

**ENVIRONMENTAL
RESTORATION
PROGRAM**

**Technical Specification for Transferring
Tank Construction Data to the Oak Ridge
Environmental Information
System (OREIS)**

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Tank Construction Data to the Oak Ridge
Environmental Information
System (OREIS)**

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

Date Issued—June 1996

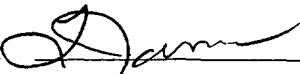
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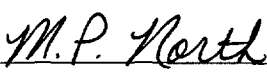
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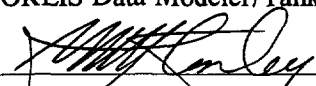
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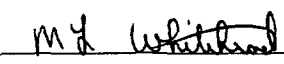
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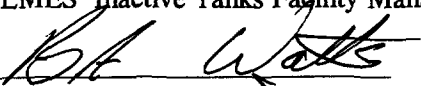
Technical Specification for Transferring Tank Construction Data to the Oak Ridge Environmental Information System (OREIS) (ES/ER/TM-189)

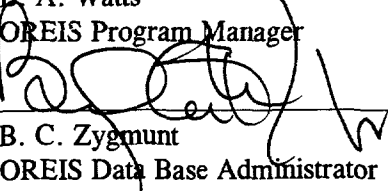
Approved by:  Date: 5/12/96
T. L. James
OREIS Data Base Team Leader

Approved by:  Date: 5/10/96
M. P. North
OREIS Data Modeler/Tank Team Facilitator

Approved by:  Date: 6/3/96
A. M. Stanley
K-25 Tank Representative

Approved by:  Date: 5/10/96
M. L. Whitehead
LMES Inactive Tanks Facility Manager

Approved by:  Date: 5.28.96
B. A. Watts
OREIS Program Manager

Approved by:  Date: 5/28/96
B. C. Zygmunt
OREIS Data Base Administrator

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 tank construction data to the Oak Ridge Environmental Information System (OREIS). This work was performed under Work Breakdown Structure Number 1.4.12.2.3.04.04.01 (Activity Data Sheet 8304).

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B. A. Watts, an employee of Environmental Restoration, Lockheed Martin Energy Systems, Inc. (LMES), is Program Manager of the Oak Ridge Environmental Information System (OREIS). OREIS Team Leaders are P. J. Pace, T. L. James, M. L. Land, J. K. Thomas, and E. P. Tinnel. E. P. Tinnel is a member of the Computational Physics and Engineering Division (CPED), Oak Ridge National Laboratory (ORNL); P. J. Pace and T. L. James are University of Tennessee (UT) subcontractors with CPED. M. L. Land and J. K. Thomas are members of the Health Sciences Research Division (HSRD), ORNL.

M. P. North, lead author of this document and facilitator for the Tanks Technical Specifications Team, is a member of Data Systems Research and Development (DSRD), LMES.

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ABBREVIATIONS

| | |
|-------|--|
| C | conditional |
| CPED | Computational Physics and Engineering Division |
| CWA | Clean Water Act |
| DOE | U.S. Department of Energy |
| EPA | Environmental Protection Agency |
| ER | Environmental Restoration |
| FCAP | Filled Coal Ash Pond |
| FFA | Federal Facility Agreement |
| HSRD | Health Sciences Research Division |
| LMES | Lockheed Martin Energy Systems, Inc. |
| M | mandatory |
| M&O | Maintenance and Operations |
| msl | mean sea level |
| NPDES | National Pollutant Discharge Elimination System |
| OREIS | Oak Ridge Environmental Information System |
| ORNL | Oak Ridge National Laboratory |
| ORR | Oak Ridge Reservation |
| PAD | Paducah Gaseous Diffusion Plant |
| PORTS | Portsmouth Gaseous Diffusion Plant |
| R | recommended |
| RTL | ready-to-load |
| SWMU | Solid Waste Management Unit |
| TDEC | Tennessee Department of Environment and Conservation |
| TOA | Tennessee Oversight Agreement |
| UT | University of Tennessee |

EXECUTIVE SUMMARY

In February 1996, a team was formed to develop, document, and implement technical specifications for transmitting tank construction data to the Oak Ridge Environmental Information System (OREIS). This document describes the requirements, responsibilities, criteria, and format for transmitting tank construction data to OREIS as determined by the Tank Technical Specification Team. The approach used to transmit these data is documented in ERWM/ER-P2701, *Transmitting Data to the Oak Ridge Environmental Information System*.

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 tank construction data maintained in Oak Ridge, Tennessee, by the U.S. Department of Energy's (DOE) Maintenance and Operations (M&O) contractor Lockheed Martin Energy Systems, Inc. (LMES), and prime contractors to the Department of Energy (DOE).

This technical specification describes the organizational responsibilities for loading tank construction data into OREIS, describes the logical and physical data transfer files, 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 site requirements.

1.2 SCOPE

This technical specification addresses the tank construction data maintained by the Y-12, K-25, and ORNL sites that will be sent to OREIS. The initial submission of data will include only inactive Environmental Restoration tanks as specified by the FFA.

1.3 PARTICIPANTS

The team consisted of site tank representatives and OREIS technical staff. The initial activities required tank representatives to determine the availability of data for loading into OREIS and to alter data management activities as required to conform to a common data transfer specification. Follow-on activities required computing personnel to modify, test, and implement application systems to transfer the data via the technical specification.

1.4 FREQUENCY OF SUBMISSION

When fully implemented, tank construction data will be sent to OREIS for the inactive Environmental Restoration FFA tanks which pertain to the gunite monitoring tank data and the Old Hydrofracture Facility monitoring tank data. Any new tank construction data will be sent to OREIS prior to or with any associated tank measurements data.

1.5 OREIS DATA MODEL

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 structures, descriptions of the data base tables, and listings of valid values for codes, parameters, and methods.

The appendix contains the OREIS Entity Relationship Diagram.

2. ROLES AND RESPONSIBILITIES

2.1 ENVIRONMENTAL RESTORATION ORGANIZATION

The site environmental restoration programs collect tank construction data and are responsible for overseeing the data activities for transmitting data to the 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) 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 tank construction data from the sites as defined in this specification. OREIS responsibilities include:

- obtaining a data transmittal package from each site which indicates the location of the data transfer file and the individual transmitting the data (e.g., the site may have a directory on the OREIS machine where the data transfer file can be copied; the transmittal package tells OREIS the file is ready to process);
- processing the data received;
- conducting data base integrity checks;
- loading the data into OREIS;
- providing a processing summary for review by data generators (to obtain authorization to release the data to the public);
- providing the data and metadata to DOE, Environmental Protection Agency (EPA), and Tennessee Department of Environment and Conservation (TDEC);
- providing a user-friendly and integrated means of accessing the data contained in the OREIS data base;
- maintaining and validating the valid values listings for codes, parameters, units of measure, analysis methods, etc.;
- maintaining a data dictionary which defines all OREIS data base tables, field names, field definitions, field formats, field optionality, etc.;
- communicating changes to the lists of OREIS code values to users through the OREIS User Services activities;

- providing a way for modifications to this specification and the tank construction 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
- making every possible and reasonable effort to ensure that the tank construction data are not manipulated or misrepresented such that invalid conclusions may be drawn from the use of the data.

3. LOGICAL FILE LAYOUT AND BUSINESS RULES

This section contains a logical representation of the subset of the OREIS model that pertains to the tank construction data. The entity names, entity definitions, field names, data types, field lengths, and field definitions are shown for each entity type. The requirement for each field is shown under the Req. (requirement) column. The categories are "M" (mandatory), "R" (recommended), and "C" (conditional). Field names marked "M" must be sent to OREIS. The data for "R" fields, if it is available or can be obtained, should be transmitted to OREIS. The physical data base field name is in ("[]") brackets.

Specifications for physically transmitting data to OREIS and associated submission rules are in Sect. 7.

3.1 TANK CONSTRUCTION DATA

The following entity types contain fields associated with transferring tank construction data to OREIS.

3.1.1 PROJECT Entity Type

A PROJECT is an environmental program responsible for collecting samples or taking measurements and 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 | Data Type | Length | Req. | Definition |
|-----------------------------|-----------|--------|------|--|
| Project Site [PROJ_SITE] | VARCHAR2 | 10 | M | Coded value that represents the site initiating the work (e.g., X-10, Y-12, K-25, ORR, PAD, PORTS, OFFSITE). See CODE table where CODE_TYPE = PROJ_SITE for a list of valid values and their descriptions. |
| Project Code [PROJ_CODE] | VARCHAR2 | 30 | M | Acronym assigned by the project (e.g., 'FCAP' for Filled Coal Ash Pond, 'NPDES' for National Pollutant Discharge Elimination System, K-25 Groundwater, Y-12 Groundwater). |

| Field Name | Data Type | Length | Req. | Definition |
|---|------------------|---------------|-------------|---|
| Project Name [PROJ_NAME] | VARCHAR2 | 100 | M | Name of the project assigned by the project staff (e.g., National Pollutant Discharge Elimination System, Y-12 Groundwater). |
| Date Completed [D_COMPLETED] | DATE | . | C | Date the project was completed, if applicable. |
| Date Initiated [D_INITIATED] | DATE | . | R | Date that the project was initiated. |
| Project Contact [PROJ_CONTACT] | VARCHAR2 | 20 | R | The person at the site responsible for reporting data to DOE, the State of Tennessee, or a regulatory agency (e.g., format = JB SMITH). |
| Project Description [PROJ_DESCRIPTION] | VARCHAR2 | 240 | R | Description of the project, often taken from ORR Site Management Plan of the ER Program. |
| Project Program [PROJ_PROGRAM] | VARCHAR2 | 8 | R | The environmental program, legislation, or DOE order that initiated the project (e.g., the Clean Water Act [CWA]). |
| Sponsor [SPONSOR] | VARCHAR2 | 50 | R | The organization responsible for data generation (e.g., Y-12 Environmental Management). |
| ADS Name [ADS_NAME] | VARCHAR2 | 60 | R | Activity data sheet name. |
| ADS Number [ADS_NUM] | VARCHAR2 | 10 | R | Activity data sheet number. |
| Comments [COMMENTS] | VARCHAR2 | 2000 | R | Comments about the project. |

Business Rules:

- If a PROJECT record already exists in OREIS, with the submission of tank construction data the PROJ_SITE, PROJ_CODE, and PROJ_NAME must be supplied at a minimum to help identify the PROJECT the tank construction data belongs to.

3.1.2 STATION Entity Type

The STATION table contains data about sampling points associated with one or more projects. Each point has a distinct station name/station type within a project.

| Field Name | Data Type | Length | Req. | Definition |
|---------------------------------------|-----------|--------|------|--|
| Station Name [STA_NAME] | VARCHAR2 | 15 | M | Unique station name assigned by the individual projects (e.g., GW101). |
| Station Type [STA_TYPE] | VARCHAR2 | 2 | M | Coded value that represents the type of station (e.g., seep, spring, well). See CODE table where CODE_TYPE = STA_TYPE for a list of valid values and their descriptions. |
| Station Status [STA_STATUS] | VARCHAR2 | 2 | R | Coded value that represents the status of the station (e.g., active, inactive, destroyed, lost, plugged and abandoned). See CODE table where CODE_TYPE = STA_STATUS for a list of valid values and their descriptions. |
| Station Description [STA_DESC] | VARCHAR2 | 200 | R | Description of the specific sampling or measuring location. |
| Date Discontinued [D_DISCONTINUED] | DATE | . | C | Date the station was discontinued or plugged and abandoned in the field, if applicable. |
| Date Established [D_ESTABLISHED] | DATE | . | C | Date the station was established in the field. For a hole, this is the date when construction of the hole is completed. |

| Field Name | Data Type | Length | Req. | Definition |
|---|-----------|--------|------|--|
| Associated Facility Number [ASSOC_FACILITY_NO] | VARCHAR2 | 8 | C | Environmental Restoration Program Facility or building number associated with the station. |
| Comments [COMMENTS] | VARCHAR2 | 2000 | R | Comments about the station. |

Business Rule(s):

- The STA_NAME + STA_TYPE must be unique within a project.
- If a STATION record already exists in OREIS for a particular tank, at a minimum the STA_NAME and STA_TYPE must be supplied with the submission of tank construction data to help identify the STATION the tank construction data are associated with.

3.1.3 LOCATION Entity Type

The LOCATION table contains coordinate and other information describing a point on the ground. Most locations are points described by x y coordinates, but a location could be a line or a polygon where measuring events occur. In those cases, a single point, such as the estimated center point, is used.

| Field Name | Data Type | Length | Req. | Definition |
|-----------------------------------|-----------|--------|------|---|
| Site [SITE] | VARCHAR2 | 10 | M | Coded value that represents the site where the coordinates are located (e.g., X-10, Y-12, K-25, ORR, PAD, PORTS, OFFSITE). See CODE table where CODE_TYPE = SITE for a list of valid values and their descriptions. |
| Received X Coordinate [RCVD_X] | NUMBER | | M | Received X-value of the distance in feet or decimal degrees, of a sampling or measuring location from the reference location. |

| Field Name | Data Type | Length | Req. | Definition |
|--|-----------|--------|------|--|
| Received Y Coordinate [RCVD_Y] | NUMBER | . | M | Received Y-value of the distance in feet or decimal degrees, of a sampling or measuring location from the reference location. |
| Received Coordinate System [RCVD_COORD_SYS] | VARCHAR2 | 10 | M | Coded value that represents the coordinate system which defines units used for RCVD_X and RCVD_Y. See CODE table where CODE_TYPE = RCVD_COORD_SYS for a list of valid values and their descriptions. |
| Date Location Established [D_LOC_ESTABLISHED] | DATE | . | R | The date the location was surveyed. |
| Elevation Error [ELV_ERROR] | NUMBER | . | R | Elevation measurement error in feet. |
| Elevation Method [ELV_METHOD] | VARCHAR2 | 10 | C | 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. |
| Ground Elevation [GRND_ELV] | NUMBER | . | R | Elevation of ground surface (for groundwater, soil, or sediment sampling) at a sampling or measuring location in feet above mean sea level (msl). |
| Location Description [LOC_DESC] | VARCHAR2 | 200 | R | The description of the location of the station. |
| Solid Waste Management Unit [SWMU] | VARCHAR2 | 10 | C | Acronym for Solid Waste Management Unit, if applicable. |

| Field Name | Data Type | Length | Req. | Definition |
|------------------------|-----------|--------|------|------------------------------|
| Comments [COMMENTS] | VARCHAR2 | 2000 | R | Comments about the location. |

3.1.4 STATION_EVENT Entity Type

The STATION_EVENT table contains data about an event occurring at one station, during which SAMPLES and any associated FLD_SMP_MEASUREMENTS are taken at a point in time. FIELD_MEASUREMENTS can also be taken during a STATION_EVENT which are not directly associated with a SAMPLE.

| Field Name | Data Type | Length | Req. | Definition |
|----------------------------|-----------|--------|------|---|
| Date Start [D_START] | DATE | | M | The date the sampling began at the STATION. |
| Date End [D_END] | DATE | | M | The date the sampling ended at the STATION. |
| Event Name [EVENT_NAME] | VARCHAR2 | 40 | R | The EVENT_NAME indicates the grouping of measurement results designated by the project. |
| Time End [T_END] | VARCHAR2 | 4 | R | The time the sampling ended at the station. |
| Time Start [T_START] | VARCHAR2 | 4 | R | The time the sampling started at the station. |
| Comments [COMMENTS] | VARCHAR2 | 2000 | R | Comments about the station event. |

Business Rules:

- If a STATION_EVENT record already exists in OREIS, with the submission of tank construction data the D_START, D_END and/or EVENT_NAME must be supplied at a minimum to help identify the STATION_EVENT the tank construction data belongs to.

3.1.5 STAT_ALIAS Entity Type

An alternate name by which a given station is identified.

| Field Name | Data Type | Length | Req. | Definition |
|----------------------------|-----------|--------|------|--|
| Alias Name [ALIAS_NAME] | VARCHAR2 | 40 | M | Alternative or additional names used in records and reports to refer to the station. |

| Field Name | Data Type | Length | Req. | Definition |
|------------------------|-----------|--------|------|-----------------------------------|
| Comments [COMMENTS] | VARCHAR2 | 2000 | R | Comments about the station alias. |

3.1.6 PROJECT_STATION_EVENT Entity Type

The PROJECT_STATION_EVENT table is an association of a STATION_EVENT which has data of interest to a specific PROJECT. Resolves the fact that data collected during a particular STATION_EVENT may be shared by multiple PROJECTs.

| Field Name | Data Type | Length | Req. | Definition |
|------------------------------|-----------|--------|------|--|
| Station Group [STA_GROUP] | VARCHAR2 | 30 | R | The STA_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 out falls for NPDES data. |
| Sample Group [SMP_GROUP] | VARCHAR2 | 30 | R | The SMP_GROUP indicates the grouping of measurement events designated by the project-based sampling design or other criteria, if available. |

Business Rules:

- The STA_GROUP is used to indicate the grouping of tanks (e.g., GROUP1, GROUP2).

3.1.7 TANK Entity Type

A TANK is an environmental container as defined in the Federal Facility Agreement (FFA) for the Oak Ridge Reservation (ORR). A tank is assigned to one of four categories (A, B, C, D). A tank can be new or replacement tank system(s) with secondary containment; an existing tank system(s) with secondary containment; an existing tank system(s) without secondary containment; or an existing tank system(s) without secondary containment that are removed from service.

| Field Name | Data Type | Length | Req. | Definition |
|--|-----------|--------|------|--|
| Federal Facility Agreement Category [FFA_CAT] | VARCHAR2 | 2 | M | Coded value that represents the Federal Facility Agreement Category assigned to a tank. See CODE table where CODE_TYPE = FFA_CAT for a list of valid values and their descriptions. |
| Level Detection [LEVEL_DETECT] | VARCHAR2 | 4 | R | Coded value that represents the type of device installed to measure tank levels. See CODE table where CODE_TYPE = LEVEL_DETECT for a list of valid values and their descriptions. |
| Tank Construction Material [TANK_CONSTR_MAT] | VARCHAR2 | 3 | M | Coded value that represents the physical material used to construct the tank shell and related components. See CODE table where CODE_TYPE = TANK_CONSTR_MAT for a list of valid values and their descriptions. |
| Cathode Protection [CATH_PROT] | VARCHAR2 | 2 | R | A logical field denoting if cathodic protection was implemented for the tank (e..g., Y=Yes, N=No, NA=Not Available). |
| Tank Orientation [TANK_ORIENT] | VARCHAR2 | 1 | R | Coded value that represents the orientation of the tank's major axis. See CODE table where CODE_TYPE = TANK_ORIENT for a list of valid values and their descriptions. |
| Outer Diameter Value [OUTER_DIAM_VAL] | NUMBER | | R | Measurement of the outer diameter about the tank's major axis, in feet. |

| Field Name | Data Type | Length | Req. | Definition |
|--------------------------------------|-----------|--------|------|---|
| Height Value [HEIGHT_VAL] | NUMBER | | C | Measurement of height about the tank's major axis. The height of the tank must be supplied if the TANK_ORIENT is vertical. |
| Length Value [LENGTH_VAL] | NUMBER | | C | Measurement of length about the tank's major axis. The length of the tank must be supplied if the TANK_ORIENT is horizontal. |
| Capacity [CAPACITY] | NUMBER | | R | Measurement of tank volume. |
| Capacity Unit [CAP_UNIT] | VARCHAR2 | 10 | R | Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = CAP_UNITS for a list of valid values and their descriptions. |
| Burial Depth [BURIAL_DEPTH] | NUMBER | | R | Burial depth to top of tank, relative to the ground surface. |
| Burial Depth Unit [BURIAL_UNIT] | VARCHAR2 | 10 | R | Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = BURIAL_UNITS for a list of valid values and their descriptions. |
| Shell Thickness [SHELL_THICKNESS] | NUMBER | | R | Measurement of tank wall thickness about the major axis. |
| Shell Thickness Unit [SHELL_UNIT] | VARCHAR2 | 10 | R | Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = SHELL_UNITS for a list of valid values and their descriptions. |

| Field Name | Data Type | Length | Req. | Definition |
|------------------------------------|-----------|--------|------|---|
| Head Thickness [HEAD_THICKNESS] | NUMBER | | R | Measurement of tank wall thickness at ends or top/bottom. |
| Head Thickness Unit [HEAD_UNIT] | VARCHAR2 | 10 | R | Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = HEAD_UNITS for a list of valid values and their descriptions. |

3.1.8 TANK_MEDIA_TYPE Entity Type

The TANK_MEDIA_TYPE is the medium(s) from which a sample was collected in the tank.

| Field Name | Data Type | Length | Req. | Definition |
|--------------------------|-----------|--------|------|--|
| Media Type [MED_TYPE] | VARCHAR2 | 2 | M | Coded value that represents the part of the environment from which a sample is collected, or on which a field measurement or observation is made. See CODE table where CODE_TYPE = MED_TYPE for a list of valid values and their descriptions. |

3.1.9 CONTAIN_SYS_TYPE Entity Type

The CONTAIN_SYS_TYPE table relates to the structural integrity as defined by DOE for each tank system.

| Field Name | Data Type | Length | Req. | Definition |
|---|-----------|--------|------|--|
| Containment System Type [CONTAIN_SYS_TYPE] | VARCHAR2 | 4 | M | Coded value that represents the method of secondary containment for a tank. See CODE table where CODE_TYPE = CONTAIN_SYS_TYPE for a list of valid values and their descriptions. |

3.1.10 REFERENCE_SOURCE Entity Type

A REFERENCE_SOURCE is a reference to any documentation containing detailed information about a specific location, or the effluent limitations and monitoring requirements under which stations are monitored (e.g., NPDES permit).

| Field Name | Data Type | Length | Req. | Definition |
|---|-----------|--------|------|---|
| Comments [COMMENTS] | VARCHAR2 | 2000 | R | Comments about the reference source. |
| Document Title [DOC_TITLE] | VARCHAR2 | 2000 | R | The official title of a given publication/document/geophysical log. |
| Publication Date [D_PUBLICATION] | DATE | | R | The day, month, and year on which a given reference source was disseminated. |
| Reference Source Number [REF_SRCE_NUM] | VARCHAR2 | 20 | M | A number which identifies a specific reference source for a given location, bore hole/well, or the permit number(s) under which the station is monitored. |

4. CHANGES TO OREIS DATA MODEL

This section describes proposed changes made to the OREIS data model to support tank construction data.

Add the following entity types and corresponding definitions to the data model:

| | |
|------------------|-------------|
| TANK | Sect. 3.1.7 |
| TANK_MEDIA_TYPE | Sect. 3.1.8 |
| CONTAIN_SYS_TYPE | Sect. 3.1.9 |

Add the field ASSOC_FACILITY_NO to the STATION table with the following definition.

| Field Name | Data Type | Length | Req. | Definition |
|---|-----------|--------|------|--|
| Associated Facility Number [ASSOC_FACILITY_NO] | VARCHAR2 | 8 | C | Environmental Restoration Program Facility or building number associated with the station. |

5. CHANGES TO OREIS CODE TABLES

This section describes proposed changes made to the OREIS code tables to support tank construction data.

Add CODE_TYPE of FFA_CAT with the following codes.

| Code_Type | Code | Code_Description |
|-----------|------|--|
| FFA_CAT | A | New or replacement tank system(s) with secondary containment. |
| | B | Existing tank system(s) with secondary containment. |
| | C | Existing tank system(s) without secondary containment. |
| | D | Existing tank system(s) without secondary containment that are removed from service. |
| | UN | Unknown |
| | ? | Other, defined in COMMENTS column |

Add CODE_TYPE of LEVEL_DETECT with the following codes.

| Code_Type | Code | Code_Description |
|--------------|------|-----------------------------------|
| LEVEL_DETECT | CP | Conductivity Probe |
| | FS | Float and Staff |
| | PMG | Pmneumatic Gauge |
| | UN | Unknown |
| | ? | Other, defined in COMMENTS column |

Add CODE_TYPE of TANK_CONSTR_MAT with the following codes.

| Code_Type | Code | Code_Description |
|-----------------|------|------------------|
| TANK_CONSTR_MAT | CS | Carbon Steel |
| | GUN | Gunite |
| | MC | Metal Composite |
| | SLS | Stainless Steel |

| | |
|----|-----------------------------------|
| UN | Unknown |
| ? | Other, defined in COMMENTS column |

Add CODE_TYPE of CONTAIN_SYS_TYPE with the following codes.

| Code_Type | Code | Code_Description |
|------------------|------|-----------------------------------|
| CONTAIN_SYS_TYPE | CV | Concrete Vault |
| | CPMS | Concrete Pit with Monitored Sump |
| | CD | Concrete Dike |
| | EPXV | Epoxy Lined Concrete Vault |
| | RL | Rubber Lined |
| | SLSV | Stainless Steel Lined Vault |
| | UN | Unknown |
| | ? | Other, defined in COMMENTS column |

Add CODE_TYPE of TANK_ORIENT with the following codes.

| Code_Type | Code | Code_Description |
|-------------|------|------------------|
| TANK_ORIENT | H | Horizontal |
| | V | Vertical |

Modify CODE_TYPE of MED_TYPE with the following codes.

| Code_Type | Code | Code_Description |
|-----------|------|------------------|
| MED_TYPE | LT | Liquid from tank |
| | SN | Super natant |

Add CODE_TYPE of CAP_UNIT with the following codes.

| Code_Type | Code | Code_Description |
|-----------|------|------------------|
| CAP_UNIT | gal | gallon |

Add CODE_TYPE of BURIAL_UNIT with the following codes.

| Code_Type | Code | Code_Description |
|------------------|-------------|-------------------------|
| BURIAL_UNIT | ft | foot |
| | in | inch |

Add CODE_TYPE of SHELL_UNITS with the following codes.

| Code_Type | Code | Code_Description |
|------------------|-------------|-------------------------|
| SHELL_UNIT | in | inch |

Add CODE_TYPE of HEAD_UNIT with the following codes.

| Code_Type | Code | Code_Description |
|------------------|-------------|-------------------------|
| HEAD_UNIT | in | inch |

6. VALID VALUES FOR OREIS CODE_TYPES

The following list contains proposed valid values for those CODE_TYPES that pertain specifically to tank construction data. Refer to the latest revision of the *Data Dictionary for the Oak Ridge Environmental Information System*, ES/ER/TM-116, for the most current and complete listings of valid values for codes, parameters, and methods.

| Code_type | Code | Code_description |
|----------------|---------|-----------------------------------|
| ELV_METHOD | ? | Other, defined in COMMENTS column |
| | ECM | Estimated from Contour Map |
| | GPS | Global Positioning System |
| | SURVEY | Survey Method |
| | UNKNOWN | Unknown |
| PROJ_SITE | K-25 | K-25 Site |
| | OFFSITE | Offsite |
| | ORR | Oak Ridge Reservation |
| | PAD | Paducah |
| | PORTS | Portsmouth |
| | X-10 | Oak Ridge National Laboratory |
| | Y-12 | Y-12 Plant |
| RCVD_COORD_SYS | ? | Other, defined in COMMENTS column |
| | ADMIN | Administrative Grid |
| | K-25 | K-25 Grid |
| | LATLON | Latitude/Longitude |
| | ORNL | ORNL Grid |
| | PAD | Paducah Grid |
| | PORTS | Portsmouth Grid |
| | STATE | State Plane |
| | UNKN | Unknown |

| Code_type | Code | Code_description |
|-------------------|-------------|--------------------------------------|
| | Y-12 | Y-12 Grid |
| SITE | K-25 | K-25 Site |
| | OFFSITE | Offsite |
| | ORR | Oak Ridge Reservation |
| | PAD | Paducah |
| | PORTS | Portsmouth |
| | X-10 | Oak Ridge National Laboratory |
| | Y-12 | Y-12 Plant |
| STA_STATUS | ? | Other, defined in COMMENTS column |
| | A | Active station |
| | D | Destroyed |
| | I | Inactive station |
| | L | Lost |
| | PA | Plugged and Abandoned |
| | UN | Unknown |
| STA_TYPE | AA | Ambient Air |
| | BH | Bore Hole |
| | BR | Barrel |
| | CB | Catch Basin |
| | CH | Channel/Ditch |
| | CP | Composite From Several Locations |
| | CT | Cooling Tower |
| | DK | Dike |
| | FB | Fixed Location Building |
| | FD | French Drain |

| Code_type | Code | Code_description |
|------------------|-------------|---|
| | FL | Flume |
| | FR | Fixed Location Receptacle |
| | FW | Faucet/Tap |
| | HP | Holding Pond/Lagoon |
| | LH | Leachate From Landfill |
| | LK | Lake/Pond |
| | MH | Manhole Cover |
| | NA | Not Available |
| | NF | Non-Fixed Location Receptacle |
| | OC | Outcrop |
| | PP | Pipe |
| | RA | RAD Emissions |
| | RE | Reservoir |
| | RV | River/Stream |
| | SE | Seep |
| | SL | Surface Location |
| | SP | Spring |
| | SS | Surface Survey |
| | SU | Sump |
| | SW | Storm Water |
| | TF | Treatment Facility |
| | TK | Tank |
| | TP | Test Pit |
| | WL | Well (e.g., core hole, open hole, piezometer) |
| | WP | Well Point |
| | WR | Weir |
| | WW | Waste Water |

7. DATA TRANSFER SPECIFICATIONS

Data can be transferred to OREIS using SAS¹, DBF, Oracle² Export files, or ASCII comma delimited files. These data base export file formats are specified in the latest revision of the ER procedure ERWM/ER-P2701, *Transmitting Data in Ready-To-Load (RTL) Format 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.³

General Submission Rules:

- Refer to procedure the latest revision of ERWM/ER-P2701, *Transmitting Data in Ready-To-Load (RTL) Format to the Oak Ridge Environmental Information System (OREIS)*, and to the training course for more details concerning submission rules.
- All mandatory fields must be populated with data, and all coded fields must use the OREIS codes, else the entire data transfer file will be returned to the site for correction and resubmission.
- STA_NAME and STA_TYPE must be unique within a project.
- Time must be 4 characters (e.g., 0700). All time is 24 hour local time zone.
- Coded fields must match OREIS codes exactly.
- The first eight characters of the field name must match OREIS field names exactly.
- The order of the fields does not matter if using SAS and DBF files. If using Oracle export files or ASCII comma delimited files the order must be specified.
- The number of records transmitted must be supplied on the data transmittal form.

¹SAS is the trademark of the SAS Institute Inc., Cary, N. C.

²Oracle is the trademark of the Oracle Corporation.

³Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof.

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 transmitted, (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 to check 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 TANK CONSTRUCTION DATA IN OREIS

A request for a change to tank construction 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 stated in the above procedure. The change request will be documented, reviewed, and approved by all tank construction program groups and the OREIS staff.

REFERENCES

EPA (Environmental Protection Agency), TDEC (Tennessee Department of Environment and Conservation -formerly TDHE: Tennessee Department of Health Environment), and DOE (U.S. Department of Energy), 1992. *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.

OREIS (Oak Ridge Environmental Information System), 1996. *Data Dictionary for the Oak Ridge Environmental Information System (OREIS)*, ES/ER/TM-116/R1, Environmental Restoration Division, Lockheed Martin Energy Systems, Inc., Oak Ridge, Tennessee.

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

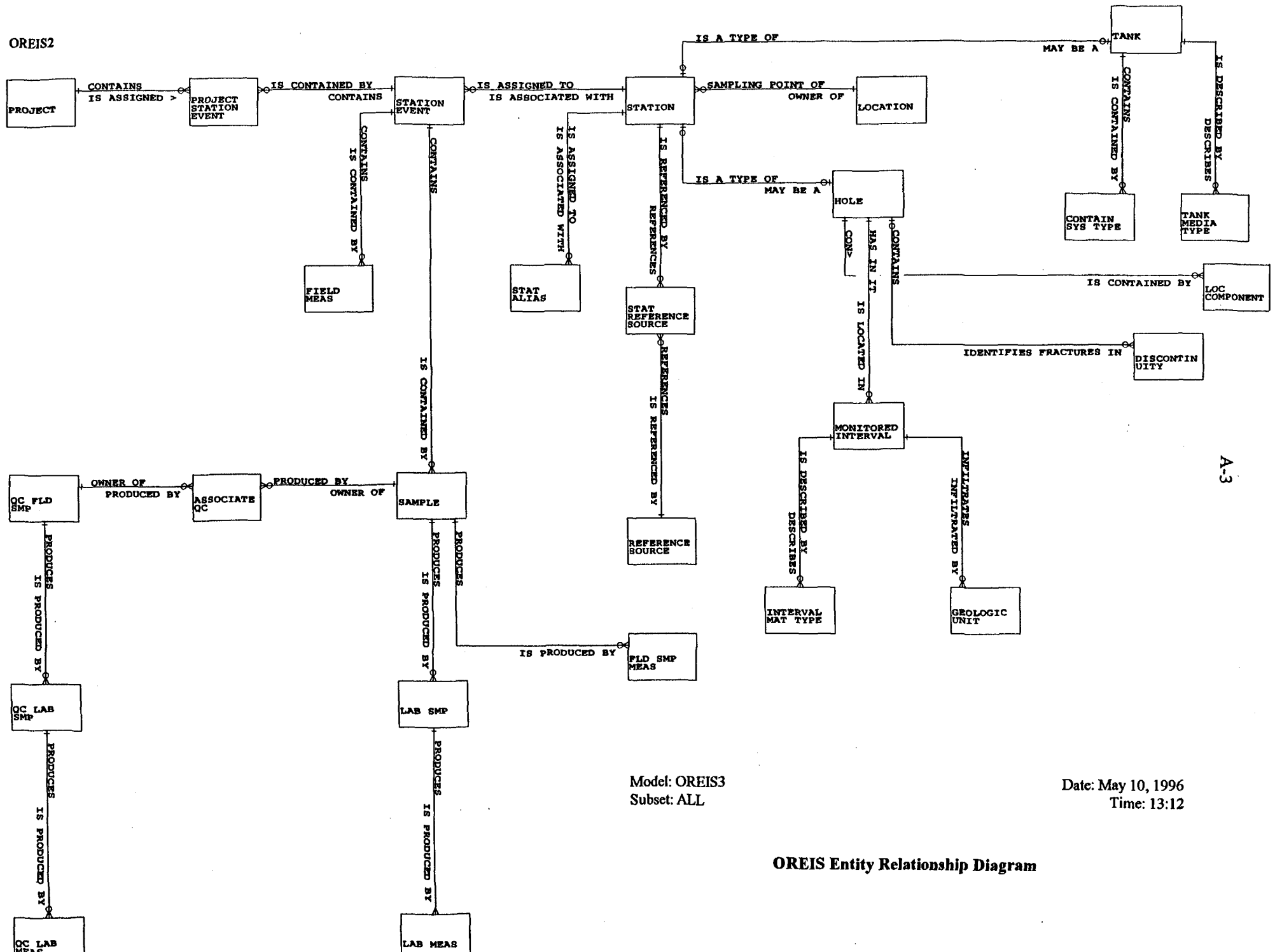
OREIS (Oak Ridge Environmental Information System), 1996. *Transmitting Data in Ready-To-Load (RTL) Format to the Oak Ridge Environmental Information System (OREIS)*, ERWM/ER-P2701, Rev. 3, Environmental Restoration Division Procedure, Lockheed Martin Energy Systems, Inc., Oak Ridge, Tennessee.

TDEC (Tennessee Department of Environment and Conservation -formerly TDHE: Tennessee Department of Health Environment), and DOE (U. S. Department of Energy), 1991. *Tennessee Oversight Agreement between the United States Department of Energy and the State of Tennessee*, May 13, 1991.

Appendix

OREIS ENTITY RELATIONSHIP DIAGRAM

OREIS2



A-3

Model: OREIS3
Subset: ALL

Date: May 10, 1996
Time: 13:12

OREIS Entity Relationship Diagram

DISTRIBUTION

1. L. V. Asplund
2. B. W. Henderson
3. D. D. Herr
4. T. L. James
5. D. M. Matteo
- 6-11. M. P. North
12. P. T. Owen
- 13-15. A. S. Quist
16. A. M. Stanley
17. J. K. Thomas
18. B. A. Watts
19. D. C. White
- 20-21. M. L. Whitehead
22. B. C. Zygmunt
23. Central Research Library
- 24-25. ER Document Management Center-RC