| **Page** | **Section** | **Line** | **Type** | **Comment/ Rationale** | **Source of Comment (Name/Agency)** | **Suggested Disposition** | **Disposition****(Completed by Principal Editor)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| N/A | N/A | N/A | N/A | ALL PAGE/SECTION/LINE NUMBERS RELATIVE TO "CHANGES ACCEPTED" VERSION | David S. Berry / NASA | N/A |  |
| A-5 | A2.5 |  | te | The table is blank.DSB: I am remiss, but it's "on my list". Not a priority yet. | David S. Berry / NASA | Eventually we need to fill this out. I agree it can be left until the content solidifies, though it should be fairly easy to fill out for the OPM, OMM, OEM. | Awaiting inputs from David. |
| E-1 | E1 |  | te | In the various equations, rTarget does not appear to be used. | David S. Berry / NASA | If it is not used, it should be removed from the "Definitions". | Awaiting inputs from Pat North |
| E-1 | E1 |  | te | In the equation of Etarget , the angle $θ$(in $τ$Atmosphere($θ$)) is not defined; it's not mentioned in the definition of $τ$Atmosphere | David S. Berry / NASA | Provide definition if it's used, or remove from equation if it's not. | Awaiting inputs from Pat North |
| E-2 | E1 |  | ed/te | In the paragraph starting with "From the above equations...", it's not clear how the substitutions into the equation for VMabsolute are correct. The equation for VMabsolute is not provided. | David S. Berry / NASA | Provide equation for VM absolute based on the Definitions provided in this section. | Awaiting inputs from Pat North |
| Annex M | M-4 |  | Ed | Verify link to document. I was not able to reach it.  | Patrick Zimmerman / NASA | Verify and update link if necessary | Awaiting current link from AGI |
| 8-9 | 8 | 0 | te | I have just reviewed the NDM/XML document. There are comments for that document, which if taken, should also be implemented in this section. DSB: I have discussed with Fran why the XML material is organized as it is. I will review his comments and implement in revision to Section 8. | FMF/GMV/ESA | Implement agreements from NDM/XML as required | Awaiting input from David. |
| All | 8.48.4.28.4.38.5.18.5.2… | All | te | In this and the following sections I have tried to get rid of <x></x> pairs. Strictly speaking this would mean that an empty element is required whereas an actual section with structure and children is actually intended. I am trying to come up with a term better than ‘section’; something more XML like.DSB: I have discussed with Fran why the XML material is organized as it is. I will review his comments and implement in revision to Section 8. | FMF/GMV/ESA | Review references to XML implementation to identify terminal elements with the term ‘element’ and complex type constructs with the term ‘section’ (or a better one thereof) | Awaiting input from David. |
| 8-19 | All | All | te | XML description for OCM missingDSB: This is "in progress", and a P2.38 draft works, but there is an issue to resolve regarding parsing of the complex lines where the structure is specified in SANA. There is also still a fair amount of churn in the OCM content. | FMF/GMV/ESA | Add description | Awaiting input from David |
| D-8 | Annex D | 6-7 | ed | These 2 lines should probably be removed because they refer to a Silver Book (ODM 2.0)DSB: Relevant lines are "Annex Fig. D-3 and Annex Fig. D-4 include unique features of ODM version 2.0, and thus ‘CCSDS\_OPM\_VERS = 2.0’ (at a minimum) must be specified." | David S. Berry / NASA | Remove. It's possible that I at some point suggested these lines be added, but now I think we should just go with the "3.0" for OPM version. I apologize for the re-work. | ? |
| F-1 | Annex F | 4-5 | ed | The lines which refer to a Silver book (ODM 2.0) should probably be removed.DSB: Relevant lines are "Annex Fig. F-2 and Annex Fig. F-3 contain features unique to the ODM version 2, and thus ‘CCSDS\_OEM\_VERS = 2.0’ must be specified." | David S. Berry / NASA | Remove from "Annex Fig. F-2... must be specified." It's possible that I at some point suggested this sentence be added, but now I think we should just go with the "3.0" for the OEM version. I apologize for the re-work. | ?? |
| 6-8 | 6.2.3 |  |  | the default value for ORB\_REF\_FRAME is ITRF2000 which is a non-inertial reference frame not suitable for many orbit definitions (except Cartesian), which changes every few years and has already been superseded several times (we have already seen ITRF2005, ITRF2008 and ITRF2014). I think the intent was to put EME2000 for the default. If the default is changed, the caption in figure G-1 should also be changed accordingly. | Luc Maisonobe (Orekit) |  | To discuss. |
|  |  |  |  |  |  |  |  |
| 1-2 | 1.2 | para 1, line 6 | ed | Mentions sections 3 through 5, but not 6. | David S. Berry / NASA | Add section 6, or say "Sections 3 through 6". |  |
| 1-2 | 1.4 | line 1 | ed | Says "Section 0" | David S. Berry / NASA | Should be Section 2 (you could probably leave this for the CCSDS Editor to fix). |  |
| 1-2 | 1.4 | 9,10 | ed | For Section 7 and Section 8, "OEM and OCM" is missing the Oxford comma. | David S. Berry / NASA | From: OEM and OCMTo: OEM, and OCMAlso check throughout document... there are several other occurrences. Alternatively, leave for CCSDS Editor. |  |
| 1-4 | 1.7 | Ref [16] | te | Reference [16] is not used in this document, so should not be listed. | David S. Berry / NASA | Remove reference |  |
| 1-5 | 1.7 | Ref [21] | ed | link is the same as that for Ref [18] | David S. Berry / NASA | Modify link text |  |
| 1-5 | 1.7 | Ref [21] | te | We should discuss whether this is deserving of a SANA reference. We have sections in CDM and RDM that can be validated. but putting this info into a SANA registry would make it hard to validate and may be inconsistent with CDM and RDM. | David S. Berry / NASA | Discuss value and necessity. |  |
| 1-5 | 1.7 | Ref [22] | te | We should discuss whether this is deserving of a SANA reference. We have sections in CDM and RDM that can be validated. but putting this info into a SANA registry would make it hard to validate and may be inconsistent with CDM and RDM. | David S. Berry / NASA | Discuss value and necessity. |  |
| 1-5 | 1.7 | Ref [24] | te | Are the classifications envisioned for this registry specified in a standard?  | David S. Berry / NASA | If not in a standard, it seems semi-arbitrary. |  |
| 3-2 | Table 3-1 |  | ed/te | CCSDS\_OPM\_VERS Example of Values uses "old" version | David S. Berry / NASA | From: 2.0To: 3.0 |  |
| 3-2 | Table 3-1 |  | ed | ORIGINATOR: wouldn't it be more straightforward to just refer users to reference [10] rather than a redirect to Annex B and then a second redirect to reference [10]? We could indicate something like "See Annex B for rationale" or something like that. | David S. Berry / NASA | Consider (for this, and related multiple redirects to Annex B and to Section 1.7). |  |
| 3-3 | Table 3-2 |  | ed/te | MESSAGE\_ID should be in header for consistency with other NDMs | David S. Berry / NASA | Please move the MESSAGE\_ID from Metadata into the header (last row of header). NOTE: CRM from P2.38 says this was fixed, but it is not. |  |
| 3-3 | Table 3-2 |  | ed | OBJECT\_NAME: After "reference [2]" there should be a closing parenthesis but there is not. | David S. Berry / NASA | Add closing parenthesis. |  |
| 3-3 | Table 3-2 |  | ed/te | CENTER\_NAME: Refers to an "OBJECT\_DESIGNATOR". This is new in P2.39, and it's not in the Table 3-2 (nor should it be in my opinion).  | David S. Berry / NASA | Discuss. I don't see the need for this. If the OBJECT\_ID isn't sufficient, why would OBJECT\_DESIGNATOR be better? The format of OBJECT\_ID is not mandatory, so that keyword should be sufficient.  |  |
| 3-3 | Table 3-2 |  | te | I question the value of an OPM that has a CENTER\_NAME of a ground station. Again, this is new in P2.39. See note above. | David S. Berry / NASA | Discuss need (i.e., provide a credible use case). |  |
| 3-3 | Table 3-2 |  | ed | CENTER\_NAME: Use of requirements language. | David S. Berry / NASA | From: "which can draw"To: "which may draw" |  |
| 4-3 | Table 4-2 |  | ed | CENTER\_NAME: Says "Origin of the STM reference frame" (looks like a copy & paste anomaly). | David S. Berry / NASA | Remove "STM". |  |
| 4-4 | Table 4-2 |  | ed/te | REF\_FRAME: Example shows "TEME", but that value is not in the referenced SANA registry. | David S. Berry / NASA | From: TEMETo: TEMEOFDATE (probably, or TEMEOFEPOCH) |  |
| 5-5 | Table 5-3 |  | ed | CENTER\_NAME: Says "Origin of the STM reference frame" (looks like a copy & paste anomaly). | David S. Berry / NASA | Remove "STM". |  |
| 5-5 | Table 5-3 |  | te | I question the value of an OEM that has a CENTER\_NAME of a ground station. Again, this is new in P2.39. See note above. | David S. Berry / NASA | Discuss need (i.e., provide a credible use case). |  |
| 5-5 | Table 5-3 |  | ed/te | CENTER\_NAME: Refers to an "OBJECT\_DESIGNATOR". This is new in P2.39, and it's not in the Table 3-2 (nor should it be in my opinion).  | David S. Berry / NASA | Discuss. I don't see the need for this. If the OBJECT\_ID isn't sufficient, why would OBJECT\_DESIGNATOR be better? The format of OBJECT\_ID is not mandatory, so OBJECT\_ID should be sufficient.  |  |
| 5-5 | Table 5-3 |  | ed | CENTER\_NAME: Use of requirements language. | David S. Berry / NASA | From: "which can draw"To: "which may draw" |  |
| 5-7 | 5.2.5.2 | 2 | ed/te | Refers to keyword "COV\_START" which should be "COVARIANCE\_START in the OEM | David S. Berry / NASA | From: COV\_STARTTo: COVARIANCE\_START |  |
| 6-2 | Table 6-1 |  | ed | Typo. | David S. Berry / NASA | From: ParamtersTo: Parameters |  |
| 6-2 | 6.2.1.4 | 2 | te | Use of "not permitted" is not part of the standard requirements terminology. | David S. Berry / NASA | Delete: "It is not permitted to mix".Add between "time" and "within": "shall not be used". Final statement: "Relative and absolutetime shall not be used within the same data block." |  |
| 6-4 | 6.2.3.4 NOTE | NOTE 1 | te | It is not clear why a new keyword "OBJECT\_DESIGNATOR" is being introduced in P2.39, late in the document development. Use of "OBJECT\_ID would be consistent with other parts of the ODM and with other NDM documents. | David S. Berry / NASA | Please provide rationale. |  |
| 6-4 | Table 6-2 |  | te | CLASSIFICATION: There is no credible argument from the standpoint of consistency to add this to the Header section of the OCM when it is absent from every other header of every other Navigation Data Message. If it's truly necessary, it should be added to every header of every message, and not just in the ODM. An easy solution here if the CLASSIFCATION is seen as necessary is to move it to the metadata. | David S. Berry / NASA | Please move to the metadata section, high up in the table. If the DATA is classfied, putting this attribute in the METADATA (data about data) is appropriate. The analogous keyword was in metadata in P2.38. |  |
| 6-5 | Table 6-3 |  | ed/te | META\_START: the "Mandatory" column contains "n/a", but should contain "Yes". (See 6.2.3.2) | David S. Berry / NASA | From: n/aTo: Yes |  |
| 6-5 | Table 6-3 |  | ed | Default column: If there is no default, the column sometimes contains "n/a" and sometimes is just blank. | David S. Berry / NASA | Consistent usage is recommended. It will be easier to see the actual default values if the cells are empty if there is no default, so a blank cell if there is no default is recommended. |  |
| 6-5 | Table 6-3 |  | ed | TECH\_ORG: A different "Description" format is used here than was used for the ORIGINATOR field in the Header. | David S. Berry / NASA | Consistent usage is recommended. |  |
| 6-5 | Table 6-3 |  | ed | TECH\_POC, TECH\_POSITION, TECH\_PHONE keywords are shown with a blank space after "TECH" and before the underscore. | David S. Berry / NASA | Remove blank space in keyword. |  |
| 6-6 | Table 6-3 |  | ed | PREVIOUS\_MESSAGE\_ID: Rerquirements language. | David S. Berry / NASA | From: "One can provide"To: "One may provide" |  |
| 6-6 | Table 6-3 |  | ed | NEXT\_MESSAGE\_ID: Rerquirements language. | David S. Berry / NASA | From: "One can provide"To: "One may provide" |  |
| 6-6 | Table 6-3 |  | ed/te | ATT\_MSG\_LINK: All other links start with the acronym of a Navigation Data Message but this one does not. | David S. Berry / NASA | From: "ATT\_MSG\_LINK"To: "ADM\_MSG\_LINK" |  |
| 6-6 | Table 6-3 |  | ed/te | \*\*\*\_MSG\_LINK and above. There are potentially 17 lines of information relevant to a space object after META\_START before we finally encounter the OBJECT\_NAME. | David S. Berry / NASA | Consider whether OBJECT\_NAME (and other identifying keywords) should be moved earlier in the list of metadata items. Compare placement of this keyword in OPM, OMM, OEM metadata. |  |
| 6-7 | Table 6-3 |  | ed | CATALOG\_NAME: A different "Description" format is used here than was used for the ORIGINATOR field in the Header. | David S. Berry / NASA | Consistent usage is recommended. |  |
| 6-7 | Table 6-3 |  | te | CATALOG\_NAME: I wonder if we should rename the <https://sanaregistry.org/r/cdm_catalog> SANA registry and re-use it as the source for this field ? | David S. Berry / NASA | Consider |  |
| 6-7 | Table 6-3 |  | te | OBJECT\_DESIGNATOR: has language about control authority/source of this ID. Seems redundant given that the message developer can point to the CATALOG\_NAME for the info. (NOTE: See earlier comments on this newly added keyword.) | David S. Berry / NASA |  |  |
| 6-7 | Table 6-3 |  | te | LIFETIME: Belongs in RDM. P2.38 CRM says this was removed per recommendation, but it's still present. | David S. Berry / NASA | Please remove. |  |
| 6-7 | Table 6-3 |  | te | OBJECT\_TYPE: Examples of values are not consistent with the same information in the CDM and RDM. | David S. Berry / NASA | Please provide example values that are consistent with the values used in CDM and RDM. |  |
| 6-8 | Table 6-3 |  | ed | TIME\_SYSTEM: Since "UTC" is in the "Default" column, it is redundant to have "(defaults to UTC) in the "Any OCM sections relying upon this field" column. | David S. Berry / NASA | Remove "(defaults to UTC)" from the far right column in table. Alternatively, remove the entire column "Any OCM sections relying upon this field ?". See later comments to this effect. |  |
| 6-8 | Table 6-3 |  | ed/te | EPOCH\_TZERO: refers to "block-specifc EPOCH\_TZERO values", but this version of OCM doesn't have any "block-specific EPOCH\_TZERO values". Instead there are "STM\_ORB\_TIME", and the maneuver override of EPOCH\_TZERO no longer seems to be present. | David S. Berry / NASA | I actually prefer that the block specific TZERO times have been removed (so thank you), although it's curious that the STM\* keyword changed and the MAN\_EPOCH\_TZERO went away even though the WG agreed to retain it in discussion at Mountain View. |  |
| 6-8 | Table 6-3 |  | te | SCLK\_EPOCH: Another new keyword in P2.39. It's curious why the default would be 1.0 for this keyword. | David S. Berry / NASA | Seems like the default value would be 0.0. Maybe this was just a copy from the SCLK\_SEC\_PER\_SI\_SEC default (?)\_ |  |
| 6-8 | Table 6-3 |  | ed/te | SCLK\_SEC\_PER\_SI\_SEC: default doesn't reflect units. | David S. Berry / NASA | The default should be 1.0 [s] |  |
| 6-8 | Table 6-3 |  | ed/te | PREVIOUS\_MESSAGE\_EPOCH: Requirements language | David S. Berry / NASA | From: "One can provide"To: "One may provide" |  |
| 6-8 | Table 6-3 |  | ed/te | NEXT\_MESSAGE\_EPOCH: Requirements language | David S. Berry / NASA | From: "One can provide"To: "One may provide" |  |
| 6-9 | Table 6-3 |  | ed/te | END\_TIME: This keyword is functionally the same as "STOP\_TIME" in other NDMs, but syntactically inconsistent. | David S. Berry / NASA | From: END\_TIMETo: STOP\_TIME |  |
| 6-9 | Table 6-3 |  | ed | TAIMUTC\_AT\_TZERO: Uses symbol for "#" for number in the Description. There are 79 instances of the word "number" in the document; only 2 uses of "#" in descriptions. | David S. Berry / NASA | From: #To: number |  |
| 6-9 | Table 6-3 |  | ed/te | TCOEFF\_SOURCE: It's not clear what timing coefficients are referred to here. There is no other mention of the parameter or its use in the document. No examples utilize it. | David S. Berry / NASA | Please explain where/how this keyword is used. |  |
| 6-9 | Table 6-3 |  | ed/te | META\_STOP: the "Mandatory" column contains "n/a", but should contain "Yes". (See 6.2.3.2) | David S. Berry / NASA | From: n/aTo: Yes |  |
| 6-5 thru 6-9 | Table 6-3 |  | ed | I think it might be best to remove the column labelled "Any OCM sections relying upon this field ?." There are only 2 entries in the 5 pages of this table that have "Yes" in this column, and that info could easily be added to the 2 table cells for which "Yes" is the answer. Rationale: It's the far right column of the table, which is the position of the "Mandatory" column in all other tables. It has the same value set as the "Mandatory" column. Since the "Yes" answers are very sparse, it's easy to miss them (I did it several times myself while reviewing Annex G OCMs). Thus the column doesn't seem to add a lot of value, and may even cause errors to be made. | David S. Berry / NASA | Consider removing the column and adding information about other OCM section dependencies to the relevant cells. |  |
| 6-10 | 6.2.4.5 |  | te | States: "In the event that the only difference between multiple orbit state time history data blocks is the selected element set (ORB\_TYPE), reference frame (ORB\_REF\_FRAME) and/or orbit center (CENTER\_NAME)..."The "and/or" construction here is problematic. From a user processing standpoint, the logical meaning is not at all clear (e.g., from the standpoint of a logical operation, it's not clear what a comma means). And the meaning is bound to change when the CCSDS Editor inserts the Oxford comma that is missing here. As written, it could mean:If the first comma means "and": "ORB\_TYPE and (ORB\_REF\_FRAME and CENTER\_NAME")"ORB\_TYPE and (ORB\_REF\_FRAME or CENTER\_NAME)" If the first comma means "or": "ORB\_TYPE or (ORB\_REF\_FRAME and CENTER\_NAME")"ORB\_TYPE or (ORB\_REF\_FRAME or CENTER\_NAME)" The truth value of these four compound conditional statements is different, and the consequent result of a program processing the OCM will be different depending upon how the programmer has interpreted this statement. The addition of the Oxford comma will change the logic too,. | David S. Berry / NASA | Consider just saying that the top-most orbit state time history is the true or master depiction. Alternatively, say that if there are differences in ORB\_TYPE **or** ORB\_REF\_FRAME **or** CENTER\_NAME (i.e., all the conditionals are "OR") then (action). Note that this doesn't state what should be done if there are no differences. |  |
| 6-11 | 6.2.4.11 | 2-3 | ed | I would move the opening parenthesis and remove semicolon. | David S. Berry / NASA | From: "...state elements **(**as defined by ORB\_TYPE**;** see SANA registry [17]..."To: "...state elements as defined by ORB\_TYPE (see SANA registry [17]..." |  |
| 6-12 | Table 6-4 |  | ed | ORB\_BASIS: Consider moving the material in the "Note" into the definition of "DETERMINED\_OD". The suggestion also avoids awkward anthropomorphism of "whose" | David S. Berry / NASA | From: existing NoteAdd to "DETERMINED\_OD": "Includes definitive OD solutions performed onboard that have been telemetered to the ground for inclusion in an OCM". |  |
| 6-13 | Table 6-4 |  | te | I question the value of an OCM that has a CENTER\_NAME of a ground station. Again, this is new in P2.39.  | David S. Berry / NASA | Discuss need (i.e., provide a credible use case). |  |
| 6-13 | Table 6-4 |  | te | CENTER\_NAME: I'm wondering why CENTER\_NAME is not in Metadata. By not having CENTER\_NAME in metadata, it's necessary to have \*\*\*\_CENTER\_NAME in most if not all the other data blocks; that seems to at least partially defeat one of the stated purposes of the OCM. It's hard to imagine how the CENTER\_NAME could realistically be different throughout an OCM when there's only a single metadata section and a single perturbations section.  | David S. Berry / NASA | Consider if it's really necessary to have all the "\*\*\_CENTER\_NAME keywords. |  |
| 6-13 | Table 6-4 |  | ed | <Insert orbit lines here>: It might be good to provide the SANA registry reference here. | David S. Berry / NASA | Add reference to "[17]" From: "... as specified in the SANA Orbital Elements registry"To: "... as specified in the SANA Orbital Elements registry [17]." |  |
| 6-14 | Table 6-5 |  | te | DRAG\_AREA: I'm having trouble envisioning how much drag area is left after the spacecraft is already bounded by the OEB. The keyword seems to be something of a misnomer. | David S. Berry / NASA | The equation for calculating the DRAG\_AREA (as it is defined for the OCM) should be provided in Annex C. |  |
| 6-14 | Table 6-5 |  | te | DRAG\_SCALE: to what quantity is the DRAG\_SCALE applied? DRAG\_COEFF? if so, why is another parameter required; why not just build it into the specified DRAG\_COEFF? or is this just documentation of whether or not the scale factor was actually applied to the DRAG\_COEFF? | David S. Berry / NASA | Provide information about how DRAG\_SCALE and DRAG\_COEFF (or other parameter) are related. |  |
| 6-16 | Table 6-5 |  |  | SOLAR\_RAD\_AREA: As with DRAG\_AREA, I'm not understanding how the "not already incorporated into the attitude dependent 'AREA\_ALONG\_OEB' parameters" is calculated. In this case (unlike the DRAG\_AREA) there is an equation that seems to calculate the SOLAR\_RAD\_AREA. The "not already incorporated into" wording seems to imply a quantity that is added to the AREA\_ALONG\_OEB\_\*. | David S. Berry / NASA | I may not be understading this correctly, but it seems that the equation provided should be augmented with the terms used to calculate the area "not already incorporated into the attitude-dependent 'AREA\_ALONG\_OEB parameters'". |  |
| 6-16 | Table 6-5 |  |  | SOLAR\_RAD\_SCALE: Similar question as with DRAG\_SCALE... is this a factor applied to the SOLAR\_RAD\_COEFF? | David S. Berry / NASA | Provide information about how SOLAR\_RAD\_SCALE and SOLAR\_RAD\_COEFF (or other parameter) are related. |  |
| 6-18 | 6.2.6.5 |  | te | This section suffers from the same problem described above for section 6.2.4.5, but to a lesser degree given that there are only 2 data elements that might differ in multiple covariances and drive the "master depiction" decision. In this case, you could get away with saying simply "or" instead of "and/or", since I think "or" is what you really mean. | David S. Berry / NASA | Consider just saying that the top-most orbit state time history is the true or master depiction. Alternatively, use "or" for the logical operation. |  |
| 6-19 | 6.2.6.13 | NOTE | ed/te | The "NOTE" following this section is important, but I don't think we can dictate how users interpolate. In particular we don't have any way to enforce a "shall" here. Also, by CCSDS guidelines, we cannot have a requirement specification in a NOTE (CCSDS Publications Guide says "the NOTE format as defined in section 4 shall be used for brief non-normativecomments". (Sorry I missed this in the review of P2.38, which also had it). | David S. Berry / NASA | Re-word the NOTE to use a non-normative statement regarding the interpolation of the neighboring time points in the covariance matrix. This may be a good place to use the "it is recommended that" construct that we can't use to express a requirement. You could even say "strongly recommended that". Alternatively you could maybe make this a 6.2.6.14 normative statement and say "should"... I still don't think "shall" would be appropriate. |  |
| 6-20 | Table 6-6 |  | ed | COV\_BASIS: Consider moving the material in the "Note" into the definition of "DETERMINED\_OD". The suggestion also avoids awkward anthropomorphism of "whose" | David S. Berry / NASA | From: existing NoteAdd to "DETERMINED\_OD": "Includes definitive OD solutions performed onboard that have been telemetered to the ground for inclusion in an OCM". |  |
| 6-20 | Table 6-6 |  | ed/te | COV\_BASIS\_ID: Description refers to orbit state time history. | David S. Berry / NASA | From: "orbit state time history"To: "covariance time history" |  |
| 6-20 | Table 6-6 |  | ed/te | COV\_REF\_FRAME: The default value provided is not in the SANA Registry | David S. Berry / NASA | From: TNWTo: TNW\_INERTIAL or TNW\_ROTATING |  |
| 6-21 | Table 6-6 |  | te | COV\_TYPE: for ORB\_TYPE, a default of "CARTPV" is indicated, and "Mandatory" is "No". For COV\_TYPE, the default is also "CARTPV" (makes sense given the default ORB\_TYPE­) but the Mandatory is "Yes". It seems that the "Mandatory" attribute should be the same for these 2 keywords. | David S. Berry / NASA | Make ORB\_TYPE mandatory or COV\_TYPE optional. There are a few other places where a keyword is shown as "Mandatory = Yes" but there is a default shown. If a keyword is mandatory, then perhaps there should be no default? And if there is a default, then perhaps mandatory should be "No"? (Note: In the XML schema, the validation is very different if Mandatory=yes or Manadtory=no.) |  |
| 6-22 | 6.2.7.5 |  | te | This section suffers from the same problem described above for section 6.2.4.5, but to a greater degree given that there are 4 data elements instead of 3 that might differ in multiple state transition matrices and drive the "master depiction" decision. The final truth value matters depending on the interpretation of commas and the "and/or" construction. | David S. Berry / NASA | Consider just saying that the top-most orbit state time history is the true or master depiction. Alternatively, use "or" for the logical operation in all cases. |  |
| 6-24 | Table 6-7 |  | ed/te | STM\_ORB\_ID: The Description refers to a keyword "STM\_ORB\_STATE\_TIME" which does not appear elsewhere. | David S. Berry / NASA | Given the description of other keywords in the table, I think "STM\_ORB\_STATE\_TIME" should be changed to "STM\_ORB\_STATE" in the Description of STM\_ORB\_ID. |  |
| 6-24 | Table 6-7 |  | te | STM\_ORB\_ID: It's not clear how this will work in practice because the ORB\_ID as I understand it applies to an orbit state time history, i.e., not a single state. Is the intent of this keyword that the user would find the the orbit state time history with the identified ORB\_ID and then pick the state within the block at the STM\_ORB\_TIME as the initial state? | David S. Berry / NASA | The Description should probably be revised to state that the initial state will be found within the identified orbit state time history, and how to identify it. |  |
| 6-24 | Table 6-7 |  | ed | STM\_BASIS: Consider moving the material in the "Note" into the definition of "DETERMINED\_OD". The suggestion also avoids awkward anthropomorphism of "whose" | David S. Berry / NASA | From: existing NoteAdd to "DETERMINED\_OD": "Includes definitive OD solutions performed onboard that have been telemetered to the ground for inclusion in an OCM". |  |
| 6-25 | Table 6-7 |  | te | I question the value of an OCM that has an STM\_CENTER\_NAME of a ground station. Again, this is new in P2.39. See notes above. | David S. Berry / NASA | Discuss need (i.e., provide a credible use case). |  |
| 6-26 | 6.2.8.1 |  | ed | States "Only those keywords shown in Table 6-10 shall be used as Key Value Notation keywords in the OCM maneuver specification". In every other OCM section you have used a different structure: "Only those keywords shown in Table x-x shall be used in the OCM <data type> specification." | David S. Berry / NASA | From: existing (which uses a different acronym for "KVN" than is used elsewhere)To: "Only those keywords shown in Table 6-10 shall be used in the OCM maneuver specification." |  |
| 6-27 | 6.2.8.10.1 | 1 | te | Seems like maybe there should also be time bounds recommended on the maneuvers accumulated due to the ADDITIVE=YES attribute | David S. Berry / NASA | Consider adding "or over multiple days" at the end. |  |
| 6-27 | 6.2.8.12 |  | te | The compound condition here is problematic (particularly the "and/or"). | David S. Berry / NASA | See comments for suggestion p.6-10, sec 6.2.4.5 . |  |
| 6-28 | 6.2.8.13 | 1 | ed | The line ends with a stray word "composition" | David S. Berry / NASA | Remove the stray word. |  |
| 6-28 | 6.2.8.14 | 2 | ed | Missing character. | David S. Berry / NASA | From: "... information to e provided..."To: "... information to be provided..." |  |
| 6-28 | 6.2.8.14 |  | te | The text specifies that the elements of information "shall be selected from one or more elements of Table 6-8 ... and Table 6-9...". In Table 6-10, it is stated that the MAN\_COMPOSITION elements of information lines should be populated "with values selected from Table 6-8 or Table 6-9". The bolding provided in Table 6-10 on MAN\_COMPOSITION implies to me that the "or" in this case is meant to be an "exclusive or" (i.e., from Table 6-8 or Table 6-9, but not both). | David S. Berry / NASA | In 6.2.8.14, "and" should be changed to "or", and it should be clear that it's an exclusive or. |  |
| 6-28 | 6.2.8.14 | 6 | ed | Closing parenthesis before the colon is not necessary | David S. Berry / NASA | Remove closing parenthesis before the colon. |  |
| 6-28 | Table 6-8 |  | ed/te | ACC\_\*: Units shown contain "^" for exponentiation instead of "\*\*" | David S. Berry / NASA | Change "^" to "\*\*" as required in 7.6.1.1(e) |  |
| 6-28 | Table 6-8 |  | ed/te | ACC\_\*: Example values shown start with decimal point. | David S. Berry / NASA | Add zero before decimal point per 7.5.6 |  |
| 6-28 | Table 6-8 |  | te | It's not clear why ACC\_DMASS, DV\_DMASS, and THR\_DMASS are all necessary. I understand that you can evaluate the rocket equation with any of these, but presumably the results would be "very close" for any given event. | David S. Berry / NASA | Is the need based on the particular spacecraft measurement instrumentation? If so, need understood. |  |
| 6-28 | Table 6-8 |  | te | THR\_DMASS: what thrust is attributable "beyond the mass change already prescribed by the rocket equation" and how is it measured or calculated? | David S. Berry / NASA | Could be ignorance on my part, but if not, elucidate. |  |
| 6-28 | Table 6-8 |  | ed/te | The Descriptons for ACC\_DMASS and THR\_DMASS start with the word "Additional". But the "Additional" only seems to apply when "MAN\_IS\_ADDITIVE" is "Yes". I think it might be best to remove the word "Additional" (e.g., DV\_DMASS doesn't have this). | David S. Berry / NASA | Consider removing "Additional" from Description of ACC\_DMASS and THR\_DMASS |  |
| 6-29 | Table 6-8 |  |  | DEPLOY\_DV\_CDA: What drag coefficient is used in determining this? | David S. Berry / NASA | I don't have suggestion... I don't know how this would be used in actual practice. |  |
| 6-29 | 6.2.8.15 | 4 | ed | If one doesn't consider the parenthetical example, the last line reads as "absolute time epoch tiime". | David S. Berry / NASA | Maybe remove "epoch time", yielding simply "absolute time". Alternatively, remove "time" in both cases, yielding "absolute epoch". |  |
| 6-30 | 6.2.8.16.6 | 2 | ed/te | Requirements language. | David S. Berry / NASA | From: "... is mandatory."To: "... shall be provided." |  |
| 6-31 | 6.2.8.16.7 |  | ed | Subject/verb agreement in NOTE 1 | David S. Berry / NASA | From: "Relationships... is"To: "Relationships ... are" |  |
| 6-32 | Table 6-10 |  | te | MAN\_DEVICE\_ID: Question. Description states that "'ALL' indicates that this maneuver represents thesummed acceleration (or velocity increment) imparted by any/all thrusters utilized in the maneuver." Since there is a block of "THR" related parameters in Table 6-8, should this "ALL" text include the summed thrust components as well? | David S. Berry / NASA | Consider:From: existing textTo: "... summed acceleration, velocity increment, or thrust imparted..." , or something like this (?) |  |
| 6-32 | Table 6-10 |  | ed | MAN\_IS\_ADDITIVE: Another instance where "Mandatory" is "Yes", but a default is specified. | David S. Berry / NASA | If it's mandatory to be specified, the default is superfluous. |  |
| 6-32 | Table 6-10 |  | ed | MAN\_IS\_ADDITIVE: Assuming the default alluded to above is retained, having the default column specify "NO" should be sufficient. It doesn't need to be in the "Mandatory" column too. | David S. Berry / NASA | Remove "(defaults to 'NO')" from the "Mandatory column. |  |
| 6-33 | Table 6-10 |  | te | I question the value of an OCM that has a MAN\_CENTER\_NAME of a ground station. Again, this is new in P2.39. See note above. | David S. Berry / NASA | Discuss need (i.e., provide a credible use case). |  |
| 6-33 | Table 6-10 |  | te | MAN\_CENTER\_NAME: See previous comments regarding "OBJECT\_DESIGNATOR" | David S. Berry / NASA | See previous comments regarding "OBJECT\_DESIGNATOR" |  |
| 6-33 | Table 6-10 |  | ed/te | MAN\_REF\_FRAME: The default value provided is not in the SANA Registry | David S. Berry / NASA | From: TNWTo: TNW\_INERTIAL or TNW\_ROTATING |  |
| 6-33 | Table 6-10 |  | te | GRAV\_ASSIST\_NAME: I don't think Earth/Sun L2 can be used for a gravity assist. Although it has relative motion with respect to the spacecraft, it has no mass, a critical element in gravity assists. | David S. Berry / NASA | Remove "EARTH\_SUN\_L2" from the list of examples. |  |
| 6-34 | Table 6-10 |  | te | DC\_MIN\_CYCLES/DC\_MAX\_CYCLES: I'm not a maneuver analyst, but I wonder if specifying defaults for these parameters might be dangerous (?) | David S. Berry / NASA | Consider. |  |
| 6-34 | Table 6-10 |  | te | DC\_MIN\_CYCLES: I'm not a maneuver analyst, so this may be a dumb question... I'm not understanding the meaning of "may override DC\_EXEC\_STOP". In this case, does this mean if the minimum number of cycles is set too high, the maneuver will continue past the time that it was actually supposed to end? If this is true, I wonder what the value of such a design parameter is. | David S. Berry / NASA | Consider. |  |
| 6-34 | Table 6-10 |  | te | DC\_MAX\_CYCLES: I'm not a maneuver analyst, so this may be a dumb question... I'm not understanding the meaning of "may override DC\_EXEC\_STOP". In this case, does this mean if the maximum number of cycles is set too low, the maneuver will end before the time that it was actually supposed to end? If this is true, I wonder what the value of such a design parameter is. | David S. Berry / NASA | Consider. |  |
| 6-34 thru 6-36 | Table 6-10 |  | ed/te | Requirements language. There are a number of places in the table which state "... is mandatory if...", with a value of "No" in the column headed "Mandatory", creating something of a contradiction. Since the "is mandatory" formulation isn't official "requirements speak" per section 1.6, I think it would be better to phrase these as "shall" statements. | David S. Berry / NASA | From: "... is mandatory if..."To: "... shall be provided if..." |  |
| 6-36 | Table 6-10 |  | te | I find the description of the phase-angle based duty cycle parameters confusing, and they don't seem to align well with the Figure C-4. It's not clear to me just what is rotating or oscillating such that there is a phase angle that can be measured. | David S. Berry / NASA | This could just be me, not being very familiar with thruster hardware and control. |  |
| 6-37 | 6.2.9.4 | 3 | ed | Uses "i.e." when "e.g." (for example) would be more appropriate. | David S. Berry / NASA | From: "(i.e. 2 0)"To: "(e.g., 2 0)' |  |
| 6-37 | Table 6-11 |  | te | ORBIT\_CENTER\_NAME: It's not clear why this is necessary since the CENTER\_NAME is specified in the Orbit State Time History section. The idea of sending a perturbations section without an orbit state time history is a bit odd. | David S. Berry / NASA | Consider if this is necessary, and if so, how does starting it with "ORBIT" make sense. |  |
| 6-37 | Table 6-11 |  | te | ORBIT\_CENTER\_NAME: The first and second+third paragraphs of the description are virtually identical. | David S. Berry / NASA | Remove duplication |  |
| 6-37 | Table 6-11 |  | te | ORBIT\_CENTER\_NAME: The idea of using a ground station as the center for the perturbations section seems very odd. | David S. Berry / NASA | Provide a credible use case. |  |
| 6-38 | Table 6-11 |  | ed/te | GRAVITY\_MODEL, GRAVITY\_MODEL\_DEGREE, GRAVITY\_MODEL\_ORDER: For no apparent reason, the much more compact notation used in the CDM and RDM has been changed in this version of the OCM. | David S. Berry / NASA | Per Nav WG Guideline 05, please make the GRAVITY\_MODEL keyword valued consistent with what has been used in the CDM and RDM. Note: it was consistent in P2.38... see Figure G-3. |  |
| 6-38 | Table 6-11 | 1 | ed | GRAVITY\_MODEL, GRAVITY\_MODEL\_DEGREE, GRAVITY\_MODEL\_ORDER: word choice... simulations are not the only place where gravity models are used. | David S. Berry / NASA | From: "simulation"To: "analysis" Use of "analysis" covers a whole range of modeling activities. |  |
| 6-38 | Table 6-11 | 5 | ed | N\_BODY\_PERTURBATIONS: Typo | David S. Berry / NASA | From: "satellites)t."To: "satellites" |  |
| 6-38 | Table 6-11 |  | ed | ALBEDO\_GRID\_SIZE: Uses symbol for "#" for number in the Description. There are 79 instances of the word "number in the document"; only 2 uses of "#" in descriptions. | David S. Berry / NASA | From: #To: number |  |
| 6-39 thru 6-41 | Table 6-11 |  | ed/te | From FIXED\_GEOMAG\_KP to end of table: It strikes me as odd that there is a need for so many keywords to override the measurements obtained from SW\_SOURCE. | David S. Berry / NASA | Consider... are the measurements received from SW\_SOURCE that bad? What is the basis for overriding these values? What is the alternative SW\_SOURCE for the overrides? How does adding a fixed value improve the accuracy? |  |
| 6-39 thru 6-41 | Table 6-11 |  | ed/te | From FIXED\_GEOMAG\_KP to end of table: There is explanatory material at the bottom part of most of these table cells that may be suitable for moving to an Annex C subsection. | David S. Berry / NASA | Consider. |  |
| 6-42 | 6.2.10.8 |  | ed/te | Given this requirement (shall), it seems that the "Note" at the very beginning of the section is superfluous. The corresponding statement from P2.38 was a "should". | David S. Berry / NASA | I would remove the "Note" since the requirement is more persuasive. |  |
| 6-43 | Table 6-12 |  | ed | OD\_METHOD: There is a long parenthetical clause (starting with "commonly") listing OD methods that breaks up the description. It really could stand alone (as a non-parenthetical) after "...ODTK)." | David S. Berry / NASA | Consider. Implementing this suggestion will make the Description easier to read. |  |
| 6-43 | Table 6-12 |  | te | If the OD is not done in UTC, then OD\_EPOCH will be misleading. | David S. Berry / NASA | Consider specifying the OD\_EPOCH in the TIME\_SYSTEM instead of UTC. |  |
| 6-44 | Table 6-12 |  | ed/te | Either TDM\_IDS from this table or TDM\_MSG\_LINK in metadata seems superfluous. | David S. Berry / NASA | Consider if both of these keywords, which should have identical values if used, are necessary. |  |
| 6-46 | Table 6-13 |  | te | (USER-DEFINED): Note that the formation of the user defined keyword is different in the OPM, OMM, and RDM. | David S. Berry / NASA | Per NavWG Guideline 05, please make the formation of the user defined keywords consistent with that defined in the OPM, OMM, and RDM. There is also a well defined structure for the XML user defined keywords that conforms to the OPM, OMM, RDM that will apply to the OCM if this section is made consistent. Otherwise, user defined parameters will not be useable in an OCM/XML unless exchange participants modify the CCSDS schemas. I don't see why the OCM should be an exception. String length is not a good argument to ignore consistency, given the huge number of keywords that a user could potentially specify in an OCM. |  |
| 7-2 | 7.4.8 |  | ed | Two missing "Oxford commas" | David S. Berry / NASA | Detect, fix. |  |
| 7-3 | 7.5.11 |  | te | This specification, which appears in all Nav WG standards, may have implications to the OCM if any fields have "UTC" specified as the default but the "TIME\_SYSTEM" is specified as non-UTC. | David S. Berry / NASA | Check to see of any issues, which could well occur if someone sets a "non-UTC" TIME\_SYSTEM in an OCM and doesn't specifiy any fields that have UTC as a default time system (maybe nly OD\_EPOCH?) |  |
| 7-3 | 7.6.1.1 |  | ed | The section explicitly mentions OPM and OMM, but also includes OCM sections. | David S. Berry / NASA | From: "OPM and OMM" To: "OPM, OMM, and OCM". |  |
| 7-4 | 7.6.4 | 4 | ed | Table notation. | David S. Berry / NASA | From: 6.12To: 6-12 |  |
| 7-4 | 7.6.4 | 5 | ed | Typo | David S. Berry / NASA | From: secionTo: section |  |
| 7-4 | 7.6.4 | NOTE | ed | Incomplete sentence. | David S. Berry / NASA | From: "... so forth.) Mass..."To: "... so forth), mass..." Alernatively, remove the starting "While".In either case, also remove closing parenthesis after "Newtons.)" |  |
| 7-4 | 7.6.4.1 |  | te | I think maneuver lines should be added to the list of lines where units are not shown | David S. Berry / NASA | From: "... orbit state, covariance, or state transition matrix data line..."To: "... orbit state, covariance, state transition matrix, or maneuver data lines..." |  |
| 7-5 | 7.7.10 |  | ed | This specification lists each section of the OCM individually, but some of the names have changed over time and the orbit determination section is left out. Alternatively, refer to the OCM sections en masse because the comment placement is the same for all of them. | David S. Berry / NASA | From: Force ModelTo: "Perturbations"Also, add "Orbit Determination"Alternatively, "Comments in the sections of the OCM may appear only at the positions shown in the defining Tables..." |  |
| 7-8 | 7.8.2.4 |  | ed | In the list of tables, table 6-9 should be removed because that table number has been re-purposed since P2.38 | David S. Berry / NASA | Remove "table 6-9" from the list of tables of acceptable keywords. |  |
| 8-20 | 8.10.25 |  | te | Maybe we can discuss this after the virtual Spring Meetings? I think we both have a lot to do prior to those meetings (at least I do anyway). | David S. Berry / NASA | Consider. |  |
| B-2 | B3 | 1 | ed | Self reference in ANNEX B to ANNEX B is odd. | David S. Berry / NASA | From: '...provided in ANNEX B normative reference [13]."To: '...provided in normative reference [13]." |  |
| B-2 | B4 | 1 | ed | Subject/verb agreement | David S. Berry / NASA | From: The set of acceptable values ... are...To: The set of acceptable values ... is ... |  |
| B-2 | B6 | 1 | ed | Subject/verb agreement | David S. Berry / NASA | From: "An additional set ... are ..."To: "An additional set ... is ..." |  |
| C-1 | C1 | last | ed | Extra word "be" | David S. Berry / NASA | From: "... is always be defined..."To: "... is always defined..." |  |
| C-3 to C-4 | C2 |  |  | Not reviewed since it appears there are still some technical matters to resolve (several comments in the document, sections highlighted in red, and a few items from P2.38 awaiting inputs from Pat North). | David S. Berry / NASA | None... will review when the section is more mature. |  |
| C-5 | C3 | 2 | te | Says the section describes "cone-based duty cycles", but that has been removed from this version. | David S. Berry / NASA | From: "...time-based, phase-angle-based and cone-based duty cycle parameters."To: "...time-based and phase-angle-based duty cycle parameters." |  |
| C-5 | C3 |  | te | In text below figure C-3, it might be helpful to indicate what is rotating or oscillating between the angular limits. | David S. Berry / NASA | Describe. |  |
| C-6 | C3 | Fig C-4 | ge | As noted above, I spent a fair amount of time going back and forth from the keywords to this diagram and never felt like I really understood how to specify the parameters correctly. | David S. Berry / NASA | This could just be me, not being very familiar with thruster hardware and control. |  |
| C-7 | C4 |  | ed/te | Minor comment... | David S. Berry / NASA | I would just add "GDoP = " to the left of the formulation. |  |
| D-1 | Annex D |  | ed/te | Following text is obsolete given the Silver book status of ODM V.1 and pending Silver book status of the ODM V.2: "Fig. D-3 and Fig. D-4 include unique features of ODM version 2.0, and thus ‘CCSDS\_OPM\_VERS = 2.0’ (at a minimum) must be specified." | David S. Berry / NASA | Remove the text. |  |
| E-1 | Fig E-2 |  | ed/te | Example uses frame "TEME" that is not in the SANA reference frame registry (should be "TEMEOFDATE") | David S. Berry / NASA | From: "TEME"To: "TEMEOFDATE" |  |
| E-2 | Fig E-3 |  | ed/te | Example uses frame "TEME" and covariance frame that are not in the SANA reference frame registry | David S. Berry / NASA | From: "TEME"To: "TEMEOFDATE" |  |
| E-3 | Fig E-4 |  | ed/te | Example uses frame "TEME" that is not in the SANA reference frame registry | David S. Berry / NASA | From: "TEME"To: "TEMEOFDATE" |  |
| E-4 | Fig F-5 |  | ed/te | Example uses frame "TEME" that is not in the SANA reference frame registry | David S. Berry / NASA | From: "TEME"To: "TEMEOFDATE" |  |
| F-4 | Fig F-3 |  | ed | The sample OEM contains the keyword "COV\_START" which is not valid in an OEM | David S. Berry / NASA | From: COV\_STARTTo: COVARIANCE\_START |  |
| G-2 | Fig G-2 |  | ed/te | The example shows ORIGINATOR\_POC, ORIGINATOR\_POSITION, and ORIGINATOR\_PHONE in the Header, instead of the metadata. | David S. Berry / NASA | Move cited keywords to Metadata Section |  |
| G-2 | Fig G-2 |  | ed/te | The example shows EPOCH\_TZERO, then TIME\_SYSTEM, which is not the correct order. | David S. Berry / NASA | Reverse order to:TIME\_SYSTEMEPOCH\_TZERO |  |
| G-2 | Fig G-2 |  | ed/te | Uses inconsistent specification of user defined parameter | David S. Berry / NASA | From: "EARTH\_MODEL"To: "USER\_DEFINED\_EARTH\_MODEL"But maybe this particular parameter should change since the user could use the standardized "GRAVITY\_MODEL = WGS-84" without a user defined parameter. |  |
| G-3 | Fig G-3 |  | te | I feel like this example ought to have a comment indicating that this is a simulation or study and not meant for ops since the spacecraft isn't identified. | David S. Berry / NASA | Add a comment. |  |
| G-3 | Fig G-3 |  | te | Mixes relative and absolute time in the Orbit State Time history... see 6.2.1.4 | David S. Berry / NASA | Choose one or other (probably relative since most of the entries are relative in this example). |  |
| G-3 | Fig G-3 |  | ed/te | This provides a good example why comments shouldn't be used for operational information. MASS in PHYS section says 100 kg, MASS in MAN section says 200 kg host. | David S. Berry / NASA | Probably should make them consistent in an example in the standard. |  |
| G-3 | Fig G-3 |  | te | I guess I was wrong that Table 6-8 or Table 6-9 was an "exclusive or"... | David S. Berry / NASA | Ignore previous comments about "exclusive or", but it should be made clear in discussion of Table 6-8/6-9 that elements from both can be mixed in the MAN\_COMPOSITION |  |
| G-3 | Fig G-3 |  | te | Example uses value for MAN\_BASIS that is not in the normative set. (Both maneuver blocks). | David S. Berry / NASA | From: MAN\_BASIS = PREDICTEDTo: MAN\_BASIS = CANDIDATE (since object isn't identified, it couldn't be a real plan I don't think). |  |
| G-3 | Fig G-3 |  | te | Example uses obsolete keyword "MAN\_EOI" (both maneuver blocks) | David S. Berry / NASA | From: MAN\_EOITo: MAN\_COMPOSITION |  |
| G-3 | Fig G-3 |  | te | Example doesn't use mandatory keyword "DEVICE\_ID" (both maneuver blocks) | David S. Berry / NASA | Add "DEVICE\_ID = DEPLOYMENT" to the first maneuver, "DEVICE\_ID = some thruster to second maneuver. |  |
| G-3 | Fig G-3 |  | ed/te | "ORBIT\_ADJUST" isn't one of the suggested values for MAN\_PURPOSE. | David S. Berry / NASA | Probably should use one of the suggested values for the example in the standard. |  |
| G-3 | Fig G-3 |  | ed/te | Example doesn't use mandatory keyword "OD\_METHOD" | David S. Berry / NASA | Add mandatory keyword |  |
| G-5thruG-8 | Fig G-4 thru Fig G-6 |  |  | Not reviewed given that based on Fig G-3 they are probably stale. | David S. Berry / NASA | Recommend checking these examples to ensure they are up to date. |  |
| G-9 | Fig G-7 |  | ge | I checked this example against the P2.38 draft XML schema for the OCM and it checks out, but the schema most likely needs to be updated too given the checking results on Fig G-3. | David S. Berry / NASA | None |  |
| K-1 | K1 | 2 | ed | Wrong OCM section cited | David S. Berry / NASA | From: "section 4"To: "section 6" |  |
| K-1 | K2 | 3 | ed/te | We pretty much know where the registries will be found. | David S. Berry / NASA | From: "..."To: sanaregistry.org |  |
| M-1 |  |  |  | Ref [M-1]: Obsolete version is cited | David S. Berry / NASA | Use 500.0-G-4, Issue 4, November 2019. |  |
| M-1 |  |  | ed | Not sure why M-3 is in red... is there a revision in progress? or might it be subject to removal from the list? | David S. Berry / NASA | Not sure how to resolve. |  |
| M-1 | Ref M-9 |  | ed | Title provided doesn't match title on paper. | David S. Berry / NASA | From: Position covariance visualizationTo: Attitude covariance visualization |  |
| M-1 | Ref M-10 |  | ed/te | I received a "404 Not found" when looking for this site. | David S. Berry / NASA | Provide alternative website? |  |
| Many | General |  | ed/te | Phrases like "documented in an ICD", "in an ICD", "in the ICD" appear frequently. This has been a staple feature of Nav WG standards. However, in anticipation of pushback from CESG, It may be proactive to try to reduce explicit references to an ICD. | David S. Berry / NASA | Review each instance of "ICD" to see if it can be viably replaced by the implicit suggestion of an ICD rather than an explicit statement, e.g., "should be agreed to between exchange partners" or something similar. This suggests an ICD between the parties but doesn't explicitly recommend it. |  |