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YUCCA
MOUNTAIN
PROJECT

Studies

Control and Traceability of Analyses

Presented to:
DOE/NRC Technical Exchange on
Total System Performance Assessment
San Antonio, Texas

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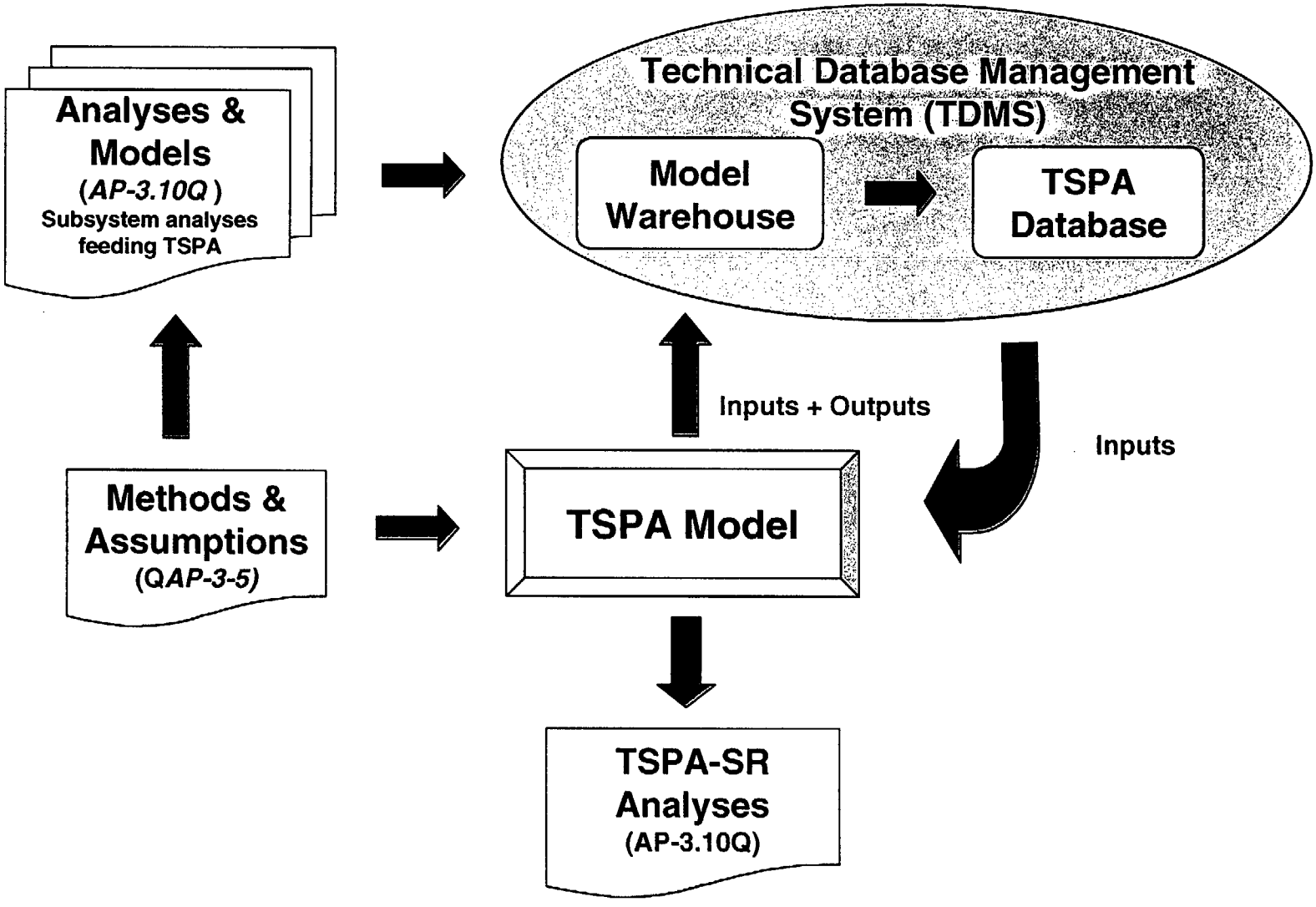
Waste Management

May 25 - 27, 1999

Objectives and Outline

- To present the framework of control, traceability and transparency of TSPA analyses
  - Overall information flow to TSPA model
  - Improvements to RIP
  - Control of information transfer to TSPA model
  - Modular design of TSPA model
  - Documentation of TSPA model

Information Flow to TSPA Model



Example of Data in TDMS

Automated Technical Data Tracking System (ATDT)

Technical Data Information View Change History

Data Tracking Number:
MO9903MWDLWC51.000 (Link to MWD)

Title:

Description:
LICENSE APPLICATION DESIGN SELECTION (LADS) TOTAL SYSTEM PERFORMANCE RESULTS FOR LINE LOAD (FEATURE 12), WASTE PACKAGE CRMS - DUAL CRM (FEATURE 14) AND CANISTERED ASSEMBLIES (FEATURE 18).

Acquired or Developed Data:
DEVELOPED

Data Preparer/Originator:
ERB, N J - M&O/DUKE

Submittal Date:
03/17/1999

Governing Plan:
SITE CHARACTERIZATION PLAN

Qualification Status:
NOT QUALIFIED

Parameters:

Parameter Name	TBV	O1	O2	O3	O4	O5	Date	Qual Accn No
REPOSITORY INTEGRATION PROGRAM (RIP) MODEL	N							

Source Data DTN(s) used for this DTN:

- LL980708604242.031
- LL980709604242.041
- MO9807MWDRIP00.000
- MO9811MWDWAP02.000
- MO9812MWDLAC47.000
- MO9812MWDWPC49.000

Improvements to RIP

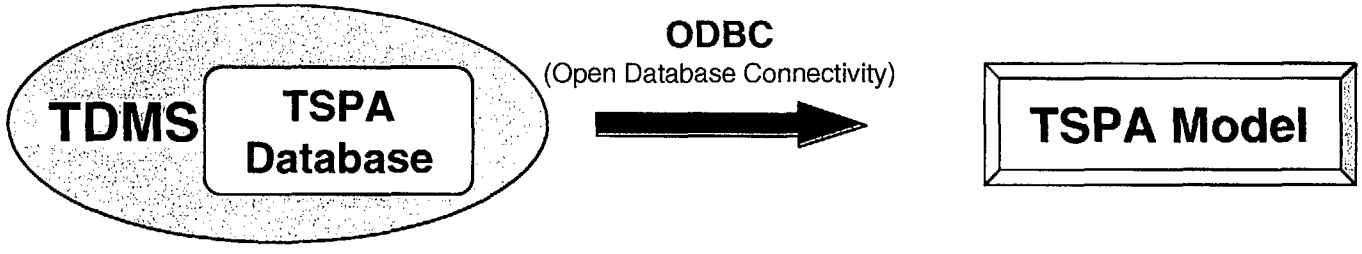
- **WINRIP - RIP with windows interface will be used as the main integrating shell for linking all the component codes together and conducting TSPA calculations**
- **Key Improvements to DOS version of RIP:**
  - **Object oriented design**
  - **Direct links to databases and spreadsheets**

Units and Conversion Factors Built Internally

- Improved capability to obtain results at intermediate points
- Input and output contained in a single file
- User interface includes: status bar, toolbars and context sensitive menus

Control of Information Transfer

- **All inputs to TSPA model imported directly from a database**
- **Relational database management system**
  - **Part of Technical Database Management System (TDMS)**
  - **Subset of TDMS containing only TSPA inputs**



Control of Information Transfer

(Continued)

- **Advantages**
  - Control version of data used (based on effective date)
  - Eliminate analyst input error
  - Provide transparency of data used in the TSPA model
  - Enhance reproducibility

Control of Information Transfer

(Continued)

- **Information directly imported includes:**
  - Constants
  - Probability distributions
  - Look up tables
  - Files for external codes

Control of Information Transfer

(Continued)

- **Along with parameter definitions, reference information imported includes:**
  - **Document title**
  - **Accession number or catalog number from Technical Information Center**
  - **Data tracking number from TDMS**
  - **Qualification status**
  - **Date stamp**
  - **Web address (providing direct link to TDMS over M&O intranet)**

Modular Design of TSPA Model

- TSPA model will be organized into modules representing different subsystem components
  - Enhance transparency
  - Easy navigation
  - Facilitates inclusion of alternative conceptual models
  - Flexibility for conducting sensitivity analyses
- These self-contained modules will contain:
  - All associated parameters and calculations
  - Parameter level documentation
  - Intermediate results at every component level

Modular Design of TSPA Model
(Continued)

- **Facilitate Review:**
  - **Self-contained modules will allow review of each component independently**
  - **Interpreting and checking final dose results based on intermediate results**

Documentation of TSPA Model

- The entire TSPA model will be documented in a Model and Analyses Document (AP-3.10Q procedure)
- Emphasis of this document will be on how each subsystem component is implemented within the TSPA model. Appropriate references and DTN for all the inputs will also be provided in this document

Documentation of TSPA Model

(Continued)

- This document along with other Model and Analyses documents describing individual subsystem components provide a good structure for documenting the entire TSPA analyses

Summary

- Obtaining inputs electronically from a database that is part of TDMS ensures version control of data used and also enhances transparency and traceability of TSPA analyses
- Modular design of TSPA model facilitates saving intermediate results and also provides a good mechanism for review of individual subsystem components

Summary
(Continued)

- **Parameter level documentation provides a framework to follow the trail of information used in the TSPA analyses to the data collection point, thus following a strict top-down approach**