

SEP 29 1998

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

625363

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) Integration System FDH			4. Related EDT No.: N/A						
5. Proj./Prog./Dept./Div.: HANDI 2000 INTEGRATION		6. Design Authority/Design Agent/Cog. Engr.: DAWN E. ADAMS			7. Purchase Order No.: N/A						
8. Originator Remarks: FOR RELEASE					9. Equip./Component No.: N/A						
					10. System/Bldg./Facility: N/A						
					12. Major Assm. Dwg. No.: N/A						
					13. Permit/Permit Application No.: N/A						
					14. Required Response Date: N/A						
11. Receiver Remarks:		11A. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No									
15. DATA TRANSMITTED					(F)	(G)	(H)	(I)			
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition			
1	HNF-3181	N/A	REV 0	TECHNICAL SUPPORT PLAN FOR	N/A	2	1				
				HANDI 2000 BUSINESS							
				MANAGEMENT SYSTEM							
16. KEY											
Approval Designator (F)		Reason for Transmittal (G)			Disposition (H) & (I)						
E, S, Q, D OR N/A (See WHC-CM-3-5, Sec. 12.7)		1. Approval 2. Release 3. Information			4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)			1. Approved 2. Approved w/comment 3. Disapproved w/comment		4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged	
17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
2	1	Design Authority	DAWN E. ADAMS	G1-21		3		DIANE WILSON		G1-21	
		Design Agent				3		DOE/RL Reading Room		H2-53	
		Cog. Eng.				3		Hanford Technical Library		P8-55	
		Cog. Mgr.									
		QA									
		Safety									
		Env.						CENTRAL FILES			
18.		19.	20.			21. DOE APPROVAL (if required)					
<i>Diane Wilson 9-23-98</i>		N/A				<i>Devin Adams 9-23-98</i> Ctrl No. _____ <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments					
Signature of EDT Originator		Date	Date								

TECHNICAL SUPPORT PLAN FOR HANDI 2000 BUSINESS MANAGEMENT SYSTEM

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U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 625363 UC: 900
Org Code: SL610000 Charge Code: HANF6800
B&R Code: EW7001000 Total Pages: 11

Key Words: HANDI 2000, BUSINESS MANAGEMENT, TECHNICAL SUPPORT PLAN, H2K, BMS, PEOPLESOF, PASSPORT

Abstract: The HANDI 2000 Technical Support Plan contains the description of the HANDI 2000 system infrastructure and software tools. This is a static document meant to identify the technical support for the hardware and software purchased and installed with the HANDI 2000 BMS.

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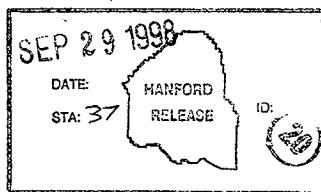
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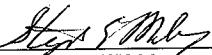
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**TECHNICAL SUPPORT PLAN
FOR
HANDI 2000
BUSINESS MANAGEMENT SYSTEM**

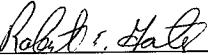
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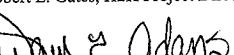
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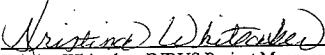
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1 INTRODUCTION

1.1 Overview

The Hanford Data Integration 2000 (HANDI 2000) Project will result in an integrated and comprehensive set of functional applications containing core information necessary to support the Project Hanford Management Contract. It is based on the Commercial-Off-The-Shelf (COTS) product solution with commercially proven business processes. The PassPort (PP) software is an integrated application for Accounts Payable, Contract Management, Inventory Management, and Purchasing. The PeopleSoft (PS) software is an integrated application for General Ledger, Project Costing, Human Resources, Payroll, Benefits, and Training. The implementation of this set of products, as the first deliverable of the HANDI 2000 Project, is referred to as Business Management System (BMS) and Chemical Management.

1.2 PURPOSE

The HANDI 2000 Technical Support Plan contains the description of the HANDI 2000 system infrastructure and software tools. This is a static document meant to identify the technical support for the hardware and software purchased and installed with the HANDI 2000 BMS.

1.3 SCOPE

The plans for the HANDI 2000 system infrastructure covers the plans for infrastructure preparation, tools and support products, and network traffic analysis. The hardware as implemented on October 1, 1998 is listed in *Appendix A*. The hardware descriptions in section 2 include hardware to be implemented in November or December of 1998 but were not ready for the October date.

1.4 ACRONYM DEFINITIONS

Acronym	Definition
BMS	Business Management System
COTS	Commercial-Off-The-Shelf
FDDI	Fiber Distributed Data Interface
GUI	Graphical Users Interface
HANDI 2000	Hanford Data Integration 2000
HLAN	Hanford Local Area Network
MSDS	Material Safety Data Sheet
OSAP	Operations System Administration Plan
PHMC	Project Hanford Management Contract
PP	PassPort
PS	PeopleSoft
SCSI	Standard Computer Systems Interface
SQL	Standard Query Language
SQR	Standard Query Reporting

2 INFRASTRUCTURE PREPARATION

The HANDI 2000 Project infrastructure configuration consists of a mixture of hardware platforms, operating systems, and software. The hardware platforms consist of various classes of Hewlett Packard (HP) hardware with Intel CPUs. The operating systems consist of both HP UNIX and Microsoft NT. The applications consist of COTS applications running on various hardware and operating systems previously mentioned. See *Appendix A* for the system hardware details.

2.1 PEOPLESOFT

There are two separate PeopleSoft databases associated with HANDI 2000. The finance database runs on the UNIX / Oracle Platform and the HR / Payroll database runs on an NT / SQL Server platform. The HR system has been running in PeopleSoft on an NT / SQL Server for some times and feeds the legacy payroll system. PeopleSoft Payroll is integrated with the HR system and needs to be on the same platform. The Finance System is to be hosted on UNIX because Indus is hosted on that platform. The PassPort/PeopleSoft Finance integration module from Indus only runs in the UNIX environment.

In FY99 a cost benefit analysis will be performed to evaluate moving PeopleSoft HR and Payroll to the UNIX/Oracle environment.

2.2 INDUS PASSPORT

Indus was chosen for the supply management, work management, action tracking, and chemical management needs of the Hanford project. It is a COTS software product written in Cobol and using Oracle as it's database. Indus PassPort runs in a UNIX environment on HP Intel computers.

2.3 P3 PRIMAVERA

Full implementation of the P3 hardware will be completed in the November / December 1998 timeframe. The October 1 implementation will consist of 1 P3 server in the 200 area to support scheduling in the area. The full implementation of P3 will begin about the December timeframe. P3 Primavera is the scheduling software used on the Hanford site. There will be three NT servers for P3 on site. The main users of P3 are located in the 200 area. There is 1 server in 200E and 1 server in 200W. A third server in 339A serves users the 300 and 1100 area. This server is also the main consolidation point for all P3 schedules on site and provides budget data to the Performance Module.

2.4 HP UNIX

The primary COTS software, consisting of PeopleSoft Financials and INDUS PassPort Supply and Chemical Management, runs in a UNIX environment. The INDUS product is supported on HP, IBM, and DEC UNIX platforms and IBM Mainframes. The HP UNIX environment was found to be the most robust environment for the Indus product. To maintain commonality between the COTS products it was decided to host PeopleSoft Financials on the same platform. Due to the widespread use of these applications at Hanford and the fact that these products are the core information application systems that support the PHMC contractor business environment for the Hanford project, it was determined that the environment needed to be robust and fault tolerant. A High Available UNIX Cluster was chosen for the operating environment. The original estimated number of users was 1000 for Indus and 500 for PeopleSoft. The K series server from HP was chosen as the platform and a high availability cluster consisting of two machines was chosen for fault tolerance. The K series server is the largest UNIX machine that supports Indus.

In the event of a failure of the production hardware or software, the applications can be automatically rehosted on the development machine after about a ten-minute interruption. For more information on the capabilities of the High Availability environment see the *H2K High Availability Service Guard Documentation*.

2.5 HIGH AVAILABILITY SWITCH

A high availability switch was chosen for connecting the HANDI 2000 to the HLAN. The original suggested configuration for a high available connection, by HP High Availability Group, was for dual 10BaseT hubs for fault tolerance. The network group suggested a single high availability switch that connected directly to the Fiber Distributed Data Interface (FDDI) ring in the 339A building. The switch has 24 10/100BaseTx ports and a 2.5-gigabyte bus. This facilitates high data transfer rates between the computers connected to the switch because of the 100 Mb LAN speed and the gigabyte bus.

2.6 NT ENTERPRISE SERVER

The production environment for the HANDI 2000 project is a complex mixture of software products and hardware, which are all interdependent on each other. The production management software, CA Unicenter, was chosen to run on a Microsoft NT Cluster that would have the same availability as the production UNIX server. The server consists of two HP LH PII/300 computers with 4 GB of internal disk space and 6 4.2 GB disks in a shared nothing configuration. The Network Interface Cards are 10/100TX PCI LAN Adapter cards. The configuration was chosen for high speed and high availability.

2.7 CLIENT APPLICATION SERVERS

Each COTS software product is client server based. The database server for INDUS PP and PS resides on the UNIX system described above. The clients also use application servers, which contain the executables for the client machines. These application servers are standard HP network servers running Microsoft NT. The location of these servers are in areas that are close to the end user in order to decrease network traffic and increase response time to the end user. There are two client application servers in order to split the load of clients between the servers.

2.8 HP NT SERVERS

The HR/Payroll Servers host the PeopleSoft HR/payroll system. They are a group of 3 sets of 3 HP NT boxes that host the system. The servers are housed in building 2261/102. Each set consists of a database server with 2 application servers. The database system for this application is Microsoft SQL server. The three sets are production set, development, test, and backup set, and the staging set for future releases.

2.9 ORACLE

Oracle is the database system for both Indus and PeopleSoft running on the main UNIX database servers. There is a separate instance of Oracle running on the servers for each instance of PeopleSoft and Indus running. The reason for this configuration is that different versions of Oracle will be required by future releases of Indus and PeopleSoft. This configuration also facilitates the high availability software, which will fail a software product over to a backup server in the event of a software or hardware failure. The instances of Indus or PeopleSoft will failover with it's supporting Oracle Database.

2.10 INTERFACING SYSTEMS AND THE FTP SERVER

The core HANDI 2000 system requires input and updating from 20 other software systems performing various functions at the Hanford site. The HANDI 2000 system also outputs information to other onsite and offsite systems. The preferred method for this information transfer is by electronic data transfer. The method needed to be secure, consistent across

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3 TOOLS AND SUPPORT PRODUCTS

Efficient management of a production environment requires many tools. The following lists the tools purchased for the HANDI 2000 production environment. The tools purchased speed the development of reports, control the processing environment, manage system resources and monitor the system for trouble.

3.1 STANDARD QUERY REPORTING SERVER

SQR is a report-scripting tool provided by PeopleSoft to facilitate reporting from the PeopleSoft tables. SQR server is an industrial-strength engine for extracting, transforming and distributing data throughout the enterprise. SQR Server gives you the power, flexibility, ease of use and scalability needed to simplify information delivery and satisfy the immediate demands for mission critical business information. SQR Server is the only solution with native access to every major database, combined with procedural extensions to Standard Query Language (SQL) and optimized for data extraction and manipulation. The project has standardized on this tool and has purchased the software for use with PassPort. SQR runs in the UNIX as well as the NT environment. The PeopleSoft version of SQR is customized and licensed for use with PeopleSoft only.

SQR scripts can be edited using any common editor and can be run manually or in a batch environment. A companion tool is the SQR Workbench product that allows the generation of SQR scripts that can run on UNIX using a graphical interface on a client workstation.

With built-in advanced output features, SQR Server delivers information to users throughout the enterprise. For output to printers, Web, fax, or email servers, SQR Server provides a wide array of report types including tabular, nested control break, cross tab, master/detail and form letters-all incorporating charts, graphs, logos, bitmaps and other images. SQR's portable output format (.SPF) enables end-users to view, fax or print on any device.

3.2 CA UNICENTER

CA Unicenter, a production control framework with software, provides cross platform monitoring and control capabilities. It runs on a Microsoft NT platform controls the sequence of jobs running, job completion monitoring, and reporting of problems to appropriate parties.

As part of its base functionality, Unicenter TNG enterprise management includes comprehensive performance management capabilities. Utilizing intelligent agents, thresholds, and correlation, Unicenter TNG continually monitors performance, collects usage data for long-term planning and trend analysis, and manages unexpected performance problems before they impact business operations.

Unicenter TNG lets administrators view their entire environment at once with functions that analyze and present data in a meaningful and consistent form. With this global view, administrators can better pinpoint bottlenecks, identify components that are consuming excessive resources, and evaluate how changing system parameters will affect performance.

- Reduces the total cost of ownership by identifying performance problems before they snowball and impact business operations.
- Improves service levels by automatically monitoring performance of IT resources.
- Improves availability by circumventing bottlenecks and other performance obstacles.

Unicenter TNG provides automatic job sequencing, monitoring, error handling, and problem notification to system administrators. This product automates and monitors the production environment.

3.3 HP ONLINEJFS

HP OnlineJFS provides the online management of the Journaled File System (JFS), a high-integrity, highly available file system supported by HP-UX. Journaled File System (JFS) provides much higher integrity and faster file system recovery than the UNIX file system. By adding HP OnlineJFS, users enjoy fast, reliable file system administration without interruption to data resource access.

Traditional UNIX file systems have to be taken offline for such administrative activities as resizing and defragmentation. Furthermore, during backups, UNIX commands and utilities don't usually provide full access to data. But by storing data in the HP-UX JFS, and using HP OnlineJFS to manage the JFS, system availability is uninterrupted during the running of routine administrative activities. HP Online JFS enables online resizing, backups, and defragmentation on the JFS without disrupting user access to data. Online resizing can improve availability and help optimize system resources, freeing up unneeded file system space. This activity is normally done while the file system is offline, but OnlineJFS lets you expand or shrink file systems dynamically, without disrupting application access. With HP OnlineJFS, HP-UX commands for file system backups -- as well as the utilities and scripts that call these commands -- can be transparently enabled for online backups. While these routine backups are taking place, applications retain full read-write access to mounted Journaled File systems -- unlike other file system implementations.

3.4 EMC OPEN SYMMETRIC MANAGER

The Symmetrix Manager for Open Systems is a centralized, server-resident application software product providing extensive user control, configuration management, and performance monitoring capabilities for the EMC storage system. This product provides access to the EMC Storage unit's internal configuration, operational status, and real-time performance information. Symmetrix Manager for Open Systems enables maximum business value from your Symmetrix system through easy point-and-click information management.

The Symmetrix Manager for Open Systems provides powerful centralized storage management and performance monitoring. The management tasks include monitoring performance and identifying error conditions. The easier and more automated these capabilities are, the more time and effort can be devoted to running and supporting the needs of the enterprise. Users can easily access a wide range of physical and logical views. Extensive windowing capabilities allow for the simultaneous display of multiple windows. Manage multiple Symmetrix systems from a single console.

Symmetrix Manager for Open Systems communicates with the Symmetrix system via a SCSI port for management from a central point, either locally or remotely located. The manager contains GUI and Command Line user interfaces, the former providing easy intuitive access and the latter facilitating automation, historical data logging, and integration with user applications. Real-time, trend-based graphical viewing of Symmetrix performance visually identifies opportunities for performance enhancement. Data placement and volume availability are facilitated through comprehensive physical and logical views of the Symmetrix configuration. Capabilities include server to LUN mapping, LUN to logical volume mapping, and logical to physical volume mapping. Historical trend analysis can be performed through performance data logging. Prior day's archived Symmetrix performance data can be simultaneously compared to that of live sessions. The physical configuration, operation, and performance of individual Symmetrix components, such as devices and disk and channel directors, can be viewed and monitored. Symmetrix Manager for Open Systems provides user-selectable monitoring thresholds for a variety of system-level and device-level performance statistics, which in turn can trigger GUI display changes, send e-mail messages, or initiate a customized program. Symmetrix diagnostic monitoring informs the operator of hardware or performance anomalies, enabling fast resolution.

3.5 EMC DYNAMIC DISK REALLOCATION

Symmetrix Manager for Open Systems offers a Disk Reallocation Option that gives an administrator the ability to reassign existing Symmetrix logical volumes between SCSI ports or host systems using a drag and drop graphical user interface.

The Disk Reallocation Option facilitates workload balancing by allowing volumes to be evenly distributed across multiple

SCSI ports to alleviate potential bottlenecks. Symmetrix logical volumes can also be moved between host systems for resource reallocation. The Disk Reallocation Option improves a storage administrator's ability to adjust system resources to meet changing application requirements.

3.6 MICROFOCUS COBOL

Microfocus Cobol is required for the PassPort product to allow the compilation of source code during product install. Micro Focus COBOL for UNIX is an integrated programming environment for developing and deploying COBOL applications on a wide range of UNIX operating environments. It includes a flexible, cross-platform COBOL compiler, a set of powerful programmer productivity tools, user interface development tools and run-time facilities to simplify application distribution.

4 NETWORK TRAFFIC ANALYSIS

See *Site Survey Hanford Project, HF-97022, Contract MJC-SBB-A34602* for the Network Traffic Analysis.

5 APPENDIX A

October 1 hardware implementation

SYSTEM	ADDRESS	LOCATION	OPERATING SYSTEM
Production UNIX Server	H2KP1	Data Center (339A)	UNIX
Non-Production UNIX Server	H2KD1	Data Center (339A)	UNIX
CA Unicenter Production Server	APEMC01	Data Center (339A)	NT
HRIS Prod DB Server	APHRPRD2	2261/102	NT
HRIS Prod Batch / Process Scheduler	APHRPRD3	2261/102	NT
HRIS Prod Payroll Processing Server	APHRPRD5	2261/102	NT
HRIS Prod Reporting DB Server	HRIS4	2261/102	NT
HRIS Backup Batch / Process Scheduler	APHRPRD5	2261/102	NT
HRIS Backup Payroll Processing Server	APHRPRD3	2261/102	NT
HRIS Backup Reporting DB Server	HRIS3	2261/102	NT
HRIS Backup DB Server	APHRTEDB	2261/102	NT
HRIS Test/Dev DB Servers	APHRTEDB/HRIS2	2261/102	NT
HRIS Test/Dev Batch / Process Scheduler	HRIS7	2261/102	NT
HRIS Test/Dev IIS Web Server	HRIS8	2261/102	NT
HRIS Test/Dev Payroll Processing Server	HRIS7	2261/102	NT
HRIS Test/Dev Reporting DB Server	HRIS3/HRIS2	2261/102	NT
HRIS New Executables & DLL Test Server	HRIS5	2261/102	NT
PassPort and PeopleSoft Application Server	APH2K01	2355	NT