

# Release A CDR RID Report

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Document CDR

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Section NA

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Figure Table NA

Category Name ECS System-Level

Actionee ECS

Sub Category

Subject SCDO CDR Design Documentation Does Not Provide a Complete Design

## Description of Problem or Suggestion:

Due to requirements and object model deficiencies, the SCDO Design documentation (DID 305 series) fails to provide a complete system design.

Program Impact:

The impacts to the program of not having a complete design available for review are as follows:

a) Partial implementation of system functionality can occur due to incomplete traceability of requirements to design. For example, 23% of SDPS Planning Subsystem PDR baseline requirements are missing from CDR design documentation and it is not clear where that functionality will be implemented. The detailed design document can not be used to code as is. Some missing requirements and design functions are mission critical. Ensuring that the design meets requirements can protect both the developer and the user if issues arise regarding system functionality. Moreover, without requirements to design traceability development of unspecified functionality can result in the developer incurring additional unplanned costs and misallocating limited resources.

b) Incomplete design documentation can lead to various interpretations of system functionality and capabilities. For example, 32% of SDPS Planning Subsystem class descriptions are missing from the design documentation thus their functionality is in question. Differences in interpretation, especially between development and testing staff, might not be captured until actual testing and might trigger costly and unplanned corrective actions to the system right before implementation.

Description:

The two major categories of identification issues are Requirements Traceability and OMT/Design Quality. Review of design documents resulted in the following:

Requirements Traceability Issues:

Issues in this area mostly involve incomplete or missing traceability to Level 4 requirements. A complete functional understanding of the design cannot be accomplished without a full allocation of requirements. The allocation to Level 4 requirements also

## Originator's Recommendation

The following steps should be taken to address the deficiencies stated in this RID:

- Review all requirement allocations and demonstrate that all L4 requirements allocated to Release A are traced to the design.
- Review and verify the consistency between the Release Plans, Requirements By Release (RBR), and Design Documentation as it relates to defining the scope of Release A. L4 requirements are presented in their final form and do not reflect the phased implementation approach detailed in the RBRs. Once the consistency check is completed, the scope of Release A should be published indicating both a short term specification of what is actually being delivered (manual/partial versus full capability) with the release, and a long term specification of how the Release A design will evolve to fulfill requirements in their entirety.
- Obtain an assessment of the status of design documentation from the development staff. If the development staff cannot code based on the available documentation, then it can be assumed that non-developers will not be able to fully understand the design and that additional work is required before the start of development activities. This assessment could be performed for a single CSCI to evaluate this approach. If such an assessment is not feasible or realistic, provide the reasoning for not providing the missing portions of the design and indicate how HAIS intends to provide the missing information to the developers.

## GSFC Response by:

## GSFC Response Date

HAIS Response by: Richard Meyer

HAIS Schedule 9/27/95

HAIS R. E. Richard Meyer

HAIS Response Date 11/21/95

A. REQUIREMENTS TRACEABILITY (Description, items (1) (3), (4)): After PDR, ECS corrected problems identified in the L4 requirements at PDR. A new Level 4 requirements matrix was baselined prior to CDR. It is this baseline against which DID305 traces, not the PDR version. While the CDR baseline still had some problem, they are significantly below the statistics cited in the RID.

We believe that the problems cited in the RID under "Description", in items # (1), (3) and (4) are due to the use of the wrong version of the L4 baseline.

B. DPREP REALLOCATION (Description item (2)): The reallocation was already announced at PDR (Dav 3 NP2-3). It is

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of the L4 baseline.

B. DPREP REALLOCATION (Description item (2)): The reallocation was already announced at PDR (Day 3, NP2-3). It is mentioned on page 5-40 in the DID 305 Overview, 305-CD-004-001. In both Ingest and Data Processing, there is now a Data Preprocessing CSC which contains the re-allocated functionality. Traces from this CSC to the requirements are presented in the respective appendixes of these volumes.

C. ISS TRACES (Description, Item (5)): These traces should have been in 304-CD-004-001. However, shortly before the CDR, the Government announced a change due to the consolidation of EBnet. We will produce the relevant traces and enter them into the RTM as soon as we have a stable set of ESN L3s from the EBnet CCR.

D. SMC TRACES (Description, Item (6)): Automated functions are part of the DID 305 design and are described in the MSS Volume, 305-CD-013-001), rather than the SMC volume. Manual process will be described in the forthcoming documents DID 604 and DID 605.

E. OMT PROBLEMS -CSS (OMT - Item (1)): PDL and state transition diagrams are not meant to provide the basis for distinguishing COTS from other portions of the design. Moreover, since CSS is on the incremental track, it was specifically exempted from generating these design representations for CDR (its components - incrementally developed - are subject to a much more extensive "hands-on" review by EP reviewers and tire-kickers). However, the CSS DID 305 volume does identify the COTS vs. Custom code (refer to 305-CD-012-001, Table 4.1-2). The traces of L4s to object classes in 305-CD-012-001 Appendix A were not readily traceable to object classes for COTS provided functions in the CDR version: this Appendix has now been updated and will be placed in the next version of this 305 volume.

F. OMT PROBLEMS - MSS (OMT - Item (2)): State diagrams are provided for the GET\_MIB (section 4.1-4) and SNMP Trap (4.1-5) which are the primary interfaces for the management agent. The fault and performance management services are provided by COTS (HPOV and Tivoli) for which detailed object models are not presented. Since the selection of Tivoli was not approved prior to CDR, specific details for Tivoli were not included in the CDR version of DID 305. MSS has updated the OMT diagrams since CDR (based on detailed comments received on the CDR design and implementation decisions). These changes have been reviewed and approved by the Release A CCB through the official CCR process. .

G. GSFC DAAC DESIGN (OMT - Item (3)).

subitem (1): INCLUSION OF COTS IN MSS SIZING: We agree. Some of the COTS had not been picked in time for CDR. The revised version of DID 305 (for Release B IDR) includes Remedy, and also Tivoli .

subitem (2): PLNHW SERVER INCOMPATIBILITIES: Yes, this was an oversight. 384 MB is correct and reflects early benchmarks in the EDF and the actual RAM we've ordered. This is corrected in the Release B IDR version of DID 305.

subitem (3): GSFC EXTERNAL INTERFACES: Good point. This table, in general, does not properly represent the "early interface test" aspect of the flows. Early interface testing is aimed primarily at functionality, vs. testing link performance. For instance, there is no plan to test the performance of the R-A operational links until late in 1996. In general, we have developed a schedule for upgrading / providing EBnet links that is in synchronization with the test schedules for the flows. This will be shown in the next iteration of DID 220 provided for IDR.

H. MSFC DAAC DESIGN (OMT - Item 4): see #7, subitem (1) While it is true that Mountainview will be provided at the MSFC DAAC, it will not run on top of HPOV on the management server. It will run on the management workstation and should be included in the sizing rationale for the MSS workstations. This oversight will be corrected in the next version of the document, and is in fact included in MSS sizing for Release A.

I. SMC DESIGN (OMT - Item 5): The ISS design is documented in the Overview volume (305-CD-004-001), because it seemed most appropriate to present it in the context of the overall hardware design (to which it relates very closely). The ISS scope is now the Local Area Networks and the interfaces to the external networks, but does not include any wide area network responsibility. Note: The referenced Virtual Terminal and Thread Services are CSS provided services (described in 305-CD-012-001 (section 4) that will be running on the SMC functional hardware.

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**Status Closed**

**Date Closed 12/7/95**

**Sponsor Schroeder**

\*\*\*\*\* **Attachment if any** \*\*\*\*\*