| **Page** | **Section** | **Line** | **Type** | **Comment/ Rationale** | **Source of Comment (Name/Agency)** | **Suggested Disposition** | **Disposition**  **(Completed by Principal Editor)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 5.1.1 | 3 | ed | Refers to "ADM and AEM" | David Berry / NASA | Change "ADM" to "APM" |  |
| 0 | 5.2.1(3b) |  | te | Says there is "a single, optional estimator description section". Later in the document (p.14, 5.2.10.5) it says "Each ACM State Covariance Time History shall be paired with an Estimator Description Block". This implies to me a 1:1 correspondence between estimator blocks and covariance matrices. If there can be more than one covariance, the it seems like there would be more than one estimator block. | David Berry / NASA | Clarify what is meant by "paired". |  |
| 2 | Table 5-1 |  | te | Again relating to pairing of Estimator Description and Covariance Data... they are separated pretty widely in Table 5-1. If they are meant to be paired, should they be contiguous? | David Berry / NASA | Consider and clarify. |  |
| 2 | Table 5-1 |  | ed | In the Sensor Data Section, Sensor is spelled "SEnsor". | David Berry / NASA | From: "SEnsor"  To: "Sensor" |  |
| 3 | Table 5-2 |  | ed/te |  | David Berry / NASA | From: "the SANA registry"  To: "the 'Abbreviation' column in the "Organizations" registry of the SANA Registry. |  |
| 3 | 5.2.3.4 |  | ed | This section may not be necessary since it looks like a title, but it doesn't add much to the header in 5.2.3 | David Berry / NASA | Delete 5.2.3.4 |  |
| 3 | 5.2.3.5+ |  | ed/te | This specification will make it impossible to validate an ACM with an XML editor. This is easier to demonstrate than to explain, but allowing optional comments anywhere in an XML message would require all of the metadata keywords to be Mandatory. It is strongly recommended that comments only be allowed at the beginning of the Metadata Section (and any other ACM section). This is consistent with other NavWG standards. | David Berry / NASA | Remove the text related to comments that appears in the sentence after the comma. |  |
| 3 | 5.2.3.6 | 1 | te | The statement as it stands is fine, but creates an ambiguity with the 2 other TIME\_SYSTEM related keywords: TIME\_SYSTEM\_ABS and TIME\_SYSTEM\_REL. Personally I don't see the need for those 2 keywords (they also muddy the waters with respect to EPOCH\_TZERO. | David Berry / NASA | Remove TIME\_SYSTEM\_ABS and TIME\_SYSTEM\_REL keywords. |  |
| 4 | 5.2.3.7 | 1 | te | relative time value should reflect units | David Berry / NASA | From: "... by a relative time value measured with respect to..."  To: ""... by a relative time value in seconds measured with respect to..." |  |
| 4 | 5.2.3.8 |  | ed | Redundant with 5.2.3.3 | David Berry / NASA | Remove either 5.2.3.3 or 5.2.3.8 |  |
| 4 | NOTE 2 |  | te | Refers to two keywords "OBJECT\_DESIGNATOR" and "INTL\_DESIGNATOR" that are not in the Metadata Section table. | David Berry / NASA | I think NOTE 2 can be removed. |  |
| 4 | NOTE 3 |  | ed | Incomplete sentence | David Berry / NASA | Either complete the sentence or remove it. |  |
| 4 | Table 5-3 |  | te | COMMENT keyword: It is strongly recommended that comments only be allowed at the beginning of the Metadata Section (and any other ACM section). This is consistent with other NavWG standards. | David Berry / NASA | Remove the text related to comments being allowed anywhere, and replace it with text saying something to the effect of "Comments allowed only at the beginning of the Metadata Section" |  |
| 4 | Table 5-3 |  | ed | Far right column has mixture of "No" and "no". | David Berry / NASA | Pick one and be consistent. "No" would be consistent with the convention used in the "Mandatory" column. |  |
| 4 | Table 5-3 |  | ed/te | OBJECT\_NAME: The Description refers to "international designators", but I think "names" is more appropriate. | David Berry / NASA | From: "... use international designators from..."  To: "... use names from..." |  |
| 5 | Table 5-3 |  | te | CENTER\_NAME: We should refer to the SANA Registry | David Berry / NASA | From: "... the NASA/JPL Solar System Dynamics Group..."  To: "... the 'Orbit Centers' SANA Registry..." |  |
| 5 | Table 5-3 |  | ed | TIME\_SYSTEM: typo | David Berry / NASA | From: "wich"  To: "which" |  |
| 5 | Table 5-3 |  | te | TIME\_SYSTEM: we should refer to the SANA Registry | David Berry / NASA | I don't know what SANA Operator will decide to call it, so for now refer to "... the 'TBD' SANA Registry |  |
| 5 | Table 5-3 |  | ed | Missing word | David Berry / NASA | From: "The time scale EPOCH\_TZERO"  To: "The time scale for EPOCH\_TZERO" |  |
| 5 | Table 5-3 |  | te | START\_TIME: Begins with "Relative time" (which is a number in seconds relative to EPOCH\_TZERO) and later states that "The epoch is specified in timing system 'TIME\_SYSTEM'. These seem contradictory to me. Then the note at the bottom talks about an absolute time format. | David Berry / NASA | Clarify. Maybe "START\_TIME" is unnecessary? |  |
| 5 | Table 5-3 |  | te | STOP\_TIME... similar to START\_TIME | David Berry / NASA | Similar to START\_TIME |  |
| 5 | Table 5-3 |  | te | TIME\_SYSTEM\_ABS and TIME\_SYSTEM\_REL | David Berry / NASA | I think these keywords are unnecessary and potentially contradictory. TIME\_SYSTEM\_ABS seems redundant with TIME\_SYSTEM. Also, if TIME\_SYSTEM is specified and is NOT UTC, and TIME\_SYSTEM\_ABS is NOT SPECIFIED (it defaults to UTC) and there is a fundamental conflict. |  |
| 6 | 5.2.4.1 | 1 | ed | Word choice, symmetry with other document sections. | David Berry / NASA | From: "Table 5-4 gives..."  To: "Table 5-4 provides..." |  |
| 6 | 5.2.4.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 6 | 5.2.4.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 6 | Table 5-4 |  | te | Keyword order: Reverse the order of the "COMMENT" and "PHYS\_START" keywords. | David Berry / NASA | Start the section with "PHYS\_START" and have "COMMENT" immediately after. |  |
| 6 | Table 5-4 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'PHYS\_START' keyword." |  |
| 6 | Table 5-4 |  | te | MASS: The value looks like "integer" value, but more likely a double precision would be used. | David Berry / NASA | From: 500  To: 500.0 |  |
| 6 | Table 5-4 |  | te | IXX through IYZ: It seems like there should be a note indicating that if any one of these parameters is provided, then all of them must be provided. | David Berry / NASA | Consider. |  |
| 6 | Table 5-4 |  | te | FUEL: The value looks like "integer" value, but more likely a double precision would be used. | David Berry / NASA | From: 750  To: 750.0 |  |
| 6 | Table 5-4 |  | te | CM: Seems like a frame definition would be necessary. Is this an item for an ICD? | David Berry / NASA | Consider |  |
| 7 | 5.2.5.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 7 | 5.2.5.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 7 | 5.2.5.5 |  | ed | Typo | David Berry / NASA | From: Esimator  To: Estimator |  |
| 7 | Table 5-5 |  | te | Keyword order: Reverse the order of the "COMMENT" and "EST\_START" keywords. | David Berry / NASA | Start the section with "EST\_START" and have "COMMENT" immediately after. |  |
| 7 | Table 5-5 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'EST\_START' keyword." |  |
| 7 | Table 5-5 |  | ed | TYPE\_OF\_ESTIMATOR: Awkward keyword? | David Berry / NASA | From: TYPE\_OF\_ESTIMATOR  To: ESTIMATOR\_TYPE |  |
| 7 | Table 5-5 |  | te | TYPE\_OF\_ESTIMATOR: Examples of values should be explained somewhere. | David Berry / NASA | Ultimately these should be described in an Informative Annex |  |
| 7 | Table 5-5 |  | te | REF\_FRAME\_A, REF\_FRAME\_B: Mandatory? | David Berry / NASA | Seems like "Yes" ? |  |
| 7 | Table 5-5 |  | ed | Should SIGMA\_U and SIGMA\_V be located closer to RATE\_STATES? | David Berry / NASA | Consider. |  |
| 8 | 5.2.6.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 8 | 5.2.6.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 8 | Table 5-6 |  | te | Keyword order: Reverse the order of the "COMMENT" and "SENSOR\_START" keywords. | David Berry / NASA | Start the section with "SENSOR\_START" and have "COMMENT" immediately after. |  |
| 8 | Table 5-6 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'SENSOR\_START' keyword." |  |
| 8 | Table 5-6 |  | te | NUMBER\_OF\_SENSORS: It seems like this would need to be the number of sensors of any given type, based on the description of "SENSOR\_TYPE\_i" | David Berry / NASA | From: "Number of sensors on the spacecraft"  To: "Number of sensors of this type on the spacecraft". |  |
| 8 | Table 5-6 |  | te | SENSOR\_TYPE\_i: It seems like this would need to precede the "NUMBER\_OF\_SENSORS" keyword, and maybe be indexed too. | David Berry / NASA | From: "Number of sensors on the spacecraft"  To: "Number of sensors of this type on the spacecraft". |  |
| 8 | Table 5-6 |  | ed | NUMBER\_OF\_SENSORS: Awkward keyword? | David Berry / NASA | From: "NUMBER\_OF\_SENSORS"  To: "SENSOR\_COUNT\_i". |  |
| 8 | Table 5-6 |  | ed | DATA\_ADJUSTMENT\_i typo in Description | David Berry / NASA | From: "includes"  To: "included" |  |
| 8-9 | Table 5-6 |  | ed | ALIGNMENT Keyword composition: placement of index is inconsistent with other placement in other indexed keywords. | David Berry / NASA | From: ALIGNMENT\_i\_FRAME\_A (also for B)  To: ALIGNMENT\_FRAME\_A\_i (also for B) |  |
| 9 | Table 5-6 |  | ed | ALIGNMENT\_i\_FRAME\_B typo in Description | David Berry / NASA | From: endo  To: end |  |
| 9 | Table 5-6 |  | te | BIAS\_i: Examples of values aren't consistent with the units in the Units column. Examples are text that have no units. | David Berry / NASA | The BIAS\_i values would likely be floating point numbers. |  |
| 9 | Table 5-6 |  | te | BIAS\_i: The description should state (along with the frame constraint) something like "must have the same units as "UNITS\_i" | David Berry / NASA | Add "... and must have the same units as 'UNITS\_i" |  |
| 10 | 5.2.7.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 10 | 5.2.7.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 11 | Table 5-7 |  | te | Keyword order: Reverse the order of the "COMMENT" and "MAN\_START" keywords. | David Berry / NASA | Start the section with "MAN\_START" and have "COMMENT" immediately after. |  |
| 11 | Table 5-7 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'MAN\_START' keyword." |  |
| 11 | Table 5-7 |  | te | MAN\_WIN\_START/STOP: Interesting that these are absolute epochs, not relative to EPOCH\_TZERO | David Berry / NASA | Consider. |  |
| 11 | Table 5-7 |  | te | MAN\_EXEC\_START/STOP: Should these be absolute epochs as with the WIN times? | David Berry / NASA | Consider, and provide examples accordingly. |  |
| 11 | Table 5-7 |  | ed | TARGET\_ATTITUDE: Typo in Description | David Berry / NASA | From: PURPOSE-ATT  To: PURPOSE=ATT |  |
| 12 | 5.2.8.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 12 | 5.2.8.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 12 | 5.2.8.5 |  | te | The notion of "pairing" is not clear here... Table 5-1 indicates a single Estimator Description Section, but the Attitude State Time History sections can be multiple. | David Berry / NASA | Does this mean something like "If one or more Attitude State Time Histories are present in an ACM, then an Estimator Description Section shall be present"? Should these sections be placed contiguously in the message? |  |
| 12 | 5.2.8.9 |  | ed | Word choice. | David Berry / NASA | From: orbit  To: attitude |  |
| 12 | 5.2.8.11 |  | te | This comment line could be problematic for an XML implementation, depending on how the attitude state XML definition is done. | David Berry / NASA | No action at this time... just awareness. |  |
| 13 | 5.2.8.14 |  | ed | Last sentence is incomplete. Last part is redundant. | David Berry / NASA | Complete the sentence (eventually... I can see ow it might be premature). |  |
| 13 | Table 5-8 |  | te | Keyword order: Reverse the order of the "COMMENT" and "ATT\_START" keywords. | David Berry / NASA | Start the section with "ATT\_START" and have "COMMENT" immediately after. |  |
| 13 | Table 5-8 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'ATT\_START' keyword." |  |
| 13 | 5.2.9.1 |  | ed | Section name cited is incorrect | David Berry / NASA | From: "ACM attitude determination"  To: "ACM sensor" |  |
| 13 | 5.2.9.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 13 | 5.2.9.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 13 | 5.2.9.5 |  | te | The notion of "pairing" is not clear here... Table 5-1 indicates a single Sensor Description Section, but the Sensor Data sections can be multiple. | David Berry / NASA | Does this mean something like "If one or more Sensor Data Sections are present in an ACM, then a Sensor Description Section shall be present"? Should these sections be placed contiguously in the message? |  |
| 13 | 5.2.9.5 |  | te | It would seem that there would need to be "n" Sensor Data Sections, where 1 <= i <= n, where "n" = "NUMBER\_OF\_SENSORS" from the Sensor Description. Also, the relevant "i" would need to be in the Sensor Data Section in order to tie the data back to the Sensor Description Section. | David Berry / NASA | Consider. |  |
| 13 | 5.2.9.7 |  | te | In the ACM Metadata, it is stated that "relative time is measured in seconds from EPOCH\_TZERO". Switching to "DAYS" here risks a computation error. | David Berry / NASA | Maybe sensor data event times should be absolute epochs. The switch to DAYS implies to me that they may not be frequent (but it is unclear what exactly constitutes a "sensor data event"). |  |
| 14 | Table 5-9 |  | te | Keyword order: Reverse the order of the "COMMENT" and "DATA\_START" keywords. | David Berry / NASA | Start the section with "DATA\_START" and have "COMMENT" immediately after. |  |
| 14 | Table 5-9 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'DATA\_START' keyword." |  |
| 14 | Table 5-9 |  | te | DATA\_NUMBER: I wonder if this is superfluous given that this info is in the Sensor Description section (NUMBER\_ELEMENTS\_i) |  | Consider. |  |
| 14 | Table 5-9 |  | te | SENSOR\_TYPE: I wonder if this is superfluous given that this info is in the Sensor Description section. | David Berry / NASA | Consider |  |
| 14 | Table 5-9 |  | te | SENSORS\_UNITS: Example shows this as "SENSOR\_UNITS" (which makes more sense) | David Berry / NASA | From: SENSORS\_UNITS  To: SENSOR\_UNITS |  |
| 14 | Table 5-9 |  | te | SENSORS\_UNITS: I wonder if this is superfluous given that this info is in the Sensor Description section. | David Berry / NASA | Consider |  |
| 14 | 5.2.10.2 | 1 | ed | Insulation against adding/deleting/changing column position. | David Berry / NASA | From: "... in column three..."  To: "... in the 'Units' column..." |  |
| 14 | 5.2.10.3 |  | te | It is strongly recommended that comments only be allowed at the beginning of this Section (and any other ACM section). This is consistent with other NavWG standards. Allowing comments anywhere precludes the ability to validate an ACM with an XML schema. | David Berry / NASA | Remove the text starting with "... with the exception" and continuing through the end of sentence. |  |
| 14 | 5.2.10.5 | 2 | te | The notion of "pairing" is not clear here... Table 5-1 indicates a single Estimator Description Section, but the Attitude State Covariance Time History sections can be multiple. | David Berry / NASA | Does this mean something like "If one or more Attitude State Covariance Time Histories are present in an ACM, then an Estimator Description Section shall be present"? Should these sections be placed contiguously in the message? (Maybe Estimator Description followed by Attitude State Time History followed by Attitude State Covariance Time History?) |  |
| 15 | 5.2.10.9 |  | te | This comment line could be problematic for an XML implementation, depending on how the attitude covariance XML definition is done. | David Berry / NASA | No action at this time... just awareness. |  |
| 15 | 5.2.10.11 |  | ed | Missing comma ("Oxford comma" the lack of which the CCSDS Editor hates!) | David Berry / NASA | From: "... maneuver, attitude state and/or sensor..."  To: "... maneuver, attitude state, and/or sensor..." |  |
| 15 | Table 5-10 |  | te | Keyword order: Reverse the order of the "COMMENT" and "COV\_START" keywords. | David Berry / NASA | Start the section with "COV\_START" and have "COMMENT" immediately after. |  |
| 15 | Table 5-10 |  | te | COMMENT Description: restrict positioning of comments | David Berry / NASA | From: existing text  To: "Comments allowed only immediately after the 'COV\_START' keyword." |  |
| 15 | Table 5-10 |  | ed | ATT\_ID: Typo | David Berry / NASA | From: covriance  To: covariance |  |
| 15 | Table 5-10 |  | te | Seems like COV\_N would be a mandatory keyword. | David Berry / NASA | From: No in "Mandatory" column  To: Yes in "Mandatory" column |  |
| 16 | Table 5-11 |  | te | USER\_DEFINED\_x: add additional constraint | David Berry / NASA | From: "... cannot be conveyed in COMMENT statements."  To: "... cannot be conveyed in standard ACM keywords or in COMMENT statements." |  |
| 16 | Table 5-11 |  | te | USER\_DEFINED\_x: Examples are of the "x" replacement string in the keyword. | David Berry / NASA | From: existing text  To: USER\_DEFINED\_SENSOR\_TEMPERATURE = 273.15 [K] |  |
| 17 | Figure 5-1 |  | ed | CCSDS\_ACM\_VERS = 2.0 should be used (since ACM will appear in ADM Version 2.) | David Berry / NASA | Fix (in this and other examples) |  |
| 17 | Figure 5-1 |  | te | The example should have OBJECT\_ID and TIME\_SYSTEM before EPOCH\_TZERO according to Table 5-3 | David Berry / NASA | Fix |  |
| 17 | Figure 5-1 |  | te | NUMBER\_STATES doesn't seem necessary given that the type of estimator is neither EKF nor BATCH | David Berry / NASA | Fix |  |
| 18 | Figure 5-2 |  | te | The example should have TIME\_SYSTEM before EPOCH\_TZERO according to Table 5-3 | David Berry / NASA | Fix |  |
| 18 | Figure 5-2 |  | te | First COMMENT should be after EST\_START | David Berry / NASA | Fix |  |
| 18 | Figure 5-2 |  | te | With NUMBER\_OF\_STATES= 7 and ATTITUDE\_STATES = QUATERNION, the user needs to know which part is the quaternion | David Berry / NASA | How is this indicated? |  |
| 18 | Figure 5-2 |  | ed | Example shows "EST\_END"; should be "EST\_STOP". | David Berry / NASA | Fix |  |
| 18 | Figure 5-2 |  | te | Second COMMENT should be after EST\_START | David Berry / NASA | Fix |  |
| 18 | Figure 5-2 |  | ed | Typo: ACUTATOR | David Berry / NASA | From: ACUTATOR  To ACTUATOR |  |
| 18 | Figure 5-2 |  | te | Third COMMENT should be after ATT\_START | David Berry / NASA | Fix |  |
| 19 | Figure 5-3 |  | te | Has TECH\_POC keyword; should be ORIGINATOR\_POC | David Berry / NASA | Fix |  |
| 19 | Figure 5-3 |  | te | The example should have TIME\_SYSTEM before EPOCH\_TZERO according to Table 5-3 | David Berry / NASA | Fix |  |
| 19 | Figure 5-3 |  | te | COMMENT should be after PHYS\_START | David Berry / NASA | Fix |  |
| 19 | Figure 5-4 |  | te | The example should have TIME\_SYSTEM before EPOCH\_TZERO according to Table 5-3 | David Berry / NASA | Fix |  |
| 19 | Figure 5-4 |  | te | NUMBER\_OF\_ELEMENTS\_i = 4 in the Sensor Description section, but DATA\_NUMBER = 3 in the Sensor Data Section. These seem inconsistent, but I'm not sure. | David Berry / NASA | If inconsistent, fix. |  |
| 19 | Figure 5-4 |  | te | DATA\_TYPE should appear before DATA\_NUMBER according to Table 5-9 | David Berry / NASA | Fix |  |
| 19 | Figure 5-4 |  | te | The association between sensor description and sensor data is not clear. It's indicated in a COMMENT, but COMMENTs aren't required. | David Berry / NASA | This could be fixed by adding an index value to the Sensor Data Section, or by having the Sensor Description and Sensor Data in the same "block". Either way the association would be obvious. |  |
| 13, 14, 15 |  |  | te | Data layouts: At some point data layouts will need to be specified in places where "<insert xxx lines here>" is specified. | David Berry / NASA | No action at this time... just awareness |  |
| Several |  |  | ed | Word choice: Throughout doc there is a specification indicating how the boundaries between the different sections are established (xxx\_START and xxx\_STOP in 5.2.x.5 or 5.2.x.6). Several times the word "indicated" is used, other times the word "delineated" is used. | David Berry / NASA | Consider which word is best, and use that one. Personally I prefer "delineated", but you used "indicated" more frequently so maybe that's your preference. |  |