212-TP-001-001

Year 2000 ECS External Interfaces Audit Report

Technical Paper

Technical Paper--Not intended for formal review or government approval.

February 1998

Prepared Under Contract NAS5-60000

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Abstract

This Technical Paper describes the activities of an audit of ECS external interfaces for potential Year 2000 problems. This audit was identified in the "Year 2000 Plan for the ECS Project", October 1997. It consists of a review of all ECS external interface ICDs for potential instances where the Year 2000 rollover could present a problem. Each of these instances has been or will be investigated further to determine whether a real problems exists. When a real problem is determined to exist, corrective measures are identified.

Keywords: External Interfaces, Year 2000, Y2K

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Contents

Abstract

1. Introduction

1.1 Purpose 1-1

1.2 Organization 1-1

2. Y2K Audit Report

2.1 Overview 2-1

2.2 Issue Summary 2-1

2.3 Assessment of All Audit Issues 2-11

2.4 Initial ICD Review Methodology 2-12

Tables

2.3-1 Issue Assessment Categories 2-1

2.3-2 Issues Requiring Further Action 2-2

Appendix A. Y2K Issues by ICD

Appendix B. Initial ICD Review Statistics

Appendix C. Action Items

Abbreviations and Acronyms

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1. Introduction

1.1 Purpose

This Technical Paper describes the activities of the audit of ECS external interfaces for potential Year 2000 problems. This audit was identified in the "Year 2000 Plan for the ECS Project", October 1997. It is being performed in lieu of the ECS Technical Direction Number 28, Year 2000 Requirements, directive that states "ECS shall include the Y2K requirements in all external interfaces, as appropriate." As stated in the Year 2000 Plan, under the assumption that ECS External Interfaces are already thought to be Y2K compliant and after considering the resources that would be required to coordinate and update each of approximately 30 ECS IRD documents, the ECS Chief Engineer (Joe Guzek) and the ECS COTR (Curt Schroeder) verbally agreed that instead of generating external interface requirements an audit of these interfaces was more appropriate at this time.

To maintain a level of independence in this audit, it was not performed by the Interface Engineering group of ECS System Engineering who generated the ICDs. Instead, it was performed by other System Engineering personnel including those from System Engineering's Architect's Office. Mike Helton coordinated the initial ICD audit to identify any potential problem areas while Andy Newton and Richard Hatfield of the Architect's Office reviewed and assessed these items for their probability as issues.

1.2 Organization

This paper is organized as follows:

Section 2.1 is a brief overview of the audit.

Section 2.2 summarizes the issue assessment activities and identifies those that are still open.

Section 2.3 describes all of the issues identified and explains how they were closed.

Section 2.4 explains the methodology used in the initial search of the ICDs.

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2. Y2K Audit Report

2.1 Overview

This document presents the current status of the audit of ECS ICDs for Year 2000 (Y2K) problems. An initial search was performed (as described in section 2.6) to identify potential issues. These potential issues were then assessed for their possibility for presenting a Y2K problem.

After the initial review of ICDs, it was determined that other documents should also be audited. As indicated in the action items of Appendix C, ECS will extend this audit to include other data format specifications.

Some sections of the EDOS ICD were not yet available, so they will be audited later.

This document will be updated to reflect future resolution of currently open issues, and to include the results of additional document audits.

2.2 Issue Summary

All of the ICDs reviewed for this audit are listed in Table A-1, Initial Analysis of All Y2K ICD Issues, in Appendix A These issues were assessed according to their likelihood of causing a problem. The status values that were used in this assessment are summarized in Table 2.3-1.

Table 2.3-1. Issue Assessment Categories

Status Value	Interpretation	Concluded Possibility of Problem	Recommended Action	Occurrences
U 1	Urgent	Likely	See Table 2.3-2	0 (zero)
O 2	Open	Possible	See Table 2.3-2	14 (of which 10 FOS related)
R 3	Resolved	Unlikely	Closed	6
R 4	Resolved	Very unlikely	Closed	17
R 5	Resolved	Extremely unlikely	Closed	6
P	Pending	TBD	See Table 2.3-2	6
'-'	Resolved	Not readable by ECS code	Closed	32

The issues that were assessed as Urgent (U 1) or Open (O 2) will be reviewed further in the near term. Pending items (P) must be resolved in the next review cycle. All these items (Urgent, Open, and Pending) are considered unresolved (open) and have been extracted for inclusion in a separate table (Table 2.3-2, Issues Requiring Further Action) for easier identification. The last column lists the actions required to resolve the potential Y2K system problems they represent.

Table 2.3-2. Issues Requiring Further Action

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[1]	Actions TBD
NSI	505-41-31	'SourceCreateDate', 'SourceCloseDate' and 'SourceClosedDate' not defined	Appendix A - Figure A1, Table A-1; A-1, A-2, A-4; x3	Potential problem: format is not defined - it is a Remedy (COTS product) specific exchange format. Remedy only displays 2 digit year; may handle the problem OK internally but this is TBD. The recommendation here is to confirm what Remedy does with this information. Format may change as a new version of Remedy is being considered at this time. Comment included on this field is "This field is in Remedy timestamp format using GMT"	O 2	Update ICD for explicit reference to format source and add check for Y2K compliance to review: System Engineering. Verify Remedy format and product Y2K compliance: COTS procurement.
ASTER (SDPS/ CSMS)	505-41-34	'SourceCreateDate' and 'SourceCloseDate' not defined	8.3 - Figure 8-1, Table 8-1; 8-2, 8-3; x2	Potential problem: format is not defined - it is a Remedy (COTS product) specific exchange format. Remedy only displays 2 digit year; may handle the problem OK internally but this is TBD. The recommendation here is to confirm what Remedy does with this information. Format may change as a new version of Remedy is being considered at this time. Comment included on this field is "This field is in Remedy timestamp format using GMT"	O 2	Update ICD for explicit reference to format source and add check for Y2K compliance to review: System Engineering. Verify Remedy format and product Y2K compliance: COTS procurement.

[1] Status after first AO review of initial search results: 'U 1' Urgent, action required; 'O 2' Open, review further; 'R 3', 'R 4' or 'R 5' Resolved - from less to more certainty; 'P' Pending, '-' No issues to review. .

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
METEOR (SAGE III MOC)	505-41-47 (10/1996)	Range beginning and ending dates - format question on items 2 and 3.	5.2.2.1 - Table 5-1; 5.3; x2	The description of the time code provided in the ICD is: "CCSDS UTC Format A". This isn't enough to understand how to use this value. CCSDS Time Codes Format book has been reviewed but there is still some ambiguity - there are several different CCSDS time code formats, one of which might cause a problem but none of which is called 'Format A'. Recommend that the Interface group resolve what the format is and then report in next version.	P	Clarify/correct reference; update ICD; report on format in next version of Y2K review: System Engineering.
METEOR (SAGE III MOC)	505-41-47	Dates of first and last packets for Ancillary data - format question for items 3 and 4.	5.5 - Table 5-5; 5-11; x2	See comment above on section 5.2.2.1 item. To be reviewed when format is known in next System Engineering audit.	P	Repeat as above: System Engineering.

[2] Status after first AO review of initial search results: 'U 1' Urgent, action required; 'O 2' Open, review further; 'R 3', 'R 4' or 'R 5' Resolved - from less to more certainty; 'P' Pending, '-' No issues to review. .

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
METEOR (SAGE III MOC)	505-41-47	Dates for first and last packets for Orbit Ancillary Metadata - format question	5.6 -Table 5-6; 5-13; x2	See comment above on section 5.2.2.1 item. To be reviewed when format is known in next System Engineering audit.	P	Repeat as above: System Engineering.
LPGS Output Data Formats DFCB	By M. Helton: 510-3DFC/0197 11/1997 By AO: January 1998[3]	"DATEHOUR_CONTACT_PERIOD" uses 2-digit years	4.3.11 - Table 4-1; 4-5; x1	This is in the LPGS metadata file section of the HDF-EOS format LPGS o/p file specification (section 4.3.8 and Table 4-1). The field storing the date and hour of the 'contact period' uses a two digit year. The file also contains time and date using a 4 digit year field in several fields, e.g. Product_Creation_Time. Year is unlikely to be used with assumed century but might be; use in implementation must be reviewed.	O 2	Use of this field in implementation must be checked on and, if necessary, changed: SE/AO to action Development.

[3] Document AO reference: URL: http://lpgs-server.gsfc.nasa.gov/!LPGS_Baseline/baseline.html, "Earth Sciences Data Information System (ESDIS) Level 1 Product Generation System (LPGS) Output Files Data Format Control Book (DFCB), 510-3DFC/0197, January 1998"

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
EDOS (SDPS/CSMS)	510-ICD-EDOS/EGS (Interface Engineering doc: EDOS file, 12/31/1997)	Item 1 - Year for GMT format uses a 2-digit year.	12.1.2.8 - Table 12.1.2.8-1; 12-11; x1	Issues remaining to be resolved are: (1) in Service Request (Sec 12.1.3.4) - - list of PDS-IDs (naming) - start S/C (Spacecraft) time - stop S/C time - time of execution (2) in Summary Performance Report (Sec 12.1.3.6) - contact identification (naming). Discussion in review agreed that these are not a problem currently but should be investigated as a correction in the ICD to resolve them once and for all.	O 2	Changes to ICD to modify these fields if possible within schedule: System Engineering, Otherwise: Action SE/AO to ensure correct usage of fields by development.
NCCDS	530-ICD-NCCDS/MOC (4/1997)[4]	Time Code PB4 (ref. 2.3b) - to be checked.	4.2.2.2.3; 4-6; x1	This is a “millisecond/microsecond” time code (PB4) defined in NASA standard “IRIG Standard Parallel Binary Time Code Format” , X-814-77-64, 5/77. Y2K compliance, if this code contains year data, should be verified.	O 2	Format to be checked in referenced document and reported in next Y2K audit revision: System Engineering. Issue to be checked with FOS: SE/AO.

[4] AO reviewed version: URL: http://ncc98.gsfc.nasa.gov/doc-list/docicd.htm, “530-ICD-NCCDS/MOC Interface Control Document Between the Network Control Center Data System and the Mission Operations Centers, Original plus DCN 001 through DCN 004 April 1997”

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
NCCDS	530-ICD-NCCDS/MOC	Time Code PB4 (ref. 2.3b) - to be checked.	9.1.4; 9-4; x1	This is a "millisecond/microsecond" time code (PB4) defined in NASA standard "IRIG Standard Parallel Binary Time Code Format" , X-814-77-64, 5/77. Y2K compliance, if this code contains year data, should be verified.	O 2	Format to be checked in referenced document and reported in next Y2K audit revision: System Engineering. Issue to be checked with FOS: SE/AO.
NCCDS	530-ICD-NCCDS/MOC	Calendar year given as 2-digit year - warning note provided.	5.3.3 - Table 5-3; 5-4; x1	Two digit year is used in the time and date format for NCCDS 'messages' such as MOC 'Schedule Add Request" etc. ICD states that I/F will not change for Y2K and that messages spanning the century roll-over should be anticipated. Impact is unlikely to extend beyond messages which span this roll-over but this is client s/w dependent. Maximum message duration appears to be 24 hours.	O 2	Issue to be checked with FOS: SE/AO.
NCCDS	530-ICD-NCCDS/MOC	Item 2 - Event start time given as a 2-digit year.	7.2.1 - Table 7-1; 7-2; x1	This is a specific usage of the above time format(in 'Schedule Add Request Message'). Maximum event duration is 24 hours.	O 2	Issue to be checked with FOS: SE/AO.
NCCDS	530-ICD-NCCDS/MOC	Items 8&9 - New & Old event start times given as 2-digit years.	7.2.2 - Table 7-3; 7-9; x2	Event start times used in 'Schedule Result Message'. Following argument given above usage should be verified as Y2K compliant in ECS Detailed Design and code.	O 2	Issue to be checked with FOS: SE/AO.

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
NCCDS	530-ICD-NCCDS/MOC	Item 9 - Old event start time given as a 2-digit year.	Table 7-6; 7-14; x1	Event start times used in 'Schedule Delete Message'. Following argument given above usage should be verified as Y2K compliant in ECS Detailed Design and code.	O 2	Issue to be checked with FOS: SE/AO.
NCCDS	530-ICD-NCCDS/MOC	Item 7 - Event start time given as a 2-digit year.	Table 7-7; 7-15, x1	Event start times used in 'Schedule Deletion Notification Message'. Following argument given above usage should be verified as Y2K compliant in ECS Detailed Design and code.	O 2	Issue to be checked with FOS: SE/AO.
NCCDS	530-ICD-NCCDS/MOC	Item 12 - Event start time given as a 2-digit year.	Table 7-8, 7-18; x1	Event start times used in 'Schedule Data Message Header. Following argument given above usage should be verified as Y2K compliant in ECS Detailed Design and code.	O 2	Issue to be checked with FOS: SE/AO.

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
NCCDS	530-ICD-NCCDS/MOC	Items 4&5 - Service start & stop times given as 2-digit years.	Table 7-9; 7-19; x1 Table 7-10; 7-20; x1 Table 7-11; 7-22; x1 Table 7-12; 7-24; x1 Table 7-13; 7-27; x1 Table 7-14; 7-32; x1 Table 7-15; 7-37; x1 Table 7-16; 7-39; x1 Table 7-17; 7-41; x1	Service start and stop times in all service formats (e.g. "MA Forward Service Format") use two digit year. Same argument as above implies that usage of these files and fields should be checked in ECS Detailed Design and code.	O 2	Issue to be checked with FOS: SE/AO.

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
NCCDS	530-ICD-NCCDS/MOC	Time, Time tags and ODM time tags given as 2-digit years.	Table 8-12; 8-20; x1 Table 8-20; 8-38; x1 Table 8-21; 8-42; x1 Table 8-22; 8-46; x1 Table 8-26; 8-64; x1 Table 8-26; 8-65; x1 Table 8-30; 8-82; x1 Table 8-30; 8-83; x1 Table 8-30; 8-84; x1 Table 8-31; 8-86; x1 Table 8-34; 8-94; x1 Table 8-34; 8-95; x1 Table 8-35; 8-96; x1	Time stamps on many 'Performance Data Messages' and 'User Monitoring Messages' use two digit year. As above usage should be verified for Y2K compliance.	O 2	Issue to be checked with FOS: SE/AO.

Table 2.3-2. Issues Requiring Further Action (continued)

I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document, Page and Problem Count	Explanation	Status[2]	Actions TBD
FDD	552-FDD-96/010R0UD0 Revision 3, 5/1997	Description of end time of X-Band interference uses a 3-digit year.	3.50.3; 3-93, x1	Believe that this must be a typo, because, of the 4 times represented here, representing start and stop times for two events, 3 of the 4 have a 4 digit year representation. Put to Interface group to confirm.	P	Clarification of correctness of ICD; expected typographic error. Report result in next audit version: System Engineering.
FDD	552-FDD-96/010R0UD0	Description of end time of data file for Predicted Orbit number uses a 3-digit year.	3.53.3; 3-97; x1	Believe that this must be a typo, because, of the 4 times represented here, 3 of the 4 have a 4 digit year representation. Put to Interface group to confirm.	P	Clarification of correctness of ICD; expected typographic error. Report result in next audit version: System Engineering.
LPS	LPS Output Files DFCB 510-3FCD/0195[5]	Referenced for formats of selected temporal fields in L-7 ICD.	Specific examples reviewed, not Y2K issues.	A defined set of field formats are referenced from the L-7 ICD as defined in this document. (Actual reference is: 514-3FCD/0195; that document is now 510-3FCD/0195).	P	Include document/ selected elements in next audit revision, as appropriate: System Engineering.

[5] AO added document, referenced from M. Helton's document #3; URL: http://lps-server.gsfc.nasa.gov/!Review/review.html, "Landsat 7 Processing System (LPS) Output Files Data Format Control Book, 510-3FCD/0195, November XX, 1997 REVIEW"

2.3 Assessment of All Audit Issues

Table A-1 in Appendix A of this document presents the results of initial analysis for all the potential Y2K ICD issues raised by the initial ICD review. This includes those considered to be closed (resolved) and those remaining open that are listed in Table 2.3-2.

The following notes (C.1 - C.6) appear throughout Table A-1 and are intended to explain the reasoning frequently used for considering issues resolved. Note that these assumptions will be captured in a forthcoming AO directive of coding rules related to Y2K compliance:

C.1 - Two-digit year field in file name. Example: L70R file name (see table A-1, Landsat 7 ICD). The file names contain another item, e.g. 'L7', which limits their duration to much less than 100 years and hence makes use of the two-digit year specification acceptable. Assumption: If in code product year is parsed from file name (unlikely) century is not assumed (would be Detailed Design error); date will be available in Y2K safe form from other defined sources, typically within the file.

C.2 - Two digit year field in data product header/metadata field, typically file, record or object name (see table A-1, L7 Zero-R DFCB); example L-70R SDS (Scientific Data Set) names. As for C.1. the inclusion of an additional field, in the case of the example 'L7' again, serves to make the two digit year sufficiently unique; maximum duration of the additional fields is << 100 years. Assumption: If in code year is parsed from field name (unlikely) century is not assumed (would be Detailed Design error); date will be available from other defined fields within the file.

C.3 - String used as an identifier contains a two digit year (see table A-1, V0 System for an example). String will be unique in 100 years and should not be used as a source for date calculations as there are others fields available specifically for that. Any code access which does read the string for date input would know that it is only 2 digit and therefore need to construct the century value.

C.4 - Field does not actually contain a year field; year given is only for semantic explanation, not part of syntax (see table A-1, V0 System for an example).

C.5 - File name contains a two digit year. Unlike C.1 there is no specific item of << 100 years duration in the filename but name will still be unique within 100 years (see table A-1, GSFC DAAC). Filename should not be used as a source for a date calculation as there are fields available in the file specifically for that purpose. Any code access to parse the filename for date input would know that it is only 2 digit and therefore need to construct the century value.

C.6 - The surface issues identified are not the real area of concern. Rather a problem may exist due to the indirect propagation of the surface issue. From a careful reading of other sections (see table A-1, EDOS ICD) of this ICD, the core of the problem is that time and date with a 2 digit year has been used to construct unique identifiers for files. These filenames are in turn embedded within other data structures. There are no problems other

than file naming problems. Note the 'naming' issue is not a problem as long as time is only used to generate file names.

2.4 Initial ICD Review Methodology

This review was performed on all of the external interface documents for the ECS Program to identify date dependencies where the date change from the year 1999 to the year 2000 may cause a problem. The anticipated problem stems from representing the year as a 2-digit number instead of a 4-digit number.

The method utilized for this review was an electronic search on certain key words of the baseline external interface documents. The key words where chosen to locate probable instances where 2-digit years are might be utilized. These key words were:

1. "date"
2. "year"
3. "yr"
4. "yy"

Most documents were considered the baseline version; some documents not available in baseline files were found in review files.

For each Y2K dependency a "first cut" determination was made to identify whether the dependency may be a problem when the date changes from 1999 to the year 2000. This determination addressed the question of what possible consequences could take place if no changes were made. If a possible consequence could occur, the date dependency was labeled a potential problem. Further analysis of these items was done to identify whether a change is necessary and what kind of change that would be.

Table B-1 shows the interfaces and identifies the documents used for the audit. This table also shows the total number of Y2K dependencies for each interface and the number of Y2K dependencies which were further analyzed for change considerations.

Most items which were identified as no consequence were items consisting of dates in Change Record pages and 2-digit year dates in Projected Work-off Plans. In these cases, the 2-digit year date dependency was considered a record which would only be dealt with by the "human eye", and not be processed by any software. In these cases the 2-digit date dependency for a set of dates in the same table (i.e. all changes in the Change Record page) were considered as one date dependency. In cases were a potential problem exists with a date dependency, each item in a table was considered and handled separately.

Table A-1 shows the date dependencies identified for each external interface document. Items which were originally considered as Potential Problems are indicated with an "X". These items were further assessed for a possible change. In some cases only a document change is expected to be needed. However, in most cases, a change to a 4-digit year representation needs to be considered.

Additional notes are as follows:

1. Certain sections of the EDOS document were not yet available and were not audited. These sections are: 2, 6, 9 and 10.
2. Only one document, the AM-1 (SSIM) interface, was not available in soft copy. In this case, the hard copy was reviewed.

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Appendix A. Y2K Issues by ICD

Table A-1. Initial Analysis of All Y2K ICD Issues

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[6]	Explanation	Status[7]
1	SCF	505-41-33	Date of changes	Change Record Page	vii	-	-	-
2	NSI	505-41-31	Date of changes	Change Record Page	vii	-	-	-
			'SourceCreateDate', 'SourceCloseDate' and 'SourceClosedDate' not defined	Appendix A - Figure A1, Table A-1	A-1, A-2 A-4	Xs (3)	Potential problem: format is not defined - it is a Remedy (COTS product supplier) specific exchange format. Remedy only displays 2 digit year, may handle the problem OK internally but this is TBD. The recommendation here is to confirm what Remedy does with this information. Format may change as a new version of Remedy is being considered at this time. Comment included on this field is "This field is in Remedy timestamp format using GMT"	O 2

[6] Count of problematic occurrences: "-" = zero, "X" == one, "Xs (N)" = N.

[7] Status after first AO review of initial search results: 'U 1' Urgent, action required; 'O 2' Open, review further; 'R 3', 'R 4' or 'R 5' Resolved - from less to more certainly; 'P' Pending, '-' No issues to review. .

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
3	Land-sat 7	By M. Helton: 505-41-32 Rev A, May 97 By AO:	Date of changes	Change Record Page	vii	-	-	-
			Landsat 7 data files from LPS	5.1.3	5-3, 5-4	Xs (2)	Year field in L-7 0R data file names. Not a problem because mission ID (L7) is also in name and mission duration << 100 years. See note C.1. under section 'Closed' above for explanation.	R 4
			Projected Work-off Plan Dates	Appendix A - Table A-1	A-1	-	-	-

[8] Count of problematic occurrences: "-" = zero, "X" == one, "Xs (N)" = N.

[9] Status after first AO review of initial search results: 'U 1' Urgent, action required; 'O 2' Open, review further; 'R 3', 'R 4' or 'R 5' Resolved - from less to more certainly; 'P' Pending, '-' No issues to review. .

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			PCD start and stop times, ETM last on and off times and SCENE_CENTER _SCAN time - format not defined.	Appendix C - Table C-1	C-2, C-3	Xs (5)	Format descriptions are referenced from LPS DFCB (514-3FCD/0195); that document is now 510-3FCD/0195 (B. Singleton) which was not included in the initial review (it has been added as document 26). Issue can be closed for these specific 5 fields as they have been checked and are defined using four-digit years.	R 5
4	VO System	505-41-30[10]	Date of changes	Change Information Page	vii	-	-	-
			Reference date of 1970 as '70'	5.3.2 parts f, g	5-11, 5-12	-	-	-
			SESSION_ID date defined as 'YY…'	Appendix A	A-17	X	In ODL message keywords specification: String identifying a user session contains two digit year. String should only be used as an ID and will be unique 100 years. See C.3.	R 4
			START_DAY_OF_YEAR examples use 2-digit years.	Appendix A	A-18	X	Example is of semantics not syntax; value is actually an integer day in year only; see C.4.	R 5
			STOP_DAY_OF_YEAR examples uses 2-digit years	Appendix A	A-20	X	Example is of semantics not syntax; value is actually an integer day in year only; see C.4.	R 5

[10] AO reviewed version: October 1997. Rev B., online from EDHS quick search.

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			DATE_AVAILABLE uses "no particular format".	Appendix A	A-24	X	Field format is not defined but is not used within V-0 protocol hence should not be in use by code.	R 4
5	GSFC DAAC	505-41-40; AO reviewed version: CH 07, 9/97[11]	Date of changes	Change Record Page	vii	-	-	-
			Notes 1 & 2 define "product generation time" in 2-digit years.	5.1.1 - Table 5-1	5-2	X	Filenames contain two digit year but is unique within 100 years. See note C.5	R 3
			Note 5 identification of pentad uses 2-digit year. (Ck year 2099)	5.1.1 - Table 5-1	5-2	X	Entry deleted from ICD (in version reviewed by AO). Likely to be a file name component as above and subject to the same arguments.	R 4
			NCEP Ship/Buoy file name as 2-digit year.	5.1.1 - Table 5-1	5-2	X	Two digit year is used as component in name of NCEP ancillary file. These files are delivered to ECS 8 times per day so there lifetime to the system must be << 100 years. Only likely problem is ambiguity which will not occur for 100 years.	R 4

[11] AO reviewed version: URL: http://edhs1.gsfc.nasa.gov/waisdata/catalog/intfcat.html, "505-41-40, CH 07, ICD Between ECS and the GSFC DAAC (8/96)", CH-07, 9/97,

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			NCEP Reynolds Blended File Name	5.1.1 - Table 5-1	5-2	X	Similar to above at frequency of once per week. Same arguments apply.	R 4
			EP/TOMS Data file name defined in 2-digit years.	5.2 - Table 5-3	5-3	X	TOMS daily Ozone data product filename contains a two digit year. File name should not be used to generate date and if it is century must be surmised. Unambiguous within 100 years.	R 3
			FILE_NAME defined as 2-digit year	4.3.4 - Figure 4-7	4-12	X	Various file names within the data component of PAN files (Production Acceptance Notification PVL)contain 2 digit years however these names should never be used as date sources (they are accompanied by separate time stamp fields which use 4 digit years) and should not cause a problem with uniqueness within 100 years.	R 3
6	LaRC DAAC	505-41-39[12]AO reviewed version CH 03 (4/97)	Date of changes	Change Information Page	vii	-	-	-

[12] Document 6 AO reviewed copy: URL: http://edhs1.gsfc.nasa.gov/waisdata/catalog/intfcat.html, "505-41-39, CHO3, ICD Between the ECS and the LaRC DAAC (8/96)"

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			sage2_aer and _ozo File Names as 2-digit years.	4.3.4 - Figure 4-4, 4-8	4-9, 4-13	Xs (2)	File names contain 2 digit year but also additional field limiting format to lifetime of << 100 years -i.e. mission identifier 'sage2' or 'sag2'; see note C.1.	R 4
			Sage II File Names defined in 2-digit years	5.1 - Table 5-1	5-1	Xs (2)	As above. Files are one per month and contain specific date and time fields separately audited for Y2K compliance.	R 4
			Work-off Plan dates in 2-digit years	Appendix A	A-1	-	-	-
7	LPGS ICD	423-41-55[13]	Date of changes	Change Information Page	vii	-	-	-
8	JPL DAAC	505-41-44-001 ICWG Review Copy (209-CD-019-001), 11/1997	None	-	-	-	-	-
9	NSIDC	423-41-45	Date of changes	Change Information Page	vii	-	-	-
			Work-off Plan dates in 2-digit years	Appendix A	A-1	-	-	-

[13] Document 7 AO reviewed copy: URL: http://lpgs-server.gsfc.nasa.gov/!LPGS_Baseline/baseline.html, "Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the ESDIS Level 1 Product Generation System (LPGS), 423-41-55, October 1997"

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
10	NOAA ADC	505-41-36[14]	Date of changes	Change Information Page	vii	-	-	-
			Work-off Plan dates in 2-digit years	Appendix A	A-3	-	-	-
			PRD.SARS.VEG.BLEVEL. File Names in 2-digit years.	5.3.2.1	5-8, 5-9	Xs (10)	Two digit year is used only as one field in the file names, which also contain product type identifying string 'PRD'. Files will contain other date stamp fields and if code uses filename to derive date it is clear that century must be surmised.	R 3
11	ASTER (SDPS/CSMS)	505-41-34	Date of changes	Change Information Page	vii	-	-	-
			'SourceCreateDate' and 'SourceCloseDate' not defined	8.3 - Figure 8-1, Table 8-1	8-2, 8-3	Xs (2)	Potential problem; uses a Remedy (COTS product supplier) specific exchange format. Remedy only displays 2 digit year, may handle the problem OK internally but this is TBD. The recommendation here is to confirm what Remedy does with this information. Format may change as a new version of Remedy is being considered at this time.	O 2

[14] AO reviewed version: July 1997. Rev B., online from EDHS quick search.

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Work-off Plan dates in 2-digit years	Appendix A	A-1	-	-	-
			Change Notes in 2-digit years.	Appendix C	C-3	-	-	-
12	AM-1 (SAS)	505-41-38 (CH02 3/1996)	Date of changes	Change Information Page	vii	-	-	-
13	AM-1 (SSIM)	421-11-19-02 (10/1996, Hard Copy)	Date of changes	Change Record Page	ii	-		-
			ETS LRS provides clock according to EIA 422A/449 standard - should be referenced and checked.	4.1.1.1	4-2	X	This is strictly a timing signal used for the synchronous link - see the 422A standard - no issue	R 5

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			SSIM clock provided in telemetry channels - format not identified.	4.1.2.1	4-3	X	Same timing signal above; same comment. Also spacecraft time (which will not necessarily coincide with wall-clock as this is a simulator being described here) is imbedded in the telemetry stream. This time code is defined in " ICD 106", AM-1 DFCB, copy in Library. All data is contained in CCSDS packets which have a secondary header containing the time, represented as no. of days , no. of msecs, and no. of usecs since 1/1/58. Day represented as 16 bit rolls over after 180 yrs. Believed only relevant to FOS within ECS.	R 5
14	AM-1 (SDVF)	505-41-37	Date of changes	Change Record Page	vii	-	-	-
15	AM-1 (PDB/DFCD) - Vol. 1 Generic	505-10-35-1	Date of changes	Change Information Page	vii	-	-	-
			Values for constant types of time are given in 2-digit years.	5.1.13	5-18	-	-	-

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
16	AM-1 (PDB/DF CD) - Vol. 2 AM-1 Mission	505-10-35-2	Date of changes	Change Information Page	vii	-	-	-
17	METEOR (SAGE III MOC)	505-41-47 (10/1996)	Date of changes	Change Record Page	vii	-	-	-
			Range beginning and ending dates - format question on items 2 and 3.	5.2.2.1 - Table 5-1	5-3	Xs (2)	The description of the time code provided in the ICD is: "CCSDS UTC Format A". This isn't enough to understand how to use this value. CCSDS Time Codes Format book has been reviewed but there is still some ambiguity - there are several different CCSDS time code formats, one of which might cause a problem but none of which is called 'Format A'. Recommend that the Interface group resolve what the format is and then report in next version.	P
			Packet times - format question on items 24-6.7 and 24-6.9.	5.2.2.2 - Table 5-2	5-7	Xs (2)	The format for this time is specified as PB-5 time code which is a ranging time code relative to 10-1-1995 that counts up for about 27 years. Refer for instance to Sec 8.1.2.4 of the EDOS ICD for a spec of this.	R 5

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Dates of first and last packets for Ancillary data - format question for items 3 and 4.	5.5 - Table 5-5	5-11	Xs (2)	See comment above on section 5.2.2.1 item. To be reviewed when format is known in next System Engineering audit.	P
			Dates for first and last packets for Orbit Ancillary Metadata - format question	5.6 -Table 5-6	5-13	Xs (2)	See comment above on section 5.2.2.1 item. To be reviewed when format is known in next System Engineering audit.	P
18	DAS	423-41-56	Date of changes	Change Information page	vii	-	-	-
			Projected Resolution dates in 2-digit years.	Appendix B - Table B-1	B-1	-	-	-

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
19	Landsat 7 System (DFCB) Vol. IV - Wideband Data	By M. Helton: 23007702-IVF 5/29/1997 Revision F By AO: LPS o/p files DFCB: 510-3FCD/0195, draft Nov 97[15]	Reviewed by M. Helton; no points of concern found.	-	-	-	No concerns found.	-
20	L 7 Zero-R Dist. Product DFCB	By M. Helton: 430-11-06-007-0 Vol. 5, Book 1, 9/1/1997 By AO: Revision 1, 1/98[16]	LPS file naming notation uses 2-digit years	5.3.1	5-5	X	File name contains last two digits of year but also mission ID (L7) making 2 digit year sufficiently unique. See note C.1.	R 4

[15] Document 19 AO reference: URL: http://lps-server.gsfc.nasa.gov/!Review/review.html, "Landsat 7 Processing System (LPS) Output Files Data Format Control Book, 510-3FCD/0195, November XX, 1997 REVIEW"

[16] Document 20 AO reference: URL: caster.gsfc.nasa.gov/l7/review.html, "Landsat 7 System Zero-R Distribution Product Data Format Control Book Volume 5, Book 1, Revision 1, January 1998, 430-11-06-007-0"

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			All SDS names (items 1 - 20) contain 2-digit years.	5.3.2 - Table 5-1	5-5 to 5-6	Xs (20)	All SDS names contain two digit year but also, again, mission identifier, L7, hence ambiguity should not arise. See note C.2.	R 3
			Vdata file names contain 2-digit years	- Table 5-2 - Table 5-3 (11 examples in section) 5.3.3.3- Table 5-4 - Table 5-5 5.3.4.1 - Table 5-6	5-7 5-12 5-21 5-22 5-23 5-25	Xs (6)	All 'Vdata' file names contain a two digit year field ('YY'). However they also all contain the mission identifier, 'L7' making them sufficiently unique. See note C.1. Page 5.3.3.3 repeats 11 of these file names as fields.	R 4
			File names use 2-digit years.	5.3.4.1 - Table 5-6	5-32 to 5-34	Xs (14)	Table 5-6 contains file names with two digit years as fields. File name also contains mission identifier; see note C.1.	R 4
			All file names have 2-digit years	5.3.4.2 - Table 5-7	5-51 to 5-54	Xs (23)	Table 5-7 contains file names with two digit years as fields (see example).File name also contains mission identifier; see note C.1.	R 4

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Object names contain 2-digit years.	5.3.6 - Table 5-8	5-64 to 5-65	Xs (46)	Data object names in 'Vgroups' contain 2 digit years. However they also contain the mission identifier 'L7' and hence are unambiguous. Date information would be extracted from other fields; see note C.2.	R 3
21	Landsat 7 System CPFD	430-15-01-002-0 9/1/1997 (By AO: Revision 1, 1/98[17])	None (CPFD == Calibration Parameter File Definition)	-	-	-	No issues.	-
22	LPGS Output Data Formats DFCB	By M. Helton: 510-3DFC/0197 11/1997 By AO: January 1998[18]	"DATEHOUR_CONTACT_PERIOD" uses 2-digit years	4.3.11 - Table 4-1	4-5	X	This is in the LPGS metadata file section of the HDF-EOS format LPGS o/p file specification (section 4.3.8 and Table 4-1). The field storing the date and hour of the 'contact period' uses a two digit year. The file also contains time and date using a 4 digit year field in several fields, e.g. Product_Creation_Time. Year is unlikely to be used with assumed century but might be; use in implementation must be reviewed.	O 2

[17] Document 21 AO reference: URL: caster.gsfc.nasa.gov/l7/review.html, "Landsat 7 Calibration Parameter File Definition, Revision 1, January 1998, 430-15-01-002-0"

[18] Document 22 AO reference: URL: http://lpgs-server.gsfc.nasa.gov/!LPGS_Baseline/baseline.html, "Earth Sciences Data Information System (ESDIS) Level 1 Product Generation System (LPGS) Output Files Data Format Control Book (DFCB), 510-3DFC/0197, January 1998"

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
23	EDOS (SDPS/ CSMS)	510-ICD-EDOS/EGS (Interface Engineering doc: EDOS file, 12/31/1997)	Item 4 - Time of SCS initiation uses 2-digit years.	5.4.5 - Table 5.4.5-1	5-39	X	An SCS is not a file but an event. Like the items below, an ID is attached to the event and is recorded in various files that are exchanged. The naming convention for the SCS involves using the start time of the SCS, which uses a 2 digit year. Very unlikely that this will lead to a problem.	R 4
			Item 1 - Year for GMT format uses a 2-digit year.	5.4.6 - Table 5.4.6-1	5-40	X	From a careful reading of Sec 5 of this ICD, the core of the problem is that time and date with a 2 digit year has been used to construct unique identifiers for files. These filenames are in turn embedded with in other data structures defined in this section. There are no problems other than file naming problems; the 'naming' issue isn't a problem as long as time is only used to generate file names. See note C.6.	R 4
			Item 1 - Year for GMT format uses a 2-digit year.	8.1.2.6 - Table 8.1.2.6-1	8-11	X	As above except see Sec 8 of the ICD for applicable detail. See also note C.6 .	R 4

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Item 1 - Year for GMT format uses a 2-digit year.	12.1.2.8 - Table 12.1.2.8-1	12-11	X	As above except see Sec 12 of the ICD for applicable detail. See also note C.6 in section 'closed' above. Problems other than naming are: (1) in Service Request (Sec 12.1.3.4): - list of PDS-IDs (naming) - start S/C (Spacecraft) time - stop S/C time - time of execution (2) in Summary Performance Report (Sec 12.1.3.6): - contact identification (naming). Discussion in review agreed that these are not a problem currently but should be investigated as a correction in the ICD to resolve them once and for all.	R 4 O 2

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Item 1 - Year for GMT format uses a 2-digit year.	12.1.2.9 - Table 12.1.2.9-1	12-12	X	See above for the entry on 12.1.2.8	R 4
24	NCCDS	530-ICD-NCCDS/MOC (4/1997)[19]	Time Code PB4 (ref. 2.3b) - to be checked.	4.2.2.2.3	4-6	Xs	This is a "millisecond/microsecond" time code (PB4) defined in NASA standard "IRIG Standard Parallel Binary Time Code Format" , X-814-77-64, 5/77. Y2K compliance, if this code contains year data, should be verified. See note C.6	O 2
			Time Code PB4 (ref. 2.3b) - to be checked.	9.1.4	9-4	Xs	Uses same format as above.	O 2
			Calendar year given as 2-digit year - warning note provided.	5.3.3 - Table 5-3	5-4	X	Two digit year is used in the time and date format for NCCDS 'messages' such as MOC 'Schedule Add Request" etc. ICD states that i/f will not change for Y2K and that messages spanning the century roll-over should be anticipated. Impact is unlikely to extend beyond messages which span this roll-over but this is client s/w dependent. Maximum message duration appears to be 24 hours.	O 2

[19] AO reviewed version: URL: http://ncc98.gsfc.nasa.gov/doc-list/docicd.htm, "530-ICD-NCCDS/MOC Interface Control Document Between the Network Control Center Data System and the Mission Operations Centers, Original plus DCN 001 through DCN 004 April 1997"

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Item 2 - Event start time given as a 2-digit year.	7.2.1 - Table 7-1	7-2	X	This is a specific usage of the above time format(in 'Schedule Add Request Message'). Maximum event duration is 24 hours.	O 2
			Items 8&9 - New & Old event start times given as 2-digit years.	7.2.2 - Table 7-3	7-9	Xs (2)	Event start times used in 'Schedule Result Message'. Following argument given above usage should be verified as Y2K compliant in ECS Detailed Design and code.	O 2
			Item 9 - Old event start time given as a 2-digit year.	Table 7-6	7-14	X	As above in 'Schedule Delete Message'.	O 2
			Item 7 - Event start time given as a 2-digit year.	Table 7-7	7-15	X	As above in 'Schedule Deletion Notification Message'.	O 2
			Item 12 - Event start time given as a 2-digit year.	Table 7-8	7-18	X	As above in 'Schedule Data Message Header" format.	O 2
			Items 4&5 - Service start & stop times given as 2-digit years.	Table 7-9 Table 7-10 Table 7-11 Table 7-12 Table 7-13 Table 7-14 Table 7-15 Table 7-16 Table 7-17	7-19 7-20 7-22 7-24 7-27 7-32 7-37 7-39 7-41	Xs (18)	Service start and stop times in all service formats (e.g. "MA Forward Service Format") use two digit year. Same argument as above implies that usage of these files and fields should be checked in ECS Detailed Design and code.	O 2

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Time, Time tags and ODM time tags given as 2-digit years.	Table 8-12 Table 8-20 Table 8-21 Table 8-22 Table 8-26 Table 8-26 Table 8-30 Table 8-30 Table 8-30 Table 8-31 Table 8-34 Table 8-34 Table 8-35	8-20 8-38 8-42 8-46 8-64 8-65 8-82 8-83 8-84 8-86 8-94 8-95 8-96	Xs (13)	Time stamps on many 'Performance Data Messages' and 'User Monitoring Messages' use two digit year. As above usage should be verified for Y2K compliance.	O 2
25	FDD	552-FDD-96/010R0UD0 Revision 3, 5/1997	Date of changes	Change Information Page	vii	-	-	-
			Issue dates of creation and resolution in 2-digit years.	Status of TBD/TBR Issues - Table	x	-	-	-
			Comment statements on modification dates use 2-digit years.	D.2.4	D-15 to D-18	-	-	-

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Byte 77 description for file generation date indicates a 2-digit year.	3.41.3	3-89	X	The file is a solar/lunar/planetary ephemeris file. This field (file generation date/time) is part of general file identification info in the file header, unlikely to be used for actual computations. The time span of coverage of the data within the file does represent year as 4 characters. Might be a problem, very unlikely.	R 4
			Description of end time of X-Band interference uses a 3-digit year.	3.50.3	3-93	X	Believe that this must be a typo, because, of the 4 times represented here, representing start and stop times for two events, 3 of the 4 have a 4 digit year representation. Put to Interface group to confirm. Recommend Action to Interface group.	P

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			Description of end time of data file for Predicted Orbit number uses a 3-digit year.	3.53.3	3-97	X	Believe that this must be a typo, because, of the 4 times represented here, 3 of the 4 have a 4 digit year representation. Put to Interface group to confirm. Recommend Action to Interface group.	P
26	LPS Output Files DFCB	LPS Output Files Data Format Control Book, 510-3FCD/ 0195[20]	A defined set of field formats are referenced from the L-7 ICD as defined in this document. (Actual reference is: 514-3FCD/0195; that document is now 510-3FCD/0195: B. Singleton).			TBD		P
			PCD start and stop times	Section 4.2.1., Table 4-17	4-55	-	Not an issue: uses a four digit year. This document is referenced for the format definition of this field from document #3, the Landsat-7 ICD.	-

[20] AO added document; URL: http://lps-server.gsfc.nasa.gov/!Review/review.html, "Landsat 7 Processing System (LPS) Output Files Data Format Control Book, 510-3FCD/0195, November XX, 1997 REVIEW"

Table A-1. Initial Analysis of All Y2K ICD Issues (continued)

I/F #	I/F	Doc. ID & Version/ Ref/Date	Y2K Dependency Summary	Section of Document	Page	Prob. Count[8]	Explanation	Status[9]
			ETM last on and off times	Section 4.2.1., Table 4-17	4-57	-	Not an issue: uses a four digit year. This document is referenced for the format definition of this field from document #3.	-
			SCENE_CENTER _SCAN time	Section 4.2.1., Table 4-17	4-62	-	Not an issue: uses a four digit year. This document is referenced for the format definition of this field from document #3.	-

Appendix B. Initial ICD Review Statistics

Table B-1. Initial ICD Review Statistics (1 of 2)

No.	I/F	Doc ID	Total Y2K Date Dependencies	Y2K - Potential Problems (Xs)
1	SCF	505-41-33	1	0
2	NSI	505-41-31	4	3
3	Landsat 7	505-41-32	9	7
4	V0 System	505-41-30	6	4
5	GSFC DAAC	505-41-40	7	6
6	LaRC DAAC	505-41-39	6	4
7	LPGS ICD	423-41-55	1	0
8	JPL DAAC	505-41-44-001 ICWG Review Copy (209-CD-019-001), 11/1997	0	0
9	NSIDC	423-41-45	2	0
10	NOAA ADC	505-41-36	12	10
11	ASTER (SDPS/CSMS)	505-41-34	5	2
12	AM-1 (SAS)	505-41-38 (CH02 3/1996)	1	0
13	AM-1 (SSIM)	421-11-19-02 (10/1996, Hard Copy)	3	2
14	AM-1 (SDVF)	505-41-37	1	0
15	AM-1 (PDB/DFCD) - Vol. 1 Generic	505-10-35-1	2	0
16	AM-1 (PDB/DFCD) - Vol. 2 AM-1 Mission	505-10-35-2	1	0
17	METEOR (SAGE III MOC)	505-41-47 (10/1996)	9	8
18	DAS	423-41-56	2	0
19	Landsat 7 System (DFCB) Vol. IV - Wideband Data	23007702-IVF 5/29/1997 Revision F	0	0
20	L 7 Zero-R Dist. Product DFCB	430-11-06-007-0 Vol. 5, Book 1, 9/1/1997	110	110
21	Landsat 7 Cal. Parameter File Definition	430-15-01-002-0 9/1/1997	0	0

Table B-1. Initial ICD Review Statistics (2 of 2)

No.	I/F	Doc ID	Total Y2K Date Dependencies	Y2K - Potential Problems (Xs)
22	LPGS DFCB	510-3DFC/0197 11/1997	1	1
23	EDOS (SDPS/CSMS)	510-ICD-EDOS/EGS (ifengng EDOS file, 12/31/1997)	5	5
24	NCCDS	530-ICD-NCCDS/MOC (4/1997)	40	40
25	FDD	552-FDD-96/010R0UD0 Revision 3, 5/1997	6	6
	TOTAL		234	208

Appendix C. Action Items

Table C-1. Action Items (1 of 2)

Item #	Action Description	Assignee	Status
1.	Behind the issues classified as 'Resolved' lie a number of assumptions (e.g. 'date is not parsed from filename'). As these constitute "Don't do" rules for development they will be captured and issued in a directive. Included will be a requirement for development to search for existing examples of each error case and to refer to AO for direction if they have any unavoidable infringements of these rules, now or in the future. The directive also will be sent to all CI leads and flagged to the ITEAM.	Andy Newton	
2.	The footnotes supplied by Mike with his report showed a small number of documents/sections as to be reviewed. On clarification this list reduced to the EDOS document sections only. In addition new versions of some of the ICDs are in progress. An updated version of the review should be issued when priorities allow (note: preferably with change bars).	Mike Helton	
3.	A number of time/date formats in the L-7 ICD were found to be defined in a document that had not been reviewed: the LPS Output Data Files DFCB(514-3FCD/0195, now 510-3FCD/0195). Review of the specific fields referenced will be added to the current AO review.	Andy Newton	Closed 2/15/98 (see Table A-1)
4.	Determine whether complete review of the LPS Output Data Files DFCB needs to be added to the ICD audit and if so to complete its addition to the next version. (Note: This document was checked briefly: the specific fields noted as referenced by the L-7 ICD are Y2K safe. However there are a number of other potential Y2K issues within it e.g. two-digit years in filenames etc.).	Mike Helton	
5.	A number of ICDs were found to not adequately reference external documents where data formats are defined. AO to identify (expect ccMails from Rick and me, Jim); System Engineering to manage change process.	Mike Helton	

Table C-1. Action Items (2 of 2)

Item #	Action Description	Assignee	Status
6.	Discussion of the above example led to the issue of other data format books which may be used to define formats used within the interfaces, i.e. which should be referenced by the ICDs, but which have not yet been audited. Joe Guzek asked System Engineering to produce a list of such reference books which actually specify data formats for components of ECS interfaces with particular emphasis on NOAA and GSFC ICDs. Ideally this exercise would also identify the specific definitions contained in such documents which are applicable to ECS; the six referenced data fields from 510-3FCD/0195 are an example of this - see entry #26 in Table A-1.	Jim Lefebvre	
7.	Task each subsystem lead to identify any known areas of their subsystem that must deal with 2 digit years. AO would provide a POC for the subsystem leads to coordinate with to get direction of how to handle the potential Y2K problem.	Andy Newton	
8.	COTS products need to be brought into the Y2K audit exercise, both from the point of view of interface data formats and capabilities. EDS is preparing a comprehensive list of COTS products used on ECS with an assessment of their Y2K compliance.	Abdollah Abtahi	
9.	Within the first AO exercise it was noticed that Discover contains a Y2K code checking add-on. First-pass analysis suggests that this would be a very useful tool for attacking the other end of the Y2K issue: problems which exist in the code. We do not have this option installed at present. There is some online information under Discover Help. Vincent has the paper documentation: 'Discover Y2K user's Guide' etc.	Mac McDonald	Obtained Discover documentation and initial cost estimate (expensive)
10.	Set of similar problems found with NCCDS ICD should affect only FOS: Andy to pass findings on to FOS (one or more of: Andy Miller, Debbie Dunn, John Rouse, Carol Chachulski).	Andy Newton	Closed 2/9/98 (all issues resolved)

Abbreviations and Acronyms

AO	Architect's Office
DAS	Data Assimilation System
DFCB	Data Format Control Book
ECS	EOSDIS Core System
EDOS	EOS Data and Operations System
FDD	Flight Dynamics Division (GSFC Code 550)
ICD	Interface Control Document
I/F	Interface
LPGS	Landsat 7 Level-1 Product Generation System
L7	Landsat 7
NCCDS	NCC Data System
NSI	NASA Science Internet
SCF	Science Computing Facility
Y2K	Year 2000

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