| **Page** | **Section** | **Line** | **Type** | **Comment/ Rationale** | **Source of Comment (Name/Agency)** | **Suggested Disposition** | **Disposition****(Completed by Principal Editor)** |
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| N/A | N/A | N/A | N/A | ALL PAGE/SECTION/LINE NUMBERS RELATIVE TO "CHANGES ACCEPTED" VERSION | David S. Berry / NASA | N/A |  |
| viii | N/A | N/A | ed | OCM tables are not listed (they all show as OEM Metadata) | David S. Berry / NASA | FYI... you can probably leave this to the CCSDS Editor to fix if you like. |  |
| 1-1 | 1.1 | para 1 line 1  | ed | Document title should be plural since there are 4 messages in the doc. | David S. Berry / NASA | From: "Orbit Data Message"To: "Orbit Data Messages" |  |
| 1-1 | 1.1 | para 4 line 1  | ed | Document title should be plural since there are 4 messages in the doc. | David S. Berry / NASA | From: "Orbit Data Message"To: "Orbit Data Messages" |  |
| 1-1 | 1.1 | para 6 line 3  | ed/te | This line refers to "... specified in an ICD". Given the CESG aversion to ICDs, I wonder if we can circumvent this by simply saying "... should be mutually agreed between exchange partners" or "... between data exchange participants" and let the exchange partners figure out how they want to document their agreement.  | David S. Berry / NASA | From: "... should be specified in an ICD."To: "... should be mutually agreed between data exchange partners." I'm thinking we could maybe appease the CESG if we do something like this throughout the document rather than referring specifically to ICDs. | Discuss at Mountain View. |
| 1-2 | 1.2 | para 3 | ed/te |  | David S. Berry / NASA | From: "... is detailed in an integrated XML schema document for all Navigation Data Message Recommended Standards. (See reference [4].)"To: "... is detailed in Section 8. |  |
| 1-2 | 1.4 |  | ed | Section 8 is missing. | David S. Berry / NASA | Add Section 8 detailing the XML instantiation. |  |
| 1-3 | 1.5 | (f) | ed/te | Red text replacement suggestion. | David S. Berry / NASA | From: "... within NMINTRK minutes..." To: "... within a specified number of minutes..." |  |
| 1-4 | 1.7 | [9] [10] | ed | Lists Pink Books in the references. | David S. Berry / NASA | Change to current Blue Book issues... the editor will fix the versions if newer standards have been published. |  |
| 2-3 | 2.5 | 2 |  | Lists the Ephemeris Compression specification, which has been removed. | David S. Berry / NASA | Remove Ephemeris Compression list item. |  |
| 2-3 | 2.6 | 3 | te | Untested claim. | David S. Berry / NASA | From: "... a single, self-contained OCM is typically sufficient."To: "... a single, self-contained OCM may be sufficient." |  |
| 3-2 | Table 3-1 |  | ed/te | ORIGINATOR: I think the parenthetical comment should be documented in Section B, and not in every potentially applicable table row. | David S. Berry / NASA | Move the statement in the parenthetical comment to Section B1. |  |
| 3-3 | Table 3-2 |  | te | MESSAGE\_ID: This should be in the Header, as it is in the CDM and RDM. | David S. Berry / NASA |  |  |
| 3-3 | Table 3-2 |  | te | MESSAGE\_CLASSIF: it is not clear why this is necessary. This seems to impose USA information classifications, or at least in general these classifications are probably not standardized. | David S. Berry / NASA | Discuss at Mountain View |  |
| 3-3 | Table 3-2 |  | ed/te | CENTER\_NAME keyword Description: general note... the parenthetical "(and note the procedure... use case)." should be moved into the Annex B, Section B2, and removed from the table. | David S. Berry / NASA | Please move the parenthetical note to the Annex B. (This one and all the others in the document.) |  |
| 3-4 | Table 3-2 |  | ed/te | REF\_FRAME: We formerly had "ICRF" as an acceptable value. This is apparently changing.  | David S. Berry / NASA | Discuss implications at Mountain View. |  |
| 3-5 | Table 3-3 |  | ed/te | COV\_REF\_FRAME: has "non-units" in the "Units" column. | David S. Berry / NASA | From: examplesTo: "n/a"The SANA registry will list all the values, not just samples. |  |
| 3-6 | Table 3-3 |  | te | MAN\_DV\_n: I don't think the units change from "km/s" to "m/s" is acceptable. | David S. Berry / NASA | Change units from "m/s" back to "km/s". Discuss at Mountain View. |  |
| 3-7 | 3.3 | 2 | ed | Says examples are in Annex E, but they are now in Annex D. | David S. Berry / NASA | From: Annex ETo: Annex D |  |
|  |  |  |  |  |  |  |  |
| 6-1 | 6.1.3 | 2 | te | Units listed for maneuvers are inconsistent with units provided for the OPM version 2. (Note: OPM maneuver units were unilaterally changed in P2.38, but this requires discussion. | David S. Berry / NASA | Preferred: Make the maneuver units consistent with the OPM Version 2.2nd choice: Explicitly indicate that the OCM units are different from those used in the OPM. |  |
| 6-1 | 6.1.3 | 1 | te | States that the units "universally used throughout the OCM are...", but this is not completely true given that some of the entries in the SANA registries use units besides km, m/s, m/s^2, kg, and s. | David S. Berry / NASA | Revise the statement to reflect either "generally" or "default" or something given that sometimes the units will not be as specified. |  |
| 6-1 | 6.1.5 | 5 | te | Recipient encouragement is probably not sufficient. | David S. Berry / NASA | From: "... the message recipient is encouraged to use a suitable interpolation method." To: "... the message recipient must use a suitable interpolation method." |  |
| 6-1 | 6.1.5 | 8 | ed | Word choice ("use" instead of "have") | David S. Berry / NASA | From: "... the recipient must have a suitably-compatible orbit propagator"To: ".. the recipient must use a suitably-compatible orbit propagator" |  |
| 6-1 | 6.2.1 | 1-3 | ed | The second and third sentences in this section are redundant. | David S. Berry / NASA | Remove the second sentence. The third sentence is sufficient. |  |
| 6-2 | 6.2.1 | all | ed | This list of header, metadata, and optional data sections is entirely redundant with Table 6-1. | David S. Berry / NASA | I would remove this material and leave 6.2.1 as simply the two sentences at bottom of p.6-1. |  |
| 6-3 | 6.2.1 Table 6-1 |  | ed/te | Somewhere it should be stated that "at least one of the optional data sections must be provided", or words to that effect. Otherwise, a degenerate OCM of header and metadata would be "valid", but that shouldn't be our intent. | David S. Berry / NASA | Add text indicating at least one data section. |  |
| 6-4 | 6.2.2 | Table 6-2 | te | The "ORIGINATOR" field and "MESSAGE\_ID" fields should in the Header, not the Metadata. | David S. Berry / NASA | Move "ORIGINATOR" and "MESSAGE\_ID" fields from Metadata to Header. This would be consistent with the other ODMs, CDM, and the RDM. |  |
| 6-4 | 6.2.3.3 | 1 | ed | Word choice. | David S. Berry / NASA | From: "Each metadata section..."To: "The metadata section..."Since you have designed the OCM to have a single metadata section, "Each" is equivalent to "The", and "The" better expresses the singular nature and is consistent with 6.2.3.2. |  |
| 6-4 | 6.2.3.4 | 1 | ed/te | Unclear requirement. | David S. Berry / NASA | I think the intent of "Each of these..." refers to "META\_START" and "META\_STOP", but it could also apply to any metadata keyword. The statement in 6.2.3.4 could be easily appended to 6.2.3.3, which would make the requirement clear. |  |
| 6-4 | 6.2.3.5 | NOTES | ed/te | The three "NOTEs" that appear after 6.2.3.5 seem premature. | David S. Berry / NASA | Suggest moving these NOTEs to right before the Table 6-3. |  |
| 6-4 | 6.2.3.5 | NOTE1 | te | Should we specify "reference [2]" for the OBJECT\_NAME and OBJECT\_ID? | David S. Berry / NASA | Consider |  |
| 6-4 | 6.2.3.5 | NOTE2 | te | Wording to indicate a recommendation. | David S. Berry / NASA | From: "... it is recommended that one of these three keywords be supplied"To: "... at least one of these three keywords should be supplied" |  |
| 6-5 | 6.2.3.7 | All | ed/te | The material in this section (which is entirely new) should be consistent with similar material that already appears in the published CDM and the very mature RDM. The excess detail seems unnecessary. | David S. Berry / NASA | Use the specifications already provided in the CDM and RDM. |  |
| 6-56-6 | 6.2.3.8 | All | te | This material is entirely new in this version, and has not seemed necessary to date. | David S. Berry / NASA | Consider whether or not this material is really necessary... does it really add anything useful to the OCM? What if someone codes it incorrectly? If it is seen to be necessary, how does it align with SC14 standards? |  |
| 6-7 | Table 6-3 | First line | ed/te | The "META\_START" keyword specified in 6.2.3.3 is missing. | David S. Berry / NASA | Add "META\_START" keyword after table heading row. |  |
| 6-7 | Table 6-3 |  | te | ORIGINATOR keyword: As noted above, for consistency with other NavWG standards, this should be in the Header. | David S. Berry / NASA | Move to header. |  |
| 6-7 | Table 6-3 |  | ed/te | ORIGINATOR keyword Description: general note... the parenthetical "(and note the procedure... use case)." should be moved into the Annex B, Section B1, and removed from the table. | David S. Berry / NASA | Please move the parenthetical note to the Annex B. (This one and all the others in the document.) |  |
| 6-7 | Table 6-3 |  | ed/te | MESSAGE\_ID keyword: As noted above, for consistency with other NavWG standards, this should be in the Header. | David S. Berry / NASA | Move to header. |  |
| 6-76-8 | Table 6-3 |  | te | PREV\_MESSAGE\_ID, PREV\_MESSAGE\_EPOCH keywords not consistent with RDM | David S. Berry / NASA | From: PREVTo: PREVIOUS |  |
| 6-8  | Table 6-3 |  | te | PREV\_MESSAGE\_EPOCH... the time scale should be UTC, just as it is for "CREATION\_DATE". | David S. Berry / NASA | From: "The time scale of this epoch is controlled via the DEF\_TIME\_SYSTEM keyword."To: "The time scale of this epoch is UTC". |  |
| 6-8 | Table 6-3 |  | te | NEXT\_MESSAGE\_EPOCH... not clear why this is necessary. | David S. Berry / NASA | Discuss at Mountain View |  |
| 6-8  | Table 6-3 |  | te | NEXT\_MESSAGE\_EPOCH... if this is seen as necessary, the description text is not relevant to the keyword. | David S. Berry / NASA | Remove the second sentence of existing text and replace with "The time scale of this epoch is UTC". |  |
| 6-8 | Table 6-3 |  | te | MESSAGE\_CLASSIF: it is not clear why this is necessary. This seems to impose USA information classifications, or at least in general these classifications are probably not standardized. | David S. Berry / NASA | Discuss at Mountain View |  |
| 6-8 | Table 6-3 |  | te | \*\*\*\_MSG\_LINK: Let's discuss whether these fields are desirable or necessary. They may well be, but let's discuss because if they are adopted here they could engender corrigenda to other standards. | David S. Berry / NASA | Discuss at Mountain View |  |
| 6-9 | Table 6-3 |  | te | INTERNATIONAL\_DESIGNATOR: Why is this different from what we are asking for in "OBJECT\_ID" for the OPM, OMM, OEM? | David S. Berry / NASA | Seems like we should be consistent here with UNOOSA. Let's discuss at Mountain View whether or not UNOOSA or NSSDC is best for this data. |  |
| 6-9 | Table 6-3 |  | te | OPERATOR, OWNER | David S. Berry / NASA | Not sure why these are relevant to the orbit given that there is already ORIGINATOR\_POC, TECH\_ORG, and TECH\_POC.  |  |
| 6-9 | Table 6-3 |  | te | MISSION: In my experience, this is very ambiguous, and not at all standardized. | David S. Berry / NASA | Review necessity for this field. We have lots of other info that better identifies the applicable spacecraft. |  |
| 6-9 | Table 6-3 |  | te | CONSTELLATION | David S. Berry / NASA | Not sure why this is necessary as a keyword. |  |
| 6-9 | Table 6-3 |  | te | LAUNCH\_\*: These keywords look like an attempt to create the Launch Data Message, and I don't think they are relevant to the trajectory per se. | David S. Berry / NASA | Discuss removal. |  |
| 6-10 | Table 6-3 |  | te | RELEASE\_EPOCH: I'm not sure what "most recent deployment of this space object" means. Presumably "this space object" is the one that was deployed... at best that phrase is ambiguous. | David S. Berry / NASA | Discuss removal. |  |
| 6-10 | Table 6-3 |  | te | MISSION\_\*\_EPOCH: The ODM is not really a Mission Description Document, so I'm not sure why these are here. Since "mission" is ambiguous, and missions are often measured in years, it's not clear why these are useful in the ODM. | David S. Berry / NASA | Discuss removal. |  |
| 6-10 | Table 6-3 |  | te | REENTRY\_EPOCH, LIFETIME: At this time, this data is properly in the RDM. | David S. Berry / NASA | Discuss removal. |  |
| 6-10 | Table 6-3 |  | te | OBJECT\_TYPE: Values should be the same as specified in the CDM/RDM | David S. Berry / NASA | Modify values to be consistent with CDM/RDM |  |
| 6-10 | Table 6-3 |  | te | OPS\_STATUS: It's not clear that a value can be uniquely defined. In particular, "PARTIALLY\_OPERATIONAL" may be excessively vague. | David S. Berry / NASA | Ensure that the values don't overlap. Ensure clear definition of "PARTIALLY\_OPERATIONAL" |  |
| 6-10 | Table 6-3 |  | te | ORBIT\_TYPE: Not sure if this is necessary. What if the ORBIT\_TYPE and the ephemeris data are inconsistent? | David S. Berry / NASA | Discuss operational need for this keyword. |  |
| 6-11 | Table 6-3 |  | te | DEF\_EPOCH\_TZERO: We need to reconsider this notion. It introduces unnecessary complexity to have a different EPOCH\_TZERO for each section of the OCM with overrides. I can see where having this type of flexibility might be desirable in the code used by an OCM PRODUCER to create an OCM, but it introduces a lot of unnecessary processing complexity for an OCM USER. I predict it will be error prone. | David S. Berry / NASA | Return to "EPOCH\_TZERO" for the entire OCM. |  |
| 6-11 | Table 6-3 |  | te | DEF\_TIME\_SYSTEM: Once again, I don't see the compelling need to have more than one TIME SYSTEM for an OCM. | David S. Berry / NASA | TIME\_SYSTEM should be sufficient. |  |
| 6-11 | Table 6-3 |  | te | SEC\_PER\_DAY: I'm having trouble imagining a scenario where this would be useful for navigating the spacecraft. Interesting from a science standpoint, but how to use this in orbit processing or tracking. | David S. Berry / NASA | Discuss at Mountain View. |  |
| 6-11 | Table 6-3 |  | te | EARLIEST\_TIME, LATEST\_TIME: Keywords are not consistent with other Nav WG standards, and it shouldn't be necessary for the OCM recipient to calculate these.  | David S. Berry / NASA | Let's use START\_TIME and STOP\_TIME please, and make them absolute times. |  |
| 6-12 | Table 6-3 | Last line | ed/te | The "META\_STOP" keyword specified in 6.2.3.3 is missing. | David S. Berry / NASA | Add "META\_STOP" keyword after table last row. |  |