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| **Page** | **Section** | **Line** | **Type** | **Comment/ Rationale** | **Source of Comment (Name/Agency)** | **Suggested Disposition** | | **Disposition**  **(completed by**  **principal editor)** | | --- | |
| General | V14; 1.1 | 2 | te | Why is this limited to ground system exchange? Has any thought been given to using this to exchange data on a crosslink between SC or is the ASCII a preclusion? | Cheryl J Gramling/NASA |  |  |
| 3-2 | 3.3.4 | 7 | te | RE: “The data in each group are logically related (pertain to the same hardware)…”  Is the only logical relationship that of pertaining to the same hardware? No other logical relationships can cover the grouping (e.g. data points at the same time)? | Cheryl J Gramling/NASA | If the only logical grouping is that the grouped data belong to the same hardware, then simply state that. |  |
| 4-1 | 4.1.3 & 4.2.4, Table 4-1, Table 4-3 | last | te | Section 4.1.3 describes the use of [Z] to indicate UTC is used, and implies there are other time system options (e.g. TAI, per Annex B). Section 4.2.4 and Table 4-1 state the creation date/time is in UTC, with no option for other time systems. Table 4-3 provides examples with other time systems. These do not seem to be consistent. | Cheryl J Gramling/NASA | If UTC is indeed *an option* for time reference system (in other words other time reference systems could be used), then the text in section 4.2.4 and Table 4-1 should be updated from “date/time in UTC” to state ‘date/time in referenced time system”, or something similar. |  |
| 4-3 | 4.3.6 & Ref 8 | 3 | gn | Newcomer question: Why is http://www.unoosa.org/oosa/en/osoindex.html the preferred reference for space objects? A quick perusal of the website on MMS found incorrect information. How frequently is the site maintained and by whom? How quickly after launch is it updated?  In addition, what designator is to be used prior to launch for testing message flows, interfaces, etc? | Cheryl J Gramling/NASA | If the NHM is to be useful for a new mission, then the site from which the international designator is retrieved should be up to date. |  |
| 4-5 | 4.3.16.1; 4.3.16.2 | 2; 4 | te | Does the SANA registry currently have a listing of these Spacecraft System and Hardware Types Values? | Cheryl J Gramling/NASA | If the answer is No, then suggest the Nav WG develop and submit such lists. |  |
| General; H-2 | Annex D |  | gn | How would one handle a nav measurement derived from a COM system, under NAV or under COM? Where would items like oscillators fall, if not directly associated with CDH, COM, or NAV, but the overall spacecraft? | Cheryl J Gramling/NASA | A few additional examples may be helpful. |  |
| General |  |  | Gn | For many of these data types an orientation wrt body frame (and/or inertial) may be needed. Are those to be defined in an ICD for a particular mission or is there a complementary message needed for the NHM that defines sensor location? | Cheryl J Gramling/NASA | Offer a way to determine the sensor location in the NHM document, perhaps defined in ICD or another CCSDS Nav message. |  |
| H-2 | Table D-1 | Hardware Type | te | Under GNS, under Description, carrier phase and Doppler are missing. | Cheryl J Gramling/NASA | Suggest including all data types. |  |
| H-2 | Table D-1 | Hardware Type | Te | Missing data item descriptors from the COM system such as pseudo-range, Doppler, or carrier phase. | Cheryl J Gramling/NASA | Suggest including data items from COM systems. |  |
| H-2 | Table D-1 | Hardware Type | Te | Missing Hardware item oscillator with associated descriptor (could be frequency offset or bias, base frequency, …) | Cheryl J Gramling/NASA | Suggest including oscillators as part of the nav hardware complement. |  |
| H-2 | Table D-1 | Hardware Type | Te | The System field offers THM and PWR, but there are no Hardware Types associated with the thermal or power subsystems. | Cheryl J Gramling/NASA | Suggest adding in thermal and power subsystem Hardware types, such as unit temperature (°C, °K), voltage (V), power [consumed/used/required] (J, W), etc. |  |