ES/ER/TM-145

MARTIN MARIETTA

ENVIRONMENTAL
RESTORATION
PROGRAM

Technical Specification for Transferring Ambient Air Monitoring Data to the Oak Ridge Environmental Information System (OREIS)

ENERGY SYSTEMS
ER

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

ES/ER/TM-145

Technical Specification for Transferring Ambient Air Monitoring Data to the Oak Ridge Environmental Information System (OREIS)

Environmental Restoration Program
P. O. Box 2003
Oak Ridge, Tennessee 37831-7298

Issue Date—June 1995

Prepared by the
Oak Ridge Environmental Information System
(OREIS) Program

Prepared for
U.S. Department of Energy
Office of Environmental Management
under budget and reporting code EW 20

MARTIN MARIETTA ENERGY SYSTEMS, INC.
managing the
Environmental Restoration and Waste Management Programs at
Oak Ridge National Laboratory
Oak Ridge K-25 Site Oak Ridge Y-12 Plant
Paducah Gaseous Diffusion Plant Portsmouth Gaseous Diffusion Plant
under contract DE-AC05-84OR21400
for the
U.S. DEPARTMENT OF ENERGY

This Document has been approved for release
to the public by:
David B. [illegible] 5/26/95
Asst. Technical Information Officer Date
Oak Ridge K-25 Site

ACKNOWLEDGEMENTS

The Program Manager of the Oak Ridge Environmental Information System (OREIS) is D. D. Herr, a member of Computing and Telecommunications Services (C&TS) of Martin Marietta Energy Systems, Inc. OREIS Team Leaders are J. F. Hines, T. L. James, M. L. Land, J. K. Thomas, and E. P. Tinnel. J. F. Hines and E. P. Tinnel are members of the Computational Physics and Engineering Division (CPED), Oak Ridge National Laboratory (ORNL); T. L. James is a University of Tennessee (UT) subcontractor with CPED. M. L. Land and J. K. Thomas are members of the Health Sciences Research Division (HSRD), ORNL.

M. P. North, OREIS facilitator for the Ambient Air Technical Specifications Team, was lead author. M. P. North is a member of C&TS.

The author acknowledges the contributions of the members of the Ambient Air Technical Specifications Team who were instrumental in developing the specifications presented in this document. Team members and their affiliations include **B. C. Zygmunt**, a member of CPED; **I. D. Shelton**, a member of the Health, Safety, Environment, and Accountability Organization, Y-12; **H. B. McElhoe**, a member of the Environmental Management Division, K-25; **T. L. James**, a UT subcontractor with CPED; **J. F. Hughes**, a member of the Office of Environmental Compliance and Documentation, ORNL; and **D. D. Herr** and **J. B. Atwater,** members of C&TS.

APPROVAL

Approved by: J. B. Atwater Date: 4/13/95
J. B. Atwater
OREIS Compliance Team Manager

Approved by: David Herr Date: 4/13/95
D. D. Herr
OREIS Program Manager

Approved by: Joan Hughes Date: 4/20/95
J. F. Hughes
ORNL Ambient Air Representative

Approved by: Date: 4/27/95
T. L. James
OREIS Data Management Team Leader

Approved by: Date: 4/20/95
H. B. McElhoe
K-25 Ambient Air Representative

Approved by: M. P. North Date: 4-12-95
M. P. North
OREIS Data Modeler/Ambient Air Team Facilitator

Approved by: Luis D. Shelton Date: 4-21-95
I. D. Shelton
Y-12 Ambient Air Representative

Approved by: Date: 4/13/95
B. C. Zygmunt
OREIS Data Base Administrator

CONTENTS

PREFACE

The purpose of this technical specification report is to address the consolidated environmental data requirements of the Federal Facility Agreement (FFA) and the Tennessee Oversight Agreement (TOA) and to document the technical specifications for transmitting ambient air environmental compliance and monitoring data to the Oak Ridge Environmental Information System (OREIS). This work was performed under Work Breakdown Structure Number 1.3.12.2.3.04 (Activity Data Sheet 8304).

DISCLAIMER

EXECUTIVE SUMMARY

In September 1994, a team was formed to develop, document, and implement technical specifications for transmitting ambient air environmental compliance and monitoring data to the Oak Ridge Environmental Information System (OREIS). The approach used to transmit this data is documented in the "Plan for Integrating Environmental Compliance and Monitoring Data into OREIS." This plan addresses the consolidated data requirements defined by the Federal Facility Agreement (FFA) and the Tennessee Oversight Agreement (TOA) as they pertain to environmental compliance and monitoring data maintained by Energy Systems' Oak Ridge Environmental Management organizations.

This document describes the requirements, responsibilities, criteria, and format for transmitting ambient air compliance and monitoring data to OREIS.

1. INTRODUCTION

1.1 PURPOSE

The primary goal of this technical specification is to meet the consolidated environmental data requirements defined by the Federal Facility Agreement (FFA) and the Tennessee Oversight Agreement (TOA) as they pertain to ambient air monitoring data maintained in Oak Ridge, Tennessee, by the Department of Energy's Maintenance and Operations (M&O) contractor Martin Marietta Energy Systems, Inc., and prime contractors to the Department of Energy (DOE).

This technical specification describes the organizational responsibilities for loading ambient air monitoring data into OREIS, describes the logical and physical data transfer files required from the Ambient Air Monitoring Program, addresses business rules and submission rules, addresses configuration control of this technical specification, and addresses required changes to the current OREIS data base structure based on the requirements of the Ambient Air Monitoring Program.

1.2 SCOPE

The scope of this technical specification is to provide ambient air monitoring data to OREIS, which resulted from sampling at the Y-12 plant, the K-25 site, the Oak Ridge National Laboratory (ORNL), and on the Oak Ridge Reservation (ORR). The data to be integrated into OREIS are primarily the analytical lab and field measurements data and their associated context (e.g., the location, time, and method of sampling).

The Ambient Air Monitoring Program is used to measure radiological and other selected parameters directly in the ambient air adjacent to the facilities. Ambient air monitoring provides direct measurement of airborne concentrations of radionuclides and other hazardous pollutants in the environment surrounding the facilities, allows facility personnel to determine the relative level of contaminants at the monitoring locations during an emergency, verifies that the contributions of fugitive and diffuse sources are insignificant, and serves as a check on dose-modeling calculations.

1.3 PARTICIPANTS

The team consists of site environmental compliance and monitoring representatives, OREIS staff members, and Computing and Telecommunications Services (C&TS) technical staff. The initial activities require environmental compliance and monitoring representatives who can determine the availability of data for loading into OREIS and who are empowered to alter data management activities as required to conform to a common data transfer specification. Follow-on activities will require computing personnel who can modify, test, and implement application systems to transfer the data via the technical specification.

1.4 FREQUENCY OF SUBMISSION

When fully implemented, all three sites will submit ambient air data quarterly. OREIS will receive the data for the previous quarter within 75 days after the quarter ends.

2. ROLES AND RESPONSIBILITIES

2.1 SITE COMPLIANCE AND MONITORING ORGANIZATION

The site compliance and monitoring organizations collect environmental measurement data and are responsible for overseeing the data activities and for transmitting data to the Department of Energy (DOE), appropriate regulatory agencies, and to OREIS. Other responsibilities include compiling data into a data base; quality assuring data and metadata; transmitting data to OREIS as defined in this specification; and using valid values listings (e.g., codes, parameters, units of measure, analysis methods) as agreed upon by the team. Each site is responsible for data verification and standardization prior to transmitting data to OREIS.

2.2 OREIS

OREIS is the consolidated environmental data base that provides consistent and well documented environmental data and data products to support the planning, decision making, and reporting activities of DOE, DOE's M&O contractor, DOE's prime contractors, and DOE subcontractors. OREIS will receive and process ambient air data from the sites as defined in this specification. OREIS responsibilities include:

1. obtaining a completed data transmittal form that identifies the site and the individual transmitting the data;

2. processing the data received;

3. conducting data base integrity checks;

4. loading the data into OREIS;

5. providing a processing summary for review by data generators (to obtain authorization to release the data to the public);

6. providing the data and metadata to DOE, EPA, and TDEC;

7. providing users a user-friendly and integrated means of accessing the data contained in the OREIS data base;

8. maintaining and validating the valid values listings for codes, parameters, units of measure, analysis methods, etc.;

9. maintaining a data dictionary which defines all OREIS data base tables, field names, field definitions, field formats, field optionality, etc.;

10. communicating changes to the lists of valid values in the code tables to users through the OREIS User Services group;

11. providing a way for modifications to this specification and the ambient air data to be easily communicated and implemented using the latest revision of ER procedure ERWM/ER-P2703, *Submitting, Reviewing, and Approving Changes to the Oak Ridge Environmental Information System (OREIS)*; and

12. making every possible and reasonable effort to ensure that the ambient air data are not manipulated or misrepresented such that invalid conclusions may be drawn from the use of the data.

3. OREIS DATA MODEL

Reference the latest revision of the *Data Management Plan for the Oak Ridge Environmental Information System*, ES/ER/TM-39, for a description of the data management objectives, the information system (computer hardware and software), the data base structure, system maintenance, data processing, and data access information. This document addresses the requirements and contains references to the procedures for meeting the data management objectives.

Reference the latest revision of the *Data Dictionary for the Oak Ridge Environmental Information System*, ES/ER/TM-116, for a definition of the measurement data base structure, descriptions of the data base tables, and listings of valid values for codes, parameters, and methods.

Reference the latest revision of the ER procedure, ERWM/ER-P2700.006, *Transmitting Compliance Data in Ready-to-Load (RTL) Form to the Oak Ridge Environmental Information System (OREIS)*, for requirements, responsibilities, and actions steps for (1) transmitting data to the OREIS, including specific data and data processing requirements; and (2) the subsequent review process used by OREIS and site personnel to prepare the data for release to regulators and other OREIS users.

Appendix A contains the OREIS Entity Relationship Diagram.

4. LOGICAL FILE LAYOUT AND BUSINESS RULES

This section contains a logical representation of the OREIS entity names and fields which will be populated with ambient air monitoring data. This section represents the subset of the OREIS model that pertains to the ambient air monitoring data. The entity names, entity definitions, field names, field lengths, and some comment/example data are shown for each entity. The ambient air requirement for each field is shown under the Req. (requirement) column. The categories are N-not null (mandatory), R-recommended, C-conditional, and O-optional).

Field name definitions are in Appendix B. How the data are physically transmitted to OREIS and associated submission rules are in Sect. 7.0.

4.1 LAB MEASUREMENT DATA

The following entities contain fields associated with transferring lab measurement data to OREIS. For each entity, the entity name, entity description, field names, field lengths/data types, and comment/example data are shown.

4.1.1 PROJECT Entity

Entity Name: **PROJECT** - The PROJECT table contains data about specific projects. A project is an environmental program responsible for collecting samples or taking measurements and/or creating regulatory reports. A project is defined by its site (or facility), sponsor, and project domain (either the geographic domain of the project within a site or its thematic domain).

Field Name	Req.	Length	(Comments)/Example Data
PROJ_SITE	N	10 CHAR	K-25, ORNL, Y-12, ORR
PROJ_UNIT	N	15 CHAR	SURFACE WATER, AMBIENT AIR
PROJ_CODE	N	30 CHAR	(Ambient Air special studies)
PROJ_DESCRIPTION	R	LONG	
PROJ_NAME	R	100 CHAR	(PROJ_CODE spelled out)
PROJ_PROGRAM	R	8 CHAR	(CAA = Clean Air Act)
SITE_NAME	R	50 CHAR	(PROJ_SITE spelled out)
SPONSOR	R	50 CHAR	Y-12 ENV. MANAGEMENT
PROJ_CONTACT	O	20 CHAR	ID SHELTON
D_INITIATED	R	9 CHAR	(DDMONYYYY)
D_COMPLETED	C	9 CHAR	(DDMONYYYY)
COMMENTS	O	200 CHAR	

Business Rule:

The PROJ_CODE is used to distinguish the different ambient air projects at each site. Examples are:

For Y-12 use

PROJ_SITE = Y-12
PROJ_UNIT = AMBIENT AIR
PROJ_CODE = Y-12 AA U
PROJ_NAME = AMBIENT AIR

PROJ_SITE = Y-12
PROJ_UNIT = AMBIENT AIR
PROJ_CODE = Y-12 AA HG
PROJ_NAME = AMBIENT AIR

(Note: Y-12 will report data by uranium results and by mercury results.)

For K-25 use

PROJ_SITE = K-25
PROJ_UNIT = AMBIENT AIR
PROJ_CODE = K-25 AA ROUTINE
PROJ_NAME = AMBIENT AIR.

PROJ_SITE = K-25
PROJ_UNIT = AMBIENT AIR
PROJ_CODE = K-25 AA BACKGROUND
PROJ_NAME = AMBIENT AIR

(Note: K-25 will report data by routine results or by a special study code e.g., BACKGROUND, PROJECT IMPACT.)

For ORNL or ORR use

PROJ_SITE = ORNL or ORR
PROJ_UNIT = AMBIENT AIR
PROJ_CODE = AMBIENT AIR
PROJ_NAME = AMBIENT AIR

4.1.2 LOCATION Entity

Entity Name: **LOCATION** - The LOCATION table contains data about unique sampling points. Each point has an OREIS-assigned identifier that is unique. Most locations are points described by x, y coordinates, but a location could be a line or a polygon where measuring events occur.

Field Name	Req.	Length	(Comments)/Example Data
LATITUDE	N	12,6 DEG	(see Business Rule)
LONGITUDE	N	12,6 DEG	(see Business Rule)
EASTING	N	10,2 NUM	(see Business Rule)
NORTHING	N	10,2 NUM	(see Business Rule)
GRID_SYS	N	10 CHAR	(see Business Rule)

SITE	N	10 CHAR	K-25, Y-12, ORNL, ORR
ELV_ERROR	R	8,2 NUM	
ELV_METHOD	R	10 CHAR	
GRND_ELV	R	8,2 NUM	
LOC_DESC	O	200 CHAR	
LOC_ERROR	R	10 CHAR	
LOC_METHOD	R	10 CHAR	
COMMENTS	O	200 CHAR	

Business Rule:

It is mandatory that one of the following sets of coordinates be populated for the LOCATION entity:

> LATITUDE/LONGITUDE - must be sent as decimal degrees
> (e.g., LATITUDE = 36.2875, LONGITUDE = 83.9452).
>
> -or-
>
> EASTING/NORTHING - must be sent with a GRID_SYS
> (e.g., EASTING = 154910.8923, NORTHING = 76485.3214,
> GRID_SYS = "ADMIN").

OREIS will do any necessary conversions to support the OREIS Geographic Information System.

4.1.3 STATION Entity

Entity Name: **STATION** - The STATION table contains data about sampling points associated with a project. Each point has a distinct station name within a project.

Field Name	**Req.**	**Length**	**(Comments)/Example Data**
STA_NAME	N	15 CHAR	201
STA_TYPE	N	2 CHAR	(AA = Ambient Air)
STA_STATUS	N	2 CHAR	(A = ACTIVE, I = INACTIVE)
STA_GROUP	R	30 CHAR	
STA_DESC	R	200 CHAR	(the physical description)
D_DISCONTINUED	C	9 CHAR	(DDMONYYYY)
D_ESTABLISHED	R	9 CHAR	(DDMONYYYY)
COMMENTS	O	200 CHAR	

Business Rules:

1. The STA_NAME + STA_TYPE must be unique within a project.

2. The STA_GROUP is used by ORNL/ORR to group stations by perimeter or remote stations (e.g., PAM = Perimeter Air Monitor, RAM = Remote Air Monitor).

4.1.4 FLD_SMP Entity

Entity Name: **FLD_SMP** - The **FLD_SMP** table contains data about a sampling event. A sampling event is an occasion where field samples are collected for analysis. A field sample is an environmental sample that is collected in the field. It may be analyzed in a field laboratory or it may be packaged for shipment to an analytical laboratory.

Field Name	**Req.**	**Length**	**(Comments)/Example Data**
MED_TYPE	N	2 CHAR	AA
SMP_TYPE	N	10 CHAR	(REG = Regular)
D_COLLECTED	N	9 CHAR	(DDMONYYYY)
SMP_COND	C	3 CHAR	(void, dry well, no flow)
SAMPLE_ID	C	15 CHAR	(assigned by project)
SMP_DEVICE_TYPE	R	10 CHAR	(equipment type)
SMP_METHOD	R	10 CHAR	CONTINUOUS SAMPLE FLOW
AVG_PER	N	1 CHAR	(averaging period)
COMMENTS	O	200 CHAR	

Business Rules:

1. Only regular ambient air sample results are tracked in OREIS. Ambient air QC sample results will not be tracked.

2. SMP_COND is used to indicate the condition at the station (e.g., sampler didn't work properly, bird or rodent ate the filter) at sample collection time. The Ambient Air Program will use the code "VS" for "Voided Sample" to indicate the result was voided due to the condition at the station.

3. The D_COLLECTED is based on the SMP_METHOD (e.g., the end of month date for weekly composites). For other sampling it might be the date the device was triggered to begin collecting the sample. For K-25 this is the run date of the sampler.

4. The filter weight at Y-12 and ORNL is performed by the lab and is recorded as a lab measurement.

5. Samples are collected on a continuous basis for a specified time period. The sample goes to the lab for analysis. The results come back to the site where further calculations are done on the results to produce a final result which is reported to OREIS. Because of this, the time a sample was collected is meaningless and does not apply to the final result reported to OREIS. Therefore, OREIS will not contain a time collected for lab measurement samples.

6. Data must be supplied for the averaging period (AVG_PER) of each sample. This is a coded field (e.g., M = monthly, Q = quarterly, D = daily).

4.1.5 LAB_SMP Entity

Entity Name: **LAB_SMP** - The LAB_SMP table describes samples that are submitted for laboratory analysis. There must be an entry in the FLD_SMP for each sample processed by the laboratory. A laboratory sample is an environmental sample that is collected in the field and sent to the laboratory for analysis. There may be more than one lab sample for a given field sample. A lab sample is tied to a field sample.

Field Name	Req.	Length	(Comments)/Example Data
LAB_CODE	N	6 CHAR	ASO
LAB_SAMPLE_ID	C	15 CHAR	(assigned by lab)
MATRIX	N	6 CHAR	WATER, SOIL, AIR
COMMENTS	O	200 CHAR	

Business Rule:

All lab results reported to the sites by the lab are further manipulated by the sites and then reported to OREIS as the final calculated result. The LAB_CODE and LAB_SAMPLE_ID for the lab result are available to the sites and will be reported to OREIS with the final calculated result.

4.1.6 LAB_MEAS Entity

Entity Name: **LAB_MEAS** - The LAB_MEAS table contains the measurement data for a laboratory sample. A laboratory sample is an environmental sample that is collected in the field and sent to a laboratory for analysis. The table includes the measurement, parameter, analysis method, units, QA detection limit, etc.

Field Name	Req.	Length	(Comments)/Example Data
PARAMTR	N	9 CHAR	(CAS_ID)
RESULTS	N	38,10 NUM	
UNITS	N	10 CHAR	
RSLTQUAL	R	4 CHAR	
RSLT_PREFIX_QUALIFIER	C	1 CHAR	<, >
ANA_TYPE	N	7 CHAR	RADS, VOA
ANA_METHOD	N	30 CHAR	(CLP list)
LAB_METHOD	C	80 CHAR	
RAD_ERR	C	38,10 NUM	
COMMENTS	O	200 CHAR	

Business Rule:

Valid codes (e.g., PARAMTR, ANA_TYPE, METHOD, MATRIX, UNITS) must be used. The site can obtain the current valid code listings from the OREIS program office. If an invalid code is transferred OREIS will return the data transfer file to the site for correction.

4.2 FIELD MEASUREMENT DATA

The following entities contain fields associated with transferring field measurement data to OREIS. Entities PROJECT, STATION, and LOCATION also apply to field measurement data (see Sect. 4.1).

4.2.1 FLD_EVENT Entity

Entity Name: FLD_EVENT - The FLD_EVENT table contains data about a measurement event. A measurement event is an occasion where environmental parameters are measured in the field with or without collecting a sample (see FLD_MEAS).

Field Name	Req.	Length	(Comments)/Example Data
MED_TYPE	N	2 CHAR	AA
SMP_TYPE	N	10 CHAR	(REG = Regular)
SMP_COND	C	3 CHAR	(void, dry well, no flow)
SMP_DEVICE_TYPE	R	10 CHAR	(equipment type)
SMP_METHOD	R	10 CHAR	
D_COLLECTED	N	9 CHAR	(DDMONYYYY)
AVG_PER	N	1 CHAR	(averaging period)
COMMENTS	O	200 CHAR	

Business Rules:

1. The filter weight taken at K-25 in the field is not sent to the lab. The weight result is stored as a field measurement.

2. SMP_COND is used to indicate the condition at the station (e.g., sampler didn't work properly, bird or rodent ate the filter) at sample collection time. The Ambient Air Program will use the code "VS" for "Voided Sample" to indicate the result was voided due to the condition at the station.

3. Y-12 and ORNL do not collect field measurements.

4. The D_COLLECTED for K-25 must be the run date of the sampler.

5. Data must be supplied for the averaging period [AVG_PER] of each sample. This is a coded field (e.g., M = monthly, Q = quarterly, D = daily).

4.2.2 FLD_MEAS Entity

Entity Name: FLD_MEAS - The FLD_MEAS table contains the measurement data for the environmental parameters collected in a measurement event (see FLD_EVENT). Examples are flow rate and temperature. It includes results, QA qualifiers, etc.

Field Name	Req.	Length	(Comments)/Example Data
PARAMTR	N	9 CHAR	
RESULTS	N	38,10 NUM	
UNITS	N	10 CHAR	
RSLTQUAL	R	4 CHAR	
RSLT_PREFIX_QUALIFIER	C	1 CHAR	<, >
SUM_METHOD	C	6 CHAR	(min/max)
COMMENTS	O	200 CHAR	

Business Rule:

Valid codes (e.g., PARAMTR, ANA_TYPE, METHOD, MATRIX, UNITS) must be used. The site can obtain the current valid code listings from the OREIS program office. If an invalid code is transferred, OREIS will return the data transfer file to the site for correction.

5. CHANGES TO OREIS DATA BASE STRUCTURE

This section describes changes made to the OREIS data base structure to support the Ambient Air program.

Entity Name:	**FLD_SMP**	
Added two new fields:	AVG_PER SMP_COND	2 characters 3 characters
Entity Name:	**FLD_EVENT**	
Added one new field:	AVG_PER	2 characters

Definitions:

AVG_PER	Required for the Ambient Air Program. The period of time over which the sample was taken or a composite of samples were taken. See CODE table where CODE_TYPE = AVG_PER for a list of valid values and their descriptions.
STA_GROUP	*(Add the following sentence to the end of the current OREIS definition.)* As a requirement of DOE, the ORR Ambient Air Program must distinguish between the data collected at PAM stations (Perimeter Air Monitoring stations for the entire reservation) and RAM stations (Remote Air Monitoring stations for the entire reservation). The STA_GROUP field can provide this grouping capability.

6. CHANGES TO OREIS CODE TABLES

This section describes changes made to the OREIS code tables to support the Ambient Air program.

CODE_TYPE:	**AVG_PER**
D	DAILY
M	MONTHLY
Q	QUARTERLY

CODE_TYPE:	**SMP_DEVICE_TYPE**
HV	High Volume Air Sampler
LV	Low Volume Air Sampler
PM10	Respirable Particulate Monitor
TM	Tritium Monitor
XG	External Gamma Air Monitor

CODE_TYPE:	**SMP_METHOD**
CSF	Continuous Sample Flow

CODE_TYPE:	**UNITS**
mrem/h	millirem per hour
ug/m3	microgram per cubic metre
mg/m3	milligram per cubic metre

CODE_TYPE:	**SMP_COND**
VS	Voided Sample

7. DATA TRANSFER SPECIFICATIONS

Data can be transferred to OREIS using any of the data base export file formats specified in the latest revision of the ER procedure ERWM/ER-P2701, *Transmitting Data to the Oak Ridge Environmental Information System (OREIS)*. Data that are transmitted to OREIS will be evaluated by OREIS staff to ensure that the transmitted data are consistent, complete, qualified, and documented. This specification introduces a special ASCII comma delimited file format designed to meet the needs of ambient air data.

7.1 GENERAL SUBMISSION RULES

The ASCII comma-delimited data transfer file contains definition records and data records.

One definition record must precede each set of data records. The definition record contains each field name (upper or lower case) for which data will be supplied. A comma must separate each field name. Some field names are optional and will not be populated by some sites. Sect. 4.0 provides details concerning field requirements. Names of fields not populated should be excluded from the definition record.

All mandatory fields must be populated with data, else the entire data transfer file will be returned to the site for correction and resubmission.

The associated data records which follow the definition record must contain a piece of data for each field name in the definition record. A comma must separate each piece of data. Character fields must be enclosed by double quotes.

To indicate that a character field or numeric field is empty/null, use a comma (e.g., "HV",,"K25", ...) or a blank space (e.g., "HV"," ","K25", ...).

A blank is written to the data base as a blank.

No blank lines must exist between definition records and data records.

No blank spaces must exist between delimiter commas in the definition record and in the data record.

All dates must be in the format DDMONYYYY (9 CHARACTERS). All times must be in 24 hour, HHMM (4 CHARACTERS), format.

Definition records and data records which exceed 80 characters in length are not separated by a carriage return. These records are a continuous string until the end of the definition records is reached.

The data transfer file must follow the submission rules listed in this section. The entire data transfer file will be returned to the site if one error is found with the file. An explanation of why the file was returned will be supplied by OREIS. The site should correct the problem and re-submit the data transfer file.

The complete data transfer file will contain the following record types. A one-character record-type code is used to identify the record type. The # sign following a one-character record-type code denotes a definition record. One definition record will occur for each set of the same fields transmitted.

Header/trailer records:

H = header record
T = trailer record

Data records:

P = project record
R = permit record
L = location/station record
M = lab measurement record
F = field measurement record

7.2 HEADER AND TRAILER RECORD FORMATS AND SUBMISSION RULES

General format of the header and trailer definition records. Example header and trailer data records follow the definition records.

Field Name	**Req.**	**Length**
DATE_SENT_OREIS	M	9 CHAR
SENT_BY_SITE	M	10 CHAR
NUM_RECORDS	M	4 NUMBER

```
H#,DATE_SENT_OREIS,SENT_BY_SITE
H,"06JUN1994","Y-12"
```

```
T#,NUM_RECORDS
T,200
```

Submission Rules:

1. It is mandatory that each data transfer file contain one header definition record followed by one header data record.
2. It is mandatory that each data transfer file contain one trailer definition record followed by one trailer data record.
3. NUM_RECORDS is a total count of every line-feed in the data transfer file.

7.3 PROJECT RECORD FORMATS AND SUBMISSION RULES

General format of the project data definition record. An example project data record follows the definition record.

P#,PROJ_SITE,PROJ_UNIT,PROJ_CODE,PROJ_DESCRIPTION,PROJ_NAME, PROJ_PROGRAM,SITE_NAME,SPONSOR,PROJ_CONTACT,D_INITIATED, D_COMPLETED,COM_PROJECT

P,"Y-12","AMBIENT AIR","AA","THE PURPOSE OF THIS PROJECT IS O...","AMBIENT AIR","CAA","Y-12","Y-12 ENVIRONMENTAL MANAGEMENT","ID SHELTON","05APR1993","04MAR1994","PROJECT COMMENTS"

Submission Rules:

1. PROJ_SITE, PROJ_CODE, PROJ_UNIT must be sent with each transmission of data to OREIS to help identify the set of data transmitted.

2. PROJ_DESCRIPTION, PROJ_NAME, PROJ_PROGRAM, SITE_NAME, SPONSOR, PROJ_CONTACT, D_INITIATED, and D_COMPLETED are provided with the first data transmission to OREIS and as the information changes.

3. Each data transfer file must contain one project definition record with the minimum field requirements of PROJ_SITE, PROJ_CODE, and PROJ_UNIT, followed by one project data record.

4. The COMMENTS in the PROJECT entity is called COM_PROJECT in the data transfer file definition record and are supplied when applicable.

7.4 LOCATION AND STATION RECORD FORMATS AND SUBMISSION RULES

General format of the location/station data definition record. An example location/station data record follows the definition record.

For initial submission of ambient air location/station records, one of the following definition records must be used.

If sending EASTING/NORTHING/GRID_SYS coordinates use the following definition record. Remember all mandatory fields must be populated (see Sect. 4.0). All other fields are populated when data are available. This information is only sent again if there has been a change in the initial submission of the location/station information (i.e., the location of a station has changed, the addition of a new station).

L#,EASTING,NORTHING,GRID_SYS,SITE,ELV_ERROR,ELV_METHOD, GRND_ELV,LOC_DESC,LOC_ERROR,LOC_METHOD,COM_LOCATION, STA_NAME,STA_TYPE,STA_STATUS,STA_GROUP,STA_DESC, D_DISCONTINUED,D_ESTABLISHED,COM_STATION

L,154910.8923,76485.3214,"ADMIN","K-25",15.0,"SURVEY",787.56,"THIS IS THE LOCATION DESCRIPTION","100 FT.","LOC METHOD","LOCATION COMMENTS","201","PP","A","REMOTE GROUP","THE STATION IS 6 FEET LONG AND 3 FEET WIDE","04JAN1994","05MAY1992","THESE ARE COMMENTS ABOUT THE STATION"

If sending LATITUDE/LONGITUDE coordinates use the following definition record. Remember all mandatory fields must be populated (see Sect. 4.0). All other fields are populated when data are available. This information is only sent again if there has been a change in the initial submission of the location/station information (i.e., the location of a station has changed, the addition of a new station).

L#,LATITUDE,LONGITUDE,SITE,ELV_ERROR,ELV_METHOD, GRND_ELV,LOC_DESC,LOC_ERROR,LOC_METHOD,COM_LOCATION, STA_NAME,STA_TYPE,STA_STATUS,STA_GROUP,STA_DESC, D_DISCONTINUED,D_ESTABLISHED,COM_STATION

L,36.2875,83.9452,"K-25",15.0,"SURVEY",787.56,"THIS IS THE LOCATION DESCRIPTION","100 FT.","LOC METHOD","LOCATION COMMENTS", "201","PP","A","REMOTE GROUP","THE STATION IS 6 FEET LONG AND 3 FEET WIDE","04JAN1994","05MAY1992","THESE ARE COMMENTS ABOUT THE STATION"

Submission Rules:

1. It is mandatory that the location and station data be sent to OREIS in the first data transfer file submission. This is a one time submission unless there is a change in location/station information.

2. It is mandatory that one set of coordinates be sent to OREIS (NORTHING/EASTING/GRID_SYS or LATITUDE/LONGITUDE). OREIS will do the necessary conversions to support the OREIS geographic information system.

3. It is mandatory that the STA_NAME + STA_TYPE be unique within a project.

4. The COMMENTS field in the LOCATION entity is called COM_LOCATION in the data transfer file definition record.

5. The COMMENTS field in the STATION entity is called COM_STATION in the data transfer file definition record.

7.5 LAB MEASUREMENT RECORD FORMATS AND SUBMISSION RULES

General format of the lab measurements data definition record. An example lab measurement data record follows the definition record. The definition record contains fields from FLD_SMP, LAB_SMP, and LAB_MEAS tables.

For normal samples use the following format:

```
M#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,D_COLLECTED,
SAMPLE_ID,SMP_DEVICE_TYPE,SMP_METHOD,AVG_PER,COM_FLD_SMP,
LAB_CODE,LAB_SAMPLE_ID,MATRIX,COM_LAB_SMP,PARAMTR,
RESULTS,UNITS,RSLTQUAL,RSLT_PREFIX_QUALIFIER,ANA_TYPE,
ANA_METHOD,LAB_METHOD,RAD_ERR,COM_LAB_MEAS
```

```
M,"201","AA","WS","REG","05JUN1993","123456789000000","HV","GRAB","M","THIS
IS A FIELD SAMPLE COMMENT....","ASO","121212121212121","AIR","THIS IS A
LAB SAMPLE COMMENT...","123456789",0.001,"MDG","!","<","OTHER",
"ANA METHOD","LABORATORY METHOD GOES HERE","2","THIS IS A LAB
MEAS COMMENT"
```

For voided samples use the following format:

```
M#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,D_COLLECTED,
SMP_COND,COM_FLD_SMP
```

```
M,"201","AA","WS","REG","05JUN1993","VS","THIS IS A FIELD SAMPLE
COMMENT"
```

Submission Rules:

1. For all submissions of lab measurement data, fields from the FLD_SMP, LAB_SMP, and LAB_MEAS tables are combined into a definition record.

2. It is mandatory that the STA_NAME + STA_TYPE be the first fields in the lab measurement records (the M# records).

3. At a minimum, STA_NAME, STA_TYPE, MED_TYPE, SMP_TYPE, D_COLLECTED, AVG_PER, LAB_CODE, LAB_SAMPLE_ID, MATRIX, PARAMTR, RESULTS, UNITS, ANA_TYPE, and ANA_METHOD must be transmitted with each set of data sent to OREIS.

4. There are two definition record formats used to transfer lab measurement data. Follow rules above to determine the appropriate format. All voided sample data must be sent with a separate definition record from normal sample data. The SMP_COND is mandatory for voided sample data and is not required for normal sample data.

5. The COMMENTS in the FLD_SMP entity is called COM_FLD_SMP in the data transfer file definition record.

6. The COMMENTS in the LAB_SMP entity is called COM_LAB_SMP in the data transfer file definition record.

7. The COMMENTS in the LAB_MEAS entity is called COM_LAB_MEAS in the data transfer file definition record.

8. The SAMPLE_ID, SMP_DEVICE_TYPE, SMP_METHOD, COM_FLD_SMP, COM_LAB_SMP, RSLTQUAL, RSLT_PREFIX_QUALIFIER, LAB_METHOD, RAD_ERR, and COM_LAB_MEAS should be sent when data are available.

7.6 FIELD MEASUREMENT RECORD FORMATS AND SUBMISSION RULES

General format of the field measurement data definition record. An example field measurement data record follows the definition record. The definition record contains fields from FLD_EVENT and FLD_MEAS tables.

For normal samples use the following format:

F#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,SMP_DEVICE_TYPE, SMP_METHOD,D_COLLECTED,AVG_PER,COM_FLD_EVENT,PARAMTR, RESULTS,UNITS,RSLTQUAL,RSLT_PREFIX_QUALIFIER,SUM_METHOD, COM_FLD_MEAS

F,"201","AA","WS","REG","HV","GRAB","04JUN1994","M","THIS IS A FIELD EVENT COMMENT","743992189",0.05,"MGD","!","<","0.005","THIS IS A FIELD MEASUREMENT COMMENT"

For voided samples use the following format:

F#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,SMP_COND, D_COLLECTED,COM_FLD_EVENT

F,"201","AA","WS","REG","VS","04JUN1994","THIS IS A FIELD EVENT COMMENT"

Submission Rules:

1. For all submissions of field measurement data, fields from the FLD_EVENT and FLD_MEAS tables are combined into a definition record.

2. It is mandatory that the STA_NAME + STA_TYPE be the first fields in the field measurement records (the F# records).

3. At a minimum, STA_NAME, STA_TYPE, MED_TYPE, SMP_TYPE, D_COLLECTED, AVG_PER, PARAMTR, RESULTS, and UNITS must be populated with each transmission of field sample data to OREIS.

4. The SMP_DEVICE_TYPE, SMP_METHOD, COM_FLD_EVENT, RSLTQUAL, RSLT_PREFIX_QUALIFIER, SUM_METHOD, and COM_FLD_MEAS should be sent when data are available.

5. There are two definition record formats used to transfer field measurement data. Follow rules above to determine the appropriate format. All voided sample data must be sent with a separate definition record from normal sample data. The

SMP_COND is mandatory for voided sample data and is not required for normal sample data.

6. The COMMENTS in the FLD_EVENT entity is called COM_FLD_EVENT in the data transfer file definition record.

7. The COMMENTS in the FLD_MEAS entity is called COM_FLD_MEAS in the data transfer file definition record.

8. The COM_FLD_EVENT, SUM_ METHOD, and COM_FLD_MEAS should be sent when data are available.

7.7 EXAMPLE DATA TRANSFER FILE

Initial submission of data must include the following records. Refer to Sect. 5.0 for the business rules on submissions of data.

```
H#,DATE_SENT_OREIS,SENT_BY_SITE
H,"06JUN1994","Y-12"
P#,PROJ_SITE,PROJ_UNIT,PROJ_CODE,PROJ_DESCRIPTION,PROJ_NAME,
PROJ_PROGRAM,SITE_NAME,SPONSOR,PROJ_CONTACT,D_INITIATED,
D_COMPLETED,COM_PROJECT
P,"Y-12","AMBIENT AIR","AA","THE PURPOSE OF THIS PROJECT IS
TO...","AMBIENT AIR","CAA","Y-12","Y-12 ENVIRONMENTAL
MANAGEMENT","ID SHELTON","05APR1993","04MAR1994","PROJECT
COMMENTS"
L#,LATITUDE,LONGITUDE,SITE,ELV_ERROR,ELV_METHOD,
GRND_ELV,LOC_DESC,LOC_ERROR,LOC_METHOD,COM_LOCATION,
STA_NAME,STA_TYPE,STA_STATUS,STA_GROUP,STA_DESC,
D_DISCONTINUED,D_ESTABLISHED,COM_STATION
L,36.2875,83.9452,"K-25",15.0,"SURVEY",787.56,"THIS IS THE LOCATION
DESCRIPTION","100 FT.","LOC METHOD","LOCATION COMMENTS",
"201","PP","A","REMOTE GROUP","THE STATION IS 6 FEET LONG AND 3
FEET WIDE","04JAN1994","05MAY1992","THESE ARE COMMENTS ABOUT
THE STATION"
M#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,D_COLLECTED,
SAMPLE_ID,SMP_DEVICE_TYPE,SMP_METHOD,AVG_PER,COM_FLD_SMP,
LAB_CODE,LAB_SAMPLE_ID,MATRIX,COM_LAB_SMP,PARAMTR,
RESULTS,UNITS,RSLTQUAL,RSLT_PREFIX_QUALIFIER,ANA_TYPE,
ANA_METHOD,LAB_METHOD,RAD_ERR,COM_LAB_MEAS
M,"201","AA","WS","REG","05JUN1993","123456789000000","HV","GRAB","M","THIS
IS A FIELD SAMPLE COMMENT....","ASO","121212121212121","AIR","THIS IS A
LAB SAMPLE COMMENT...","123456789",0.001,"MDG","!","<","OTHER",
"ANA METHOD","LABORATORY METHOD GOES HERE","2","THIS IS A LAB
MEAS COMMENT"
M#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,D_COLLECTED,
SMP_COND,COM_FLD_SMP
M,"201","AA","WS","REG","05JUN1993","VS","THIS IS A FIELD SAMPLE
COMMENT"
```

```
F#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,SMP_DEVICE_TYPE,
SMP_METHOD,D_COLLECTED,AVG_PER,COM_FLD_EVENT,PARAMTR,
RESULTS,UNITS,RSTLQUAL,RSLT_PREFIX_QUALIFIER,SUM_METHOD,
COM_FLD_MEAS
F,"201","AA","WS","REG","HV","GRAB","04JUN1994","M","THIS IS A FIELD
EVENT COMMENT","743992189",0.05,"MGD","!","<","0.005","THIS IS A FIELD
MEASUREMENT COMMENT"
F#,STA_NAME,STA_TYPE,MED_TYPE,SMP_TYPE,SMP_COND,
D_COLLECTED,COM_FLD_EVENT
F,"201","AA","WS","REG","VS","04JUN1994","THIS IS A FIELD EVENT
COMMENT"
[insert more records]
T#,NUM_RECORDS
T,200
```

8. OREIS DATA INTEGRITY CHECKS

Data that are transmitted to OREIS will be evaluated by OREIS staff to ensure that the transmitted data are consistent, complete, qualified and documented. The data base integrity checking process will confirm that (1) the number of records received matches the number of records provided in the trailer record, (2) the locations are valid, and (3) all coded fields sent to OREIS contain valid OREIS codes. OREIS will provide summary statistics to the users to verify what was loaded.

Reviews for data consistency and completeness may include (1) range checks, elementary statistics, or scatter plots of numeric and date fields to check for missing data, reasonable values, and outliers; (2) frequency tabulations and sorted lists of units, qualifiers, codes, and other selected character fields to check for missing data, miscoded data, and inconsistencies; (3) comparison of new and existing data checks for errors and wrong units of measure; (4) maps of station locations to verify coordinates; (5) checks to confirm that related records can be linked, i.e., that laboratory measurement results match with records that define the field sampling date and the coordinates of the sampling location, and (6) other checks based on the data (e.g., check for samples from discontinued stations).

9. REQUESTING CHANGES TO AMBIENT AIR DATA IN OREIS

A request for a change to ambient air data stored in OREIS will be handled according to the latest revision of ER procedure, ERWM/ER-P2703, *Submitting, Reviewing, and Approving Changes to the Oak Ridge Environmental Information System (OREIS).*

10. CONFIGURATION CONTROL

Configuration control of this technical specification will be handled according to the latest revision of the ER procedure, ERWM/ER-P2703, *Submitting, Reviewing, and Approving Changes to the Oak Ridge Environmental Information System (OREIS)*. Users should request changes to this specification as specified in the above procedure. The change request will be documented, reviewed, and approved by all ambient air monitoring groups and the OREIS staff.

11. REFERENCES

Data Dictionary for the Oak Ridge Environmental Information System (OREIS), Vol. 1, ES/ER/TM-116, Environmental Restoration Division, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, November 1994.

Data Management Plan for the Oak Ridge Environmental Information System (OREIS), ES/ER/TM-39/R1, Environmental Restoration Division, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, June 1994.

Federal Facility Agreement for the Oak Ridge Reservation, DOE/OR-104, U.S. Environmental Protection Agency Region IV, U.S. Department of Energy,Tennessee Department of Environment and Conservation, Atlanta, Georgia, January 1, 1992.

Submitting, Reviewing, and Approving Changes to the Oak Ridge Environmental Information System (OREIS), ERWM/ER-P2703, Rev. 1, Environmental Restoration (ER) Division Procedure, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, March 1995.

Tennessee Oversight Agreement between the United States Department of Energy and the State of Tennessee, May 13, 1991.

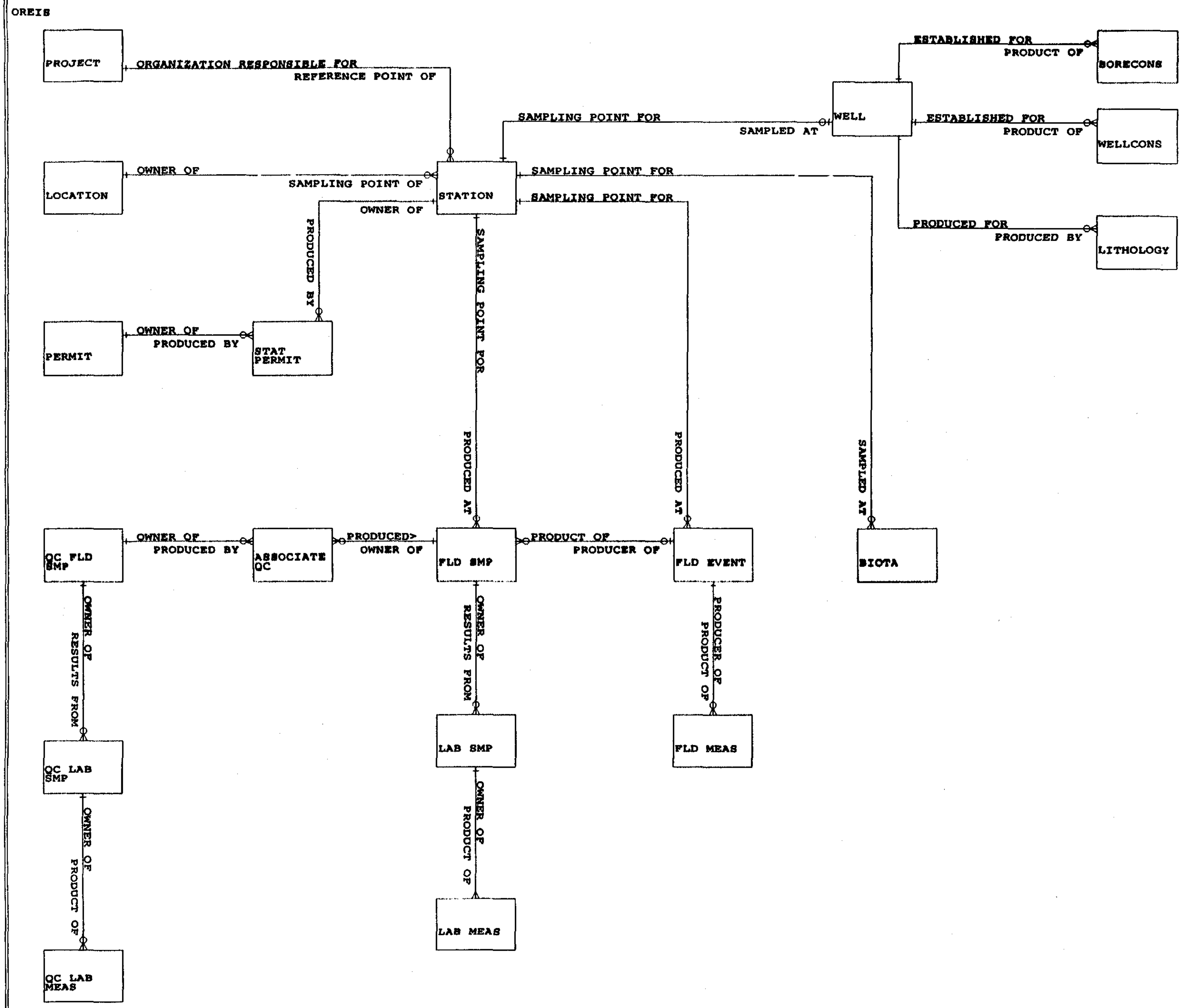
Transmitting Compliance Data in Ready-To-Load Form (RTL) to the Oak Ridge Environmental Information System, Environmental Restoration (ER) Division Procedure ERWM/ER-P2700.006, Rev. 0, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee (draft).

APPENDIX A

OREIS ENTITY RELATIONSHIP DIAGRAM

Model :OREIS2 Date: Nov. 18, 1994

Subset:ALL Time: 07:36



APPENDIX B

OREIS FIELD DEFINITIONS

OREIS FIELD DEFINITIONS

Refer to the latest revision of a controlled copy of the Data Dictionary for the Oak Ridge Environmental Information System (OREIS) (ES/ER/TM-116) for a complete listing of OREIS definitions. To ensure having the most current valid code listings (e.g., parameters, analysis methods, units) contact the OREIS program office.

Table: PROJECT

PROJ_SITE	Acronym for site initiating the work (e.g., ORNL, Y-12, K-25, Paducah, Portsmouth, or Offsite). See **CODE** table where CODE_TYPE = PROJ_SITE for a list of valid values and their descriptions.
PROJ_UNIT	Acronym of the geographic unit associated with the project (e.g., Surface Water, Ground Water, Ambient Air, WAG1).
PROJ_CODE	Acronym assigned by the project (e.g., "FCAP" for Filled Coal Ash Pond, "NPDES" for National Pollutant Discharge Elimination System).
PROJ_DESCRIPTION	Description of the project, often taken from the ORR Site Management Plan of the ER Program.
PROJ_NAME	The name of the project assigned by the project staff.
PROJ_PROGRAM	The environmental program, legislation, or DOE order that initiated the project (e.g., the Clean Water Act [CWA]).
SITE_NAME	Name of the site associated with this data.
SPONSOR	The organization responsible for data generation (e.g., Y-12 Environmental Management).
PROJ_CONTACT	The person at the site responsible for reporting data to DOE, the State of Tennessee, or a regulatory agency (e.g., format = JB SMITH).
D_INITIATED	Date that the project was initiated.
D_COMPLETED	Date the project was completed, if applicable.
COMMENTS	Comments about the project.

Table: LOCATION

EASTING	X-value (East-West) of the distance in feet of a sampling or measuring location from the reference location. Must have either GRID_SYS, EASTING, and NORTHING; or LATITUDE and LONGITUDE.
NORTHING	Y-value (North-South) of the distance in feet of a sampling or measuring location from the reference location. Must have either GRID_SYS, EASTING, and NORTHING; or LATITUDE and LONGITUDE.
GRID_SYS	Coordinate grid system, defines units used for EASTING and NORTHING. See CODE table where CODE_TYPE = GRID_SYS for a list of valid values and their descriptions. Must have either GRID_SYS, EASTING, and NORTHING; or LATITUDE and LONGITUDE.
LATITUDE	Geographic position of a station in degrees north of the equator. Must be in the format DDD.XXXXXX where DDD represents degrees and XXXXXX represents decimal degrees. Must have either GRID_SYS, EASTING, and NORTHING; or LATITUDE and LONGITUDE.
LONGITUDE	Geographic position of a station in degrees west of the Prime Meridian. Must be in the format DDD.XXXXXX, where DDD represents degrees and XXXXXX represents decimal degrees. Must have either GRID_SYS, EASTING, and NORTHING; or LATITUDE and LONGITUDE.
SITE	Acronym for the site within which the station is located (K-25, ORNL, Paducah, Portsmouth, Y-12, Offsite).
ELV_ERROR	Elevation measurement error in feet.
ELV_METHOD	Coded value that represents the elevation measurement method. See CODE table where CODE_TYPE = ELV_METHOD for a list of valid values and their descriptions.
GRND_ELV	Elevation of ground surface (for groundwater, soil, or sediment sampling) at a sampling or measuring location in feet above mean sea level (msl).
LOC_DESC	The description of the location of the station.
LOC_ERROR	Location error in feet.

LOC_METHOD	Method used for locating the station. See CODE table where CODE_TYPE = LOC_METHOD for a list of valid values and their descriptions.
COMMENTS	Comments about the location.

Table: STATION

STA_NAME	Unique station name assigned by the individual projects.
STA_TYPE	Type of station. See CODE table where CODE_TYPE = STA_TYPE for a list of valid values and their descriptions.
STA_STATUS	Status of the station. See CODE table where CODE_TYPE = STA_STATUS for a list of valid values and their description.
STA_GROUP	The station group indicates the grouping of stations designated by the project-based sampling design or other criteria (e.g., general category of discharge). For NPDES data, this field will contain one of the following outfall categories: CATEGORY I, CATEGORY II, CATEGORY III, and CATEGORY IV. A category is a grouping of outfalls for NPDES data. **As a requirement of DOE, the ORR Ambient Air Program must distinguish between the data collected at PAM stations (Perimeter Air Monitoring stations for the entire reservation) and RAM stations (Remote Air Monitoring stations for the entire reservation). The STA_GROUP field can provide this grouping capability.**
STA_DESC	Description of the specific sampling or measuring location.
D_DISCONTINUED	Date the station was discontinued in the field, if possible.
D_ESTABLISHED	Date the station was established in the field.
COMMENTS	Comments about the station.

Table: FLD_SMP

MED_TYPE	Coded value that represents the sample medium. See CODE table where CODE_TYPE = MED_TYPE for a list of valid values and their descriptions.

SMP_TYPE	Coded value that represents the type of sample collected. See CODE table where CODE_TYPE = SMP_TYPE for a list of valid values and their descriptions.
D_COLLECTED	Date sample was collected. This may not exist for historical data.
SMP_COND	The coded value that represents conditions at the station at collection time (e.g., VS = Voided Sample, NF = No Flow, DW = Dry Well). See CODE table where CODE_TYPE = SMP_COND for a list of valid values and their descriptions.
SAMPLE_ID	Unique sample identifier assigned by the project, if available.
SMP_DEVICE_TYPE	Coded value that represents the name of the equipment used to collect the sample (e.g., bailer, centrifugal pump). See CODE table where CODE_TYPE = SMP_DEVICE_TYPE for a list of valid values and their descriptions.
SMP_METHOD	Coded value that represents the sampling method. See CODE table where CODE_TYPE = SMP_METHOD for a list of valid values and their descriptions.
AVG_PER	**Required for the Ambient Air Program. The period of time over which the sample was taken or a composite of samples were taken. See CODE table where CODE_TYPE = AVG_PER for a list of valid values and their descriptions.**
COMMENTS	Comments about the field sample.

Table: LAB_SMP

LAB_CODE	Coded value assigned by the project that represents the analytical laboratory that performed the analysis of the sample. See the CODE table where CODE_TYPE = LAB_CODE for a list of valid values and their descriptions.
LAB_SAMPLE_ID	Unique value assigned by the analytical laboratory to identify the sample, if a SAMPLE_ID exists.
MATRIX	Sample medium being analyzed (i.e., soil or water). See CODE table where CODE_TYPE = MATRIX for a list of valid values and their descriptions.

COMMENTS	Comments about the sample.

Table: LAB_MEAS

PARAMTR	Chemical Abstract Services number without dashes if it is contained in the OREIS **PARAMETER** table. If not, it is a non-CAS number assigned by the Common Lab Practices Committee, or a non-standard number assigned by OREIS staff representing a parameter/analyte/measurement.
RESULTS	Measurement for a given parameter, reported in units consistent with the OREIS Data Management Plan.
UNITS	Coded value that represents the units of measure used to report the parameter value. See **CODE** table where CODE_TYPE = UNITS for a list of valid values and their descriptions.
RSLTQUAL	Coded value that documents any conditions associated with the results of the analysis. See **CODE** table where CODE_TYPE = RSLTQUAL for a list of valid values and their descriptions.
RSLT_PREFIX_QUALIFIER	A qualifier indicating whether the result is below, within, or above range limits. See **CODE** table where CODE_TYPE = RSLT_PREFIX_QUALIFIER for a list of valid values and their descriptions. Required for National Pollutant Discharge Elimination System (NPDES) and Ambient Air.
ANA_TYPE	Coded value of the chemical group to which the analyte belongs. See **CODE** table where CODE_TYPE = ANA_TYPE for a list of valid values and their descriptions.
ANA_METHOD	Method number assigned by the Common Lab Practices Committee to identify a standard analysis method.
LAB_METHOD	Name of the laboratory method used to perform the analysis if not a standard method defined in the **METHOD** table.
RAD_ERR	The counting error for a specific radionuclide expressed as 2 standard deviations, for RAD data.
COMMENTS	Comments about the individual sample.

Table: FLD_EVENT

MED_TYPE	Coded value that represents the measurement medium. See CODE table where CODE_TYPE = MED_TYPE for a list of valid values and their descriptions.
SMP_TYPE	Coded value that represents the type of measurement collected. See CODE table where CODE_TYPE = SMP_TYPE for a list of valid values and their descriptions.
SMP_COND	The coded value that represents conditions at the station at collection time (e.g., VS = Voided Sample, NF = No Flow, DW = Dry Well). See CODE table where CODE_TYPE = SMP_COND for a list of valid values and their descriptions.
SMP_DEVICE_TYPE	Coded value that represents the name of the equipment used to collect the sample (e.g., bailer, centrifugal pump). See CODE table where CODE_TYPE = SMP_DEVICE_TYPE for a list of valid values and their descriptions.
SMP_METHOD	Coded value that represents the measurement method. See CODE table where CODE_TYPE = SMP_METHOD for a list of valid values and their descriptions.
D_COLLECTED	Date measurement was taken. This may not exist for historical data.
AVG_PER	**Required for the Ambient Air Program. The period of time over which the sample was taken or a composite of samples were taken. See CODE table where CODE_TYPE = AVG_PER for a list of valid values and their descriptions.**
COMMENTS	Comments about the field events.

Table: FLD_MEAS

PARAMTR	Chemical Abstract Services number without dashes if it is contained in the OREIS PARAMETER table. If not, it is a non-CAS number assigned by the Common Lab Practices Committee, or a non-standard number assigned by OREIS staff representing a parameter/analyte/measurement.

RESULTS	Measurement for a given parameter, reported in units consistent with OREIS Data Management Plan.
UNITS	Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = UNITS for a list of valid values and their descriptions.
RSLTQUAL	Coded value that documents any conditions associated with the results of the analysis. See CODE table where CODE_TYPE = RSLTQUAL for a list of valid values and their descriptions.
RSLT_PREFIX_QUALIFIER	A qualifier indicating whether the result is below, within, or above range limits. See CODE table where CODE_TYPE = RSLT_PREFIX_QUALIFIER for a list of valid values and their descriptions. Required for National Pollutant Discharge Elimination System (NPDES) and Ambient Air.
SUM_METHOD	Summation method used to aggregate data, such as maximum or mean, if one is used.
COMMENTS	Comments about the measurement.

ES/ER/TM-145

DISTRIBUTION

1. L. V. Asplund
2. J. B. Atwater
3. B. A. Berven
4. H. L. Boston
5. W. P. Carlton
6. J. M. Coe
7. J. S. Colley
8. D. G. Cope
9. W. D. Dillow
10. T. E. Hart
11. T. W. Hendren
12. D. D. Herr
13. S. G. Hildebrand
14. J. F. Hines
15. C. G. Holmes
16. R. K. Holmes
17. J. F. Hughes
18. M. M. Humphreys
19. T. L. James
20. M. A. Kuliasha
21. M. L. Land
22. F. E. Latham
23. J. R. Lyons
24-26. D. M. Matteo (3)
27. H. B. McElhoe
28-37. M. P. North (10)
38-39. P. T. Owen (2)
40. M. R. Palmer
41. T. C. Perry
42-44. A. S. Quist (3)
45. I. D. Shelton
46. R. Sinovec
47. D. S. Tharpe
48. J. K. Thomas
49. E. D. Tinnel
50. C. C. Travis
51. B. G. Zygmunt
52. Central Research Library
53-55. Central ER Doc. Mgmt. Center (3)
56. Laboratory Records Department
57. Y-12 Central Files

58. M. W. Vestal, Tennessee Department of Environment and Conservation, DOE Oak Ridge Operations Office, 761 Emory Valley Road, Oak Ridge, TN 37830
59. T. W. Hendren, Tennessee Department of Environment and Conservation, DOE Oak Ridge Operations Office, 761 Emory Valley Road, Oak Ridge, TN 37830
60. R. C. Sleeman, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, Tn 37831-8541