Final. The old Retailer may receive this as readings (A_1 , F_1) relating to the first period (Date 1-2) or (F_1 , A_3) for the second period (Date 2-3).

	Date 1 Reading 1	Date 2 Reading 2	Date 3 Reading 3	Date 4 Reading 4
Step 1	A_1	E_1		
Step 2	A_1	A_2	E_2	
Step 3	A_1	S_2	A_3	E_3
Step 4	A_1	F_1	A_3	E_3

	Previous Register Read		Current Register Read		Files to Retailer 1 or 2
	Date	Reading	Date	Reading	
Step 1	Date 1	A ₁	Date 2	E ₁	1
Step 2	Date 1	A ₁	Date 2	A ₂	1
	Date 2	A ₂	Date 3	E ₂	1
Step 3	Date 2	A ₁	Date 2	S ₂	1
	Date 2	S ₂	Date 3	A ₃	1
	Date 3	A ₃	Date 4	E ₃	2
Step 4	Date 2	F ₁	Date 3	A ₃	1
	OR		OR		
	Date 1	A ₁	Date 2	F ₁	1