8 - 7 6 1 P - 8

110787

PROCESS AND METHODOLOGY OF DEVELOPING CASSINI G&C TELEMETRY DICTIONARY

Edwin P. Kan

Jet Propulsion Laboratory California Institute of Technology 4800 Oak Grove Drive Pasadena, Ca 91109

ABSTRACT

While the Cassini spacecraft telemetry design had taken on the new approach of "packetized telemetry", the AACS (Attitude and Articulation Subsystem) had further extended into the design of "mini-packets" in its telemetry system. Such telemetry packet and mini-packet design produced the AACS Telemetry Dictionary, iterations of the latter in turn provided changes to the former. The ultimate goals were to achieve maximum telemetry packing density, optimize the "freshness" of more time-critical data, and to effectuate flexibility, i.e. multiple AACS data collection schemes without needing to change the overall spacecraft telemetry mode. This paper describes such a systematic process and methodology, evidenced by various design products related to, or as part of, the AACS Telemetry Dictionary.

INTRODUCTION

An efficient ground data system and effective telemetry data processing / analysis system stem from good engineering design with respect to timeliness, frequency, accuracy, and sufficiency of the data contents in the telemetry stream. The human interaction with the data, thence consumption of the data, can also be enhanced by human-engineered telemetry displays and systematic organization of the telemetry measurements.

Such objectives can be achieved, in part, by an up front design of a flexible and efficient telemetry handling system on board the spacecraft, and of an equally efficient ground data analysis system. A common thread between the flight and ground systems is the Telemetry Dictionary.

In the present context, the Telemetry Dictionary is more than just a collection of telemetry measurements with their descriptions, arranged in some alphabetical ordering. The development process of the Dictionary is intertwined and iterative with the design process of the telemetry system. In fact, the Dictionary is not simply the child-of-the-parent of the telemetry design; it is also the parent-of-the-child. The Dictionary evolves from the telemetry design process; and through iterations, the Dictionary development in turn provides improvement and optimization to the telemetry design.

This iterative process was particularly necessary for the Cassini AACS (Attitude and Articulation Subsystem) because of its new approach of using a "packetized telemetry" system versus the widely used "time division multiplex" (TDM) system. The AACS further extended the packet design to include the "mini-packet" design.

The ultimate goals of the mini-packet and packet telemetry design were to achieve maximum telemetry packing density, optimize the "freshness" of more time-critical data, and to effectuate flexibility, i.e. multiple AACS data collection schemes without needing to change the overall spacecraft telemetry mode.

The Cassini AACS telemetry design also responded to the object-oriented design approach of the AACS flight software. The fundamental entity of telemetry collection was to be based on each software object. A bottoms-up approach was used to assemble and analyze the telemetry measurements per software object. A database was constructed in which each measurement (i.e. record) was associated with attributes including measurement-number (E-numbers in Cassini), mini-packet, software object, channel¹ type, bit assignment, scale factor etc.

¹ "Channels" are herein used synonomously with telemetry "measurements", and should not be confused with "telecommunication channel, bandwidth".

Through iterative analysis, the collection of measurements was screened, organized, and assigned to the fundamental unit of a telemetry mini-packet. Mini-packets were created that grouped measurements by similar functions and/or similar collection periods. A systematic optimization of mini-packet assignments led to the consolidation of the database, from which statistics were synthesized and analyzed. AACS telemetry modes were designed corresponding to the overall spacecraft telemetry modes - a virtue of the flexibility of a mini-packet packetized telemetry system. Telemetry maps specifying the periodicity of telemetry mini-packets were designed, satisfying overall spacecraft telemetry bandwidth allocation requirements.

This paper describes such a systematic process and methodology, evidenced by various design products related to, or as part of, the AACS Telemetry Dictionary. This work was performed during the first part of Fiscal Year 1994, and was completed before the AACS Flight Software Critical Design Review.

FEATURES OF A TELEMETRY DICTIONARY

References to the AACS Telemetry Dictionary of Galileo (ref. 1), Mars Observer (ref. 2), and Cassini (ref. 3) reveal the common features of a telemetry dictionary of a major-size spacecraft. Putting aside those spacecraft-specific design features that should always be documented, the following list shows the major features to be included in the telemetry dictionary:

- Spacecraft telemetry system description
- Subsystem (e.g. AACS) telemetry system desciption
- Telemetry design: data acquisition, processing, storing, and transmission; telemetry maps, rates, modes (overall spacecraft mode versus subsystem mode)
- Telemetry detailed design: data format, headers, trailers, fillers, engineering "transfer frames", major frames
- Telemetry packets, mini-packets
- Special telemetry modes
- Telemetry Indices: by channel number, display mnemonics, data type, subsystem association, flight software name, and frequency (periodicity)
- Telemetry data sheet (by channel number)

- Telemetry subcommutation map (for TDM) design; packet and mini-packet tables (for "packetized" design)
- Telemetry modes, transitions, relationship between spacecraft mode and subsystem (telemetry / operation) mode
- Parent-to-child relationship between channels (child-channels are usually derived in Ground Data System in order to relieve spacecraft downlink burden)

Spreadsheet or database documentation of channel data is ideal not only for sorting / indexing purposes, but also invaluable in the analysis / synthesis of telemetry modes, rate (periodicity) association, decommutation and mini-packet / packet design. Spreadsheet columns, i.e. attributes, should at least include channel number, display mnemonics, data type, subsystem association, flight software name, and frequency (periodicity).

In fact, the basis of the Cassini AACS Telemetry Dictionary used for the mini-packet / packet design, rate group association, and overall downlink channel bandwidth optimization, was a spreadsheet documentation of all telemetry channels.

Additional attributes included in the Cassini AACS Telemetry Dictionary spreadsheets were associations to software object, hardware unit, and mini-packet function (hence mini-packet name). Desired data frequency (periodicity) was a very important attribute, used in the iterative design of the mini-packets. The desired periodicity expressed the "freshness" requirement, and was represented by cardinal ratings of F, FM, M, MS, and S (i.e. fast, fastmedium, medium, medium-slow, and slow). Attributes of data types (signed integer, unsigned integer, floating-point, digital, state and ASCII) and number of data bits were included for channel bandwidth optimization and statistics summarization.

PACKET / MINI-PACKET DESIGN vs TDM (Time Division Multiplex) DESIGN

The gist of the design differences between packet / mini-packet design versus TDM design is the absence vs presence of a "telemetry decommutation map". In a TDM design, a channel will be included in the telemetry stream (regardless of whether the stream is to be downlinked or stored on-board) at a fixed location according to the decommutation map. A map covers all locations of a complete unit of telemetry stream (also known in Galileo as Major Frame, in Mars Observer as Engineering Transfer Frame). At a given bit rate, the "frame" always spans the same duration of time. (Hence, the scheme is called TDM.)

Within a decommutation map, the same channel can appear once or multiple times. In the former case, the channel is said to be in the "slow deck"; in the latter, "medium" or "fast" deck, depending on the repetition rate. In Galileo, there are basically three rates, the "ninety-one-deck", "thirteen-deck", and "zero-deck", ranging from slow to fast. For 1200 bps telemetry rate, the periods are 60 2/3 sec., 8 2/3 sec, and 2/3 sec. In Mars Observer, in the 2000 bps Engineering Mode, there are the 32 sec., 8 sec., 1 sec. "decks" for the flight computer processed data.

Decommutation maps are large. There can be multiple maps, one for each Spacecraft "mission" mode. In Mars Observer, there are four modes: Engineering, Mission, Emergency and Safe Mode; with different bit rates ranging from fast to slow, respectively. In Galileo, even though bit rate can change from 1200 bps down to 8 bps, the same decommutation map still applies; however, there is an extra "Variable Telemetry Map" that can be selected from four choices. All Variable Telemetry Maps provide 22.5 (16-bit) words, equivalently 18 plus 9 one-half channels at the zero-deck rate.

Changes to decommutation maps are possible normally via memory loads at specific memory addresses. Such a change process is laborintensive.

For Cassini, if TDM were used, the maps would be even larger (about five times as large as Galileo, and one-and-a-half times larger than Mars Observer). This is not simply due to complexity of the spacecraft, i.e. number of subsystems, but is due to increase of compution power of the on-board computers.

Without using the packet / mini-packet design, Cassini would suffer excessive sluggishness in AACS telemetry - where the fastest allocation downlink rate was at 1896 bps, with 576 bps allocated to AACS.

The mini-packet design provides AACS with total freedom to assign desired / appropriate mini-packets to the fixed packet size allocated to AACS. Each Spacecraft Subsystem is allocated a certain packet size. Multiple (not necessarily integral number of) packets can be included in an "engineering transfer frame".

Flexibility is achieved by associating AACS Telemetry Modes for certain AACS Operation Modes, and against all Spacecraft Mode. Instead of having the TDM decommutation map(s), maps of telemetry channels in mini-packets (regardless of modes), and maps of mini-packets in packets (per AACS Telemetry Mode) are stored. The first set of maps are much smaller than a TDM decommutation map. The second set of maps are basically tables of "(m,n) frequency" allocation of mini-packets to packets.

"(m,n)" frequency in Cassini means that, for that AACS Telemetry Mode, m mini-packets will be contained in n packets. E.g. (8,1) is the fastest rate and (1,64) is the slowest rate in Cassini. At an AACS packet period of 8 sec., they represent mini-packet periods of 1 sec and 512 sec.

For more details on TDM, mini-packets, guaranteed delivery of mini-packets in packets, see (ref.1 - 4)

CASSINI PROCESS & METHODOLOGY of Telemetry Dictionary Development

The Cassini AACS telemetry design and Telemetry Dictionary development was an interactive and iterative process. Using project organization terminology, it was a cooperative task performed between the AACS Subsystem Group, Control Analysis Group, Flight Software Group, Hardware & Electronics Group, and the Ground Data Systems / Mission Operations Group.

While generic telemetry channel requirements were synthesized by the Subsystem Group, specific candidates were proposed by the Hardware Group, Analysis Group, and the Software Group. Inheritance from the Galileo and Mars Observer designs was duly observed. In fact, a one-to-one comparison was made between the Galileo AACS Telemetry Dictionary and the candidate Cassini Dictionary, revealing potential omissions and confirming completeness.

From the respective AACS Groups, requirements for candidate telemetry channel, periodicity, data bits (resolution, precision), and format were drawn on hardware (sensors, actuators, hardware-to-electronics interfaces); control states, intermediate and observable variables; flight computer hardware data, hardware configuration and overall fault protection data. The Ground System Group was consulted regarding mission operations requirements and channel bandwidth optimization. Human engineered mnemonics and channel type assignment were prescribed to all measurements, conforming with JPL's AMMOS (Advanced Multi-Mission Operations System) ground software standards.

The object-oriented software design of the AACS flight software design (some 20 objects) (ref. 5) provided an easy association of telemetry to software objects. The list of object names and their statistics are given in Table 1. (The Telemetry Manager is one such object.) Table 2 is a sample of this initial compilation of telemetry dictionary, for the Software Object of "Accelerometer_Telemetry_Manager". Since object-oriented software design has distinct input output data flow, the same telemetry can be tapped from either the source or destination. A rule of thumb was adopted to tap the telemetry from the source, unless certain functional groupings made it more desirable to tap from the destination.

A spreadsheet for all telemetry channels was then composed, where all attributes were entered, including their cardinal ordering of periodicity.

At that point, mini-packets were designed which attempted to group telemetry by

- functionality
- similarity in periodicity requirement
- manageable size of mini-packet.

The number of mini-packets were kept to a minimum, compromising with the uniformity (diversity) of the functionality and periodicity of the channels grouped within the same mini-packet.

The mini-packet attribute was then added to the spreadsheet. With each iteration, new packet / mini-packet design was synthesized and their statistics analyzed. Iterations on the spreadsheet, good engineering practice, and negotiations with the engineer(s) requiring the specific channels (and other requirements), then led to a compromised mini-packet design.

While the design work was approaching completion, bandwidth allocation had yet to be analyzed. This was when the cardinal ordering of mini-packet periodicity was translated into ordinal (m,n) association.

New spreadsheets were prepared (Table 3), which were linked to the Telemetry Dictionary spreadsheet, linked for channel attributes such as data bit size and mini-packet association. An iterative analysis and synthesis further led to optimized (m,n) periodicity associations, addition/deletion/merging of mini-packets, and final assignment of channels to mini-packets.

Finally, an overall design of AACS Telemetry Modes, corresponding to all AACS Operation Modes and Spacecraft "Mission" Modes led to more rounds of iterations and finalization of the telemetry design, mini-packet / packet design, and, above all, the AACS Telemetry Dictionary.

Samples of the Final Dictionary (as of Jan., 94) are given in Table 4 and 5, where the telemetry channels are ordered by channel-numbers (i.e. "E-numbers", also by Software Objects), and by mini-packets.

All in all, 1088 channels in 67 mini-packets were assembled in the AACS Telemetry Dictionary. Out of these 67 mini-packets, 6 contained the less used off-diagonal covariance and Kalman gain elements (161 measurements), which are non-essential during normal mission operations. Eliminating those left 947 measurements in 61 mini-packets. A total of seven telemetry maps corresponding to 7 AACS telemetry modes were constructed. These modes are: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; (4) Slow Cruise; (5) Orbital Ops; (6) Δv ; (7) ATE (Attitude Estimator) Calibration. These 7 maps cover all spacecraft telemetry modes. For further information about mode transitions, and for details of the AACS Telemetry Dictionary, refer to (ref. 3 and 6.)

CONCLUSION

The process of bottoms-up development, use of human engineering skills, and the construction of the database had permitted a systematic way of sorting, synthesizing and analyzing all Cassini AACS telemetry measurements. Maximizing the use of database formulas and linking databases also permitted expedient parametric variation and analysis of bottom-line figures; examples of the latter were dictionary statistics, and bandwidth consumption (vs allocation) for specific telemetry modes. Hence, an effective and flexible packet / mini-packet design scheme.

This process of developing the packet / minipacket design and the establishment of the AACS Telemetry Dictionary had proven to be closely intertwined and cross-productive. The end result also provided the design for the "Telemetry Manager" flight software object. The process helped to bind a contract, i.e. interface specification of telemetry measurement between software objects. It further provided important feedback to software control algorithm designers for finalizing design parameters.

In conclusion, not only was this Cassini process a means to an end - the Telemetry Dictionary, it was also a team-player in the overall AACS flight software design.

ACKNOWLEDGEMENT

This work was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under contract to the National Aeronautics and Space Administration. The author would also like to acknowledge the efforts of D. Bernard, M. Brown, and R. Rasmussen, who laid the foundations to this present work.

REFERENCES

- 1. Anon., "Galileo AACS Telemetry Dictionary," Document GLL-OET-91-393, Jet Propulsion Laboratory, Pasadena, Ca., USA, 10/30/91.
- 2. Anon., "Mars Observer: Engineering Telemetry & Command Dictionary," CTD-3271152 Vol. 1 & 2, Contract #957444, prepared by Astro-Space Division, General Electric Company for Jet Propulsion Laboratory, Pasadena, Ca., USA, 9/11/92.
- 3. Anon., "Cassini AACS Telemetry Dictionary, Vol. 1 and 2," JPL Document #D-11796, Jet Propulsion Laboratory, Pasadena, Ca., USA, 5/9/94.
- 4. Anon., "Cassini Functional Requirements: Telemetry Format and Measurements," JPL Document #699-3-281, Jet Propulsion Laboratory, Pasadena, Ca., USA, Apr. 1994.
- Hackney, J., D. Bernard & R. Rasmussen, "Cassini Spacecraft Object Oriented Flight Control Software," Paper 93-033, Proc. AIAA AAS Conf., Jan. 1993.
- Kan, E. P., "The Cassini AACS Telemetry Dictionary -Development Process and Results," presentation on 1/5/94, also IOM# GLL-OET-93-667, Jet Propulsion Laboratory, Pasadena, Ca., USA, 12/28/93.

| Software | Object | Hdwe ass'n | # channels | |
|----------|----------------------------------|------------|------------|------------------------------------------------|
| ACL | Attitude Control | | | Notes |
| ACM | Attitude Commander | Software | 29 | |
| ADC | Attitude Determination Commander | Software | 43 | |
| ATE | Attitude Estimator | Software | 1 | |
| CFG | Configuration Manager | Software | 244 | 161 cov & K not essential |
| CMD | Command Manager | XXX | 124 | |
| CMT | Constraint Manager | Software | 15 | |
| FPA | Constraint Manager | Software | 13 | |
| FPR | Fault Protection & Analyzer | XXX | 280 | 24 assigned; 256 TBD |
| | Fault Protection Recovery | Software | 3 | <i>U</i> , , , , , , , , , , , , , , , , , , , |
| FSX | Flight Software Executive | EFC | 71 | |
| IOUmgr | Input_Output_Unit Manager | XXX | 54 | |
| IVP | Inertial Vector Propagator | Software | 1 | |
| MOD | Mode Commander | Software | 5 | |
| PROM | PROM_Control | Software | 6 | |
| SID | Star ID (identification) | Software | 64 | |
| TLM | Telemetry Manager | Software | 2 | |
| XBA | Cross-string Bus Adapter | Software | 24 | |
| ACC | Accelerometer Manager | Hdwe Mgr | 7 | |
| EGA | Engine Gimbal Actuator | Hdwe_Mgr | 10 | |
| IRU | Inertial Reference Unit | Hdwe_Mgr | 10 | |
| PMS | Propulsion Module System | Hdwe_Mgr | 12 | |
| RWA | Reaction Wheel Assembly | • | 1 | |
| SRU | Stellar Reference Unit | Hdwe_Mgr | 48 | TOTAL # ch.'s = 1094 |
| SSA | Sun Sensor Assembly | Hdwe_Mgr | 18 | less non-ess. $ATE = 933$ |
| | our oonsor Assembly | Hdwe_Mgr | 10 | less TBD FPA ch = 677 |

 TABLE 1. Summary Statistics - # of Channels vs Software Object

| Table 2. | Telemetry | List f | or | Accelerometer | <u>Manager</u> | Software | Object | |
|----------|-----------|--------|----|---------------|----------------|----------|--------|--|
|----------|-----------|--------|----|---------------|----------------|----------|--------|--|

| СЪ | Ch# (new#) | Mnemonics | Mini Pkt# | | Hardware associat'n | Software object | | | Туре | Bit | Scale Factor |
|---------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------|-----------------|
| E E E E E I | 1001 1002 1003 1004 1005 1006 1007 Cegend: | ACCstate ACC_calBIAS deltaV_ACC ACC_totBIAS deltaV_tmtg ACC_tmtg raw_ACC_CT Rate (cruise | 4 21 21 21 21 21 22 F = f | Sfwe_State2 deltaV deltaV deltaV deltaV deltaV IRU/ACC_data ast; M = medium | ACC ACC ACC ACC ACC ACC ACC ACC ACC | HdweMgr HdweMgr HdweMgr HdweMgr HdweMgr HdweMgr HdweMgr FM = mediu | M Z Z MS Z MS | "driftDelta" - calib prior to deltaV "deltaV" - after scale factor compensatio "drift"= driftNominal+driftDelta "deltaVTimeTag", used to compute "diffTim "timeTag"; 8+8 bits "accumDeltaV" - before scale factor compe ; MS = medium slow: Z = zero, except in a | I U U I | 4 16 16 16 16 16 | |
| E E E E E E E | 1395 1650 1665 1666 2035 | ACC_cycle ACC_ONtime ACC_RESETct ACC_ERR ACC_ERR_ct ACC_Val_ERR ACC_drf_ERR | 26 26 37 38 38 46 46 46 | IRU/ACC_stat IRU/ACC_stat Reset_count Bus_error Bus_error Anomaly_st2 Anomaly_st2 | ACC ACC ACC ACC ACC ACC ACC ACC | CFG CFG IOU_mgr IOU_mgr IOU_mgr FPA FPA | S S MS | unit in second ACC_mgr: "accTooBigFault" ACC_mgr: "driftTooBigFault" | U U U U D D | 8 16 8 8 8 4 4 | |

| Table 4. | AACS Telemetry | Dictionary | - sorted by | Channel# | and | Software | Object | (Dage 1 | | ۳ ۱ |
|----------|----------------|------------|-------------|----------|-----|----------|--------|---------|--|------------|
|----------|----------------|------------|-------------|----------|-----|----------|--------|---------|--|------------|

| СЪ | Ch# (new#) | Mnemonics | Mini Pkt# | | Hardware | Software | | | Туре | Bit | Scale |
|----|---------------|-------------|--------------|-----------------|------------|--------------------|--------|------------------------------------------------------|-------|------|--------|
| | (new#) | | PKC# | prime | associat'n | object | cruis | e* | | | Factor |
| Е | 1001 | ACCstate | 4 | Sfwe_State2 | ACC | UdvoMan | | | | | |
| E | 1002 | ACC_calBIAS | | deltaV | ACC | HdweMgr HdweMgr | м | | s | 2 | 1 |
| Е | 1003 | deltaV_ACC | 21 | deltaV | ACC | - | Z | ACC_mgr: "driftDelta" - calib prior to de | I. | 16 | 5.0 E6 |
| Е | 1004 | ACC_totBIAS | | deltaV | ACC | HdweMgr HdweMgr | Z Z | ACC_Mgr: "deltaV" - after scale factor co | : I | 20 | 500 |
| Е | 1005 | deltaV_tmtg | | deltaV | ACC | | | ACC_mgr: "drift"= driftNominal+driftDelta | I | 16 | 5.0 E6 |
| Е | 1006 | ACC_tmtg | 21 | deltaV | ACC | HdweMgr | Z | ACC_mgr: "deltaVTimeTag", used to compute | U | 20 | BITcro |
| Е | 1007 | raw_ACC_CT | 22 | IRU/ACC_data | ACC | HdweMgr | Z | ACC_mgr: "timeTag"; 12+8 bits | U | 20 | BITcro |
| | | | | xillo/ nec_data | ACC | HdweMgr | MS | ACC_Mgr: "accumDeltaV" - before scale fac | I | 24 | 1 |
| E | 1021 | momUNLOADst | 3 | Sfwe_State | Sfwe | ACL | FM | RCS/ACL: "inactive/THRUSTR_WARMUP/UNloadi | c | 2 | 1 |
| Е | 1022 | MANUVR_st | 3 | Sfwe_State | Sfwe | ACL | FM | TVC/RCS_deltaV/ACL: "off/TVC_enabled/RCS | | 2 | 1 1 |
| Е | 1023 | ATT_CNTR_st | 4 | Sfwe_State2 | Sfwe | ACL | м | | s | - | - |
| Е | 1024 | POSdadBND_X | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: changes by +/-20% during cruise; | | 4 | 1 |
| Е | 1025 | POSdadBND_Y | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: changes by +/-20% during cruise; | | 16 | 1.0 E5 |
| Е | 1026 | POSdadBND_Z | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: changes by +/-20% during cruise; | | 16 | 1.0 E5 |
| E | 1027 | RATEddBND_X | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: constants | | 16 | 1.0 E5 |
| Е | 1028 | RATEddBND_Y | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: constants | U | 16 | 1.0 E6 |
| Ε | 1029 | RATEddBND_Z | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: constants | U | 16 | 1.0 E6 |
| Е | 1030 | ddBND_IbitX | 6 | SC_pointg2 | Sfwe | ACL | | RCS/ACL: impulse bang-bang ctrl S/C att ć | υ | 16 | 1.0 E6 |
| Ξ | 1031 | ddBND_IbitY | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: impulse bang-bang ctrl S/C att c | U | 16 | TBD |
| Ξ | 1032 | ddBND_IbitZ | 6 | SC_pointg2 | Sfwe | ACL | s | RCS/ACL: impulse bang-bang ctrl S/C att c | U | 16 | TBD |
| Ξ | 1033 | POSerr_X | 8 | Att_cntrl | Sfwe | ACL | FM | RCS/ACL: impulse bang-bang ctrl S/C att ć | U | 16 | TBD |
| Ξ | 1034 | POSerr_Y | 8 | Att_cntrl | Sfwe | ACL | FM | Same measurement for RCS, RWA, TVC. RCS: de | I | 16 | 2.0 E5 |
| 3 | 1035 | POSerr_Z | 8 | Att_cntrl | Sfwe | ACL | FM | | I | 16 | 2.0 E5 |
| 3 | 1036 | RATErr_X | 8 | Att_cntrl | Sfwe | ACL | FM | Same measurement for RCS, RWA, TVC. RCS: $d\epsilon$ | I | 16 | 2.0 E5 |
| 3 | 1037 | RATErr_Y | 8 | Att_cntrl | Sfwe | ACL | 3 | Same measurement for RCS/RWA/TVC. RCS: d€ | I | 16 | 1.0 E6 |
| 2 | 1038 | RATErr Z | 8 | Att_cntrl | Sfwe | ACL | FM | ditto [IRU res of 0.25µrad/pulse/0.25 sec | I | 16 | 1.0 E6 |
| 2 | 1039 | cmdTORQUE X | 11 | RWA cntrl | Sfwe | ACL | FM . | ditto [IRU res of 0.25µrad/pulse/0.25 sec | I | 16 | 1.0 E6 |
| 2 | | cmdTORQUE_Y | 11 | RWA cntrl | Sfwe | | Z | RWA/ACL: Different form RWA_TQ's. Here: | I | 16 | 2.0 E5 |
| : | | cmdTORQUE_Z | 11 | RWA cntrl | Sfwe | ACL | Z | RWA/ACL: Different form RWA_TQ's. Here: | I | 16 | 2.0 E5 |
| : | | cmd_S/C_H_X | 11 | RWA cntrl | Sfwe | ACL | Z | RWA/ACL: Different form RWA_TQ's. Here: | I | 16 | 2.0 E5 |
| | | cmd_S/C_H_Y | 11 | RWA cntrl | Sfwe | ACL | Z | RWA/ACL: Different from ATE's momemntum | I | 16 | 1.0 E3 |
| | | cmd_S/C_H_Z | 11 | RWA cntrl | Sfwe | ACL | Z | RWA/ACL: Different from ATE's momemntum | I | 16 | 1.0 E3 |
| | | cmd_thrustX | 21 | deltaV | | ACL | | RWA/ACL: Different from ATE's momemntum | I | 16 | 1.0 E3 |
| | | cmd_thrustY | 21 | deltaV | Sfwe | ACL | 9 | TVC/ACL: "TsubC" | I | 16 | TBD |
| | | cmd_thrustZ | 21 | deltaV | Sfwe | ACL | | TVC/ACL: "TsubC" | I | 16 | TBD |
| | | BURN_time | 21 | deltaV | Sfwe | ACL | | TVC/ACL: "TsubC" | I | 16 | ТBD |
| | | deltaV_pred | 21 | | Sfwe | ACL | Z | 16+8 bits. 0.004 sec res 2^16 = 65536 sec | U | 24 E | ITcrop |
| | | dereav_pred | 21 | deltaV | Sfwe | ACL | Z | TVC/ACL: predict of the time profile of T | U | 20 | 500 |
| | 1061 1 | TURN_status | 3 | Sfwe_State | Sfwe | ACM | FM | "Completed/Pate Natehing (page) | | | |
| | 1062 / | ATT_CMD_st | 4 | Sfwe_State2 | Sfwe | ACM | M | "Completed/Rate_Matching/POS_matching/COA | | 2 | 1 |
| : | | cmdSC_Q1 | 5 | SC_pointing | Sfwe | ACM | | "bago attitude" | S | 4 | 1 |
| | etc e | etc | etc | etc. | etc. | | | "base_attitude" | I | 16 | 32768 |
| | | | | | | ell. | erc.e | etc. e | etc e | etc | etc |

| AMCS Packet Star, (bb) = 4615 AMCS Packet Star, (bb) = 4616 AM | Attick Frederic fields Attick Frederic fields< | | | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------|-----------------------------------------|------------------|-------------------------------------------------|-----------------------------|------------------|-----|
| Ansolution Factor Size (Feb) = 16(5) ActS Preder Period ActS Pre | Network Status Assignation for the set of this = 16. Access head Name Assignation for the set of this = 16. Access head Name Assignation for the set of this = 16. Access head Name Assignation for the set of this = 16. Access head Name Assignation for the set of this = 16. Access head Name | | AACS Pa | cket Size (bits) = | 4608 | | | | |
| Net Packet Name Februation Fe | Net Mini-Packet Vane # channels Sine Dis m Period Sec Sine Sine <thsine< th=""> <thsine< th=""> Sine</thsine<></thsine<> | | Hex Assignab | ider Size (bits) = le Space (bits) = | 96 4512 | | AACS Pack Assignable | | |
| Estimated Attriade 6 132 9 13 132 0 Estimated Attriade 6 9 9 144 2 14 1 132.00 Extention 13 164 2 24 2 575 575 Stotewen State 2 30 194 1 2 266 10.00 Stotewen State 2 30 194 1 2 266 10.00 Stotewen State 2 30 194 1 2 266 10.44 Stotewen State 2 194 1 194 1 104 104 Attriac Controller 6 120 184 1 164 512 0.03 Attriac Controller 10 1184 126 126 126 123 133 133 133 133 134 132 164 512 0.33 133 133 135 133 133 133 133 133 133 133< | Estimated Attriction 6 132 134 13 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 | Aini-P | Mini-Packet Name | # channels | Size (bits) | _ | Period (sec) | pos | |
| Jendomic Contriguention 13 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 133 132 133 132 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 | Selfware Soliton 13 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 132 133 132 133 132 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 <th< td=""><td>-</td><td>Estimated Attitude</td><td>ď</td><td>193</td><td>- 4</td><td></td><td></td><td></td></th<> | - | Estimated Attitude | ď | 193 | - 4 | | | |
| Softwares State 5 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 <th7< th=""> 7 <th7< th=""> <</th7<></th7<> | Softwares State Softwares | ~ | Hardware Configuration | 13 | 184 | - * | - 68 | 132.00 | 23% |
| Develore 30 144 1 2 16 9.00 Faleecerit Pointing 2 20 528 1 2 6 9.00 Fulluide Control 10 124 120 5 120 5 120 5 144 1 2 16 1.20 0.66 1.20 0.66 1.20 0.66 1.20 0.66 1.20 0.66 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24 1. | Spectra State 2 30 144 1 2 16 9.00 Turnulation formulation 6 120 528 13 52 16 9.00 Specarent Pointing 2 10 120 528 120 526 120 536 Constraint Attriation (AtE) Marking 0 16 120 120 120 120 124 144 Attriation formation 0 168 120 168 126 0.36 144 Attriation formation 0 168 120 168 126 128 144 Attriation formation 10 168 168 168 126 128 144 Attriation formation 12 168 168 168 128 144 Attriation 12 168 168 128 128 128 128 128 128 128 128 128 128 128 128 128 128 128 128 | ~ ~ | Software State | 8 | 69 | * | 4 | 9.79 17.25 | 3% |
| Time letting 10 264 13 264 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 165 | Specent Forming 2 10 228 13 2 16 1650 Fund Serred Data 19 184 13 2 16 136 Fund Serred Data 19 184 17 2 194 194 FUNd General Data 10 184 17 2 194 194 FUNd General Data 10 184 12 2 194 194 Attricto Estimator (ATE) Data 10 184 2 16 128 0.94 Attricto Estimator (ATE) Data 2 2 2 16 2 16 Attricto Estimator (ATE) Data 2 2 2 6 3 9 Attricto Estimator (ATE) Data 2 2 2 6 3 9 Attricto Estimator (ATE) Data 2 2 2 6 3 9 Attricto Estimator (ATE) Data 2 2 6 3 9 9 9 9 SiD State | 1 0 | Solitware State 2 Spacecraft Pointing | 30 | 144 | •* • | 16 | 9.00 | 2% |
| Time letensty. To 223 123 226 120 236 120 Mitude Control 10 134 1 13 12 6 10 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0< | Tum letenety. Total letene | 9 | Spacecraft Pointing | 15 | 264 | ~`; | 16 | 16.50 | 3% |
| Mittude Controller 6 720 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 73 | Mitude Controller 6 720 73 236 128 128 128 128 128 128 134 135 134 135 134 135 134 135 134 135 134 135 134 135 134 135 134 135 134 135 135 134 135 135 134 135 135 134 135 135 134 135 135 134 135 135 136 134 135 135 135 135 135 135 135 135 135 135 135 135 135 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 136 | 2 | Turn telemetry | 10 | 926 | - 35 | 256 | 2.06 | %0 |
| Constanti Affluide Contol 10 184 1 6 512 0.00 PMA Controller 10 184 120 184 0.94 PMA Controller 10 184 120 126 0.94 PMA Controller 12 216 216 0.94 Affe Controller 12 216 216 0.94 Affe Controller 12 216 216 0.94 Affe Considere Data 22 216 216 0.94 Affe Considere Data 12 216 216 0.94 Strip Start & X of Statistics 19 906 1 21 216 Strip Statistics 14 200 21 21 216 216 Strip Statistics 14 201 246 21 0.36 21 Strip Statistics 16 216 16 216 0.36 21 Strip Statistics 16 216 266 216 0.36 21 </td <td>Constraint Attrude Control 10 184 170 164 572 0.00 RMA Controller 0 10 134 170 16 123 0.14 175 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.12 0.14 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.11 0.12</td> <td>ω</td> <td>Attitude Controller</td> <td>9</td> <td>120</td> <td>2 .</td> <td>256</td> <td>1.28</td> <td>%0</td> | Constraint Attrude Control 10 184 170 164 572 0.00 RMA Controller 0 10 134 170 16 123 0.14 175 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.12 0.14 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.11 0.12 | ω | Attitude Controller | 9 | 120 | 2 . | 256 | 1.28 | %0 |
| PIMA General Data 18 120 184 120 124 124 Althude Estimator (ATE) Data 12 216 16 12 144 1 Althude Estimator (ATE) Data 12 216 16 25.50 144 1 Alt Much Controlled 22 376 16 12 144 25.50 Alt Estimator (ATE) Data 22 376 16 128 1.44 23.50 Alt Estimator (ATE) Data 22 376 5 6.4 33.8 6.4 33.8 Stor Start & Z Data 10 194 22 14 50 14 22 35.55 0.37 25.55 0.37 14 23 25.5 0.33 14 20 35 25.55 0.34 14 20 35 25.5 0.34 14 23 25.5 0.34 14 23 25.5 0.35 14 16 15.5 0.35 14 4 23 25.5 <td< td=""><td>PMM General Data 1 120 120 124 144 Afficultie Estimator (AFE) Martic 9 184 7 23.50 144 Afficultie Estimator (AFE) Data 12 216 12 144 33.6 Afficultie Estimator (AFE) Data 12 216 5 64 5.86 0.42 Afficultie Estimator (AFE) Data 12 216 5 64 3.36 0.42 3.38 Stor Start As 5 Data 10 164 2 26 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 5 0.42 3.38 5 5 0.42 3.38 5 5 5 5 5 0.</td><td>6</td><td>Constraint Attitude Control</td><td>10</td><td>184</td><td>1 64</td><td>512</td><td>00.00</td><td>11%</td></td<> | PMM General Data 1 120 120 124 144 Afficultie Estimator (AFE) Martic 9 184 7 23.50 144 Afficultie Estimator (AFE) Data 12 216 12 144 33.6 Afficultie Estimator (AFE) Data 12 216 5 64 5.86 0.42 Afficultie Estimator (AFE) Data 12 216 5 64 3.36 0.42 3.38 Stor Start As 5 Data 10 164 2 26 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 0.42 3.38 5 5 0.42 3.38 5 5 0.42 3.38 5 5 5 5 5 0. | 6 | Constraint Attitude Control | 10 | 184 | 1 64 | 512 | 00.00 | 11% |
| Mithode Estimator (ATE) Matrix 10 134 138 138 138 144 Attitude Estimator (ATE) Data 22 376 7 2 64 538 ATE Star Po-atilitation Data 12 216 7 6 512 0.42 ATE founde Estimator (ATE) Data 12 216 7 6 512 0.43 ATE founde Estimator (ATE) Data 12 216 7 6 512 0.43 ATE founde Estimator (ATE) Data 12 216 7 6 512 0.43 SID: Star 1 & 2 Data 19 16 96 7 2 16 95 SID: Star 1 & 2 Data 12 248 7 2 6 4 4 4 SID: Star 1 & 2 Data 12 248 7 2 6 6 7 2 6 6 5 0 9 12 2 6 6 5 0 9 12 2 12 | Mitted Estimator (ATE) Matric 10 184 15 128 1.44 Attribute Estimator (ATE) Matric 9 164 5.84.00 1.44 2.84.00 Attribute Estimator (ATE) Matric 9 168 5.2 3.6 6.4 5.84.00 Attribute Estimator (ATE) Matrix 22 3.76 1.2 2.6 9.4 5.84 Attribute Estimator (ATE) Matrix 22 3.6 1.6 2.3.36 1.44 5.84 0.93 3.36 5.12 0.42 5.84 0.93 5.95 0.94 3.36 5.95 0.94 5.95 0.94 5.95 0.94 5.95 0.94 5.95 0.94 5.95 0.94 5.95 0.94 5.95 0.94 5.95 0.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 5.95 <td< td=""><td>-</td><td>RWA General Data</td><td>ω</td><td>120</td><td>15</td><td>128</td><td>0.94</td><td>%0</td></td<> | - | RWA General Data | ω | 120 | 15 | 128 | 0.94 | %0 |
| Ammone summer 9 168 1 2 16 2 16 23.50 ATE Auto-Calibration Data 12 216 7 6 5 23.50 33.58 ATE Auto-Calibration Data 12 216 7 6 5 23.50 33.58 ATE Covariance Data 12 216 7 6 4 5.88 4.94 4.96.00 SID: Start & 2 Data 19 19 194 2 1 4 46.00 33.5 SID: Start & 2 Data 12 23.2 14 2.8 32.2 14.4 4.90 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35. | Affindre Estimation (ATE) Data 2 760 4 7 2 94.00 ATE Autro Calibration Data 12 216 7 6 6.4 5.88 ATE Surve Calibration Data 12 216 7 6 6.4 5.88 ATE Surve Calibration Data 12 216 7 6 5.12 0.43 Stro Sarvi Sa Stro Open Data 19 19 198 508 7.5 0.43 Stro Sarvi Sa Stro Open Data 19 19 308 5.2 6.4 5.6 0.43 Stro Sarvi Sa Stro Open Data 12 2.8 4.40 32 5.6 0.44 Stro Sarvi | = + | Attitude Estimator (ATE) Material | 10 | 184 | 18 | 128 | 1.44 | %0 |
| ATE Atter 216 7 6 1 6 33.50 ATE Atter Tex 12 216 5 2 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 33.50 6 9 33.50 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | ATE Auto-Calibration Data 12 216 18 64 23.56 ATE Star Pre-Plier Data 12 216 16 23.56 0.42 23.86 ATE Star Pre-Plier Data 12 216 16 512 0.42 3.88 StD: Star 14 Contained 12 216 16 19.25 0.42 3.88 StD: Star 14 StD 12 264 5.80 0.42 5.88 4.600 4.94 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 5.96 0.42 5.86 0.43 5.86 0.42 5.86 0.42 5.86 5.96 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 5.86 0.42 < | 13 | Attitude Estimator (ATE) Data | 6 | 168 | ₹ (| ~ | 84.00 | 15% |
| ArtE State Data 22 376 5 5 5 6 7 5.86 ArtE Govariance Data 1 2 16 16 5 6.4 5.86 ArtE Kaltmar (sam) Articlican 10 184 2 1 6.4 5.86 SID: Start 1 & 2 Data 12 2.16 1 2 6.4 5.80 SID: Start 1 & 2 Data 12 2.64 1 2 6.4 5.80 SID: Start 1 & 2 Data 12 2.64 1 2 2.64 1 4 0.03 SID: Start 1 & 2 Data 12 2.64 1 2 2.64 1 2 2.64 1 2 2.64 1 2 2.65 0.97 3 2 2.64 1 2 2 6 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 2 2 2 2 | ArtE State Data 22 376 5 5 5 6 4 5.86 ArtE Covariance Data 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 4 | ATE Auto-Calibration Data | 12 | 216 | N 9 | 16 | 23.50 | 4% |
| B ATE Covariance Data 12 216 64 512 0.42 3 StD: Star 1 & 2 Data 19 168 7 16 19.25 0.432 0.333 3 StD: Star 1 & 2 Data 19 306 176 1 12 0.432 0.333 3 StD: Star 1 & 2 Data 19 306 176 1 2 4 46.00 10 NM meture Data 28 400 26 1.22 0.432 26.9 0.93 1 NM meture Data 28 400 26 1.66 1.75 0.43 2.60 0.93 2.60 0.93 2.60 0.93 2.60 0.93 2.60 0.93 2.60 0.93 2.60 0.93 2.60 0.93 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.60 2.61 2.61 | AFE formantice 12 216 6 512 0.432 AFE formant Gent Data 19 168 1 2 1 4 60.03 2 SID: Start 1 & 2 Data 19 168 1 2 1 4 60.03 2 0.33 550 0.33 550 0.33 550 0.33 550 0.33 550 0.33 550 0.33 550 0.33 550 0.33 550 0.33 550 0.35 550 0.33 550 0.33 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 0.35 550 | 15 | ATE Star Pre-Filter Data | 22 | 376 | ° « | 64 | 3.38 | 1% |
| SID: Start & Schwalten 9 168 7 64 512 0.33 512 0.33 512 0.33 512 0.33 512 0.33 512 0.33 512 0.33 512 0.33 513 512 0.33 513 0.31 212 214 212 214 212 216 112 213 213 216 112 213 213 213 213 213 213 213 213 213 213 213 213 213 214 213 214 214 214 214 213 214 214 213 214 213 214 214 213 214 214 213 214 214 214 214 213 214 214 214 214 214 214 214 214 214 214 214 214 214 214 214 215 214 214 215 214 215 214 216< | Alf Extend Gain Data 9 168 5 5 5 0 3 SID: Start & 2 Data 10 184 2 164 2 16 9 3 SID: Start & 2 Data 19 25 16 129 25 0 3 SID: Start & 2 Data 12 243 16 12 4 46.00 SID: Start & 2 Data 12 243 16 17 25 16 17 SSA & SHU Statistics 12 244 200 4 2 2 6 17 SSA & SHU Statistics 12 14 200 4 4 2 0 3 2 2 17 0 3 2 0 3 2 17 0 3 2 17 0 3 2 0 3 2 16 17 0 3 2 16 17 0 3 2 16 17 0 3 | 16 | ATE Covariance Data | 12 | 216 | 1 64 | 512 | 0.40 | %1 |
| SID: Star 3 A & 5 Data 10 184 2 1 4 46:00 SID: Star 3 A & 5 Data 19 23 246 1 23 256 0.97 SID: Star 3 A & 5 Data 19 23 256 0.97 172 19.25 SID: Star 3 A & 5 Data 12 248 12 248 12 256 0.97 SSA & SHU Output Data 22 264 32 256 1.72 0.19 SSA & SHU Output Data 22 248 76 276 1.72 0.19 SSA & SHU Output Data 22 248 70 75 256 1.72 SSA & SHU Output Data 22 248 76 72 23 23 SSA SHU Output Data 22 248 76 76 23 23 256 1.72 SSA SHU Statistics 16 248 512 128 169 26 23 23 256 1.69 26 23 23 <td< td=""><td>SID: Start 3 A & Data 10 184 2 1 4 46:0 SID: Start 3 A & Data 19 23 19 25 19 25 SID: Calibration: Type Data 3 2 24 32 256 0.97 SID: Calibration: Type Data 3 2 24 32 256 0.97 SSA & SID: Output Data 22 28 32 256 1.72 0.93 No. Output Data 22 28 440 32 256 1.72 0.93 No. Statistics 6 96 74 32 256 1.72 0.94 SSA & SID: Statistics 6 96 74 32 256 1.72 0.94 SSA & SID: Statistics 6 96 74 32 256 1.72 0.93 1.72 MAR Statistics 16 248 512 0.19 512 0.19 0.19 512 0.19 512 0.19 512 0.19<!--</td--><td></td><td>ATE Kalman Gain Data</td><td>6</td><td>168</td><td>1 64</td><td>512</td><td>0.33</td><td>%0</td></td></td<> | SID: Start 3 A & Data 10 184 2 1 4 46:0 SID: Start 3 A & Data 19 23 19 25 19 25 SID: Calibration: Type Data 3 2 24 32 256 0.97 SID: Calibration: Type Data 3 2 24 32 256 0.97 SSA & SID: Output Data 22 28 32 256 1.72 0.93 No. Output Data 22 28 440 32 256 1.72 0.93 No. Statistics 6 96 74 32 256 1.72 0.94 SSA & SID: Statistics 6 96 74 32 256 1.72 0.94 SSA & SID: Statistics 6 96 74 32 256 1.72 0.93 1.72 MAR Statistics 16 248 512 0.19 512 0.19 0.19 512 0.19 512 0.19 512 0.19 </td <td></td> <td>ATE Kalman Gain Data</td> <td>6</td> <td>168</td> <td>1 64</td> <td>512</td> <td>0.33</td> <td>%0</td> | | ATE Kalman Gain Data | 6 | 168 | 1 64 | 512 | 0.33 | %0 |
| Silv Calibration Type Batta 19 308 1 2 16 19.25 Nu Maneuvor Data 12 248 12 248 12 256 9.97 Nu Maneuvor Data 12 2 244 32 256 9.97 Nu Nouput Data 22 244 32 256 9.97 Nu Nouput Data 23 440 32 6.50 9.97 Nu Nouput Data 23 440 32 6.50 9.97 RNA Statistics 6 14 200 6 512 0.19 RNA Statistics 16 248 512 0.36 0.36 0.36 PMS Trinster Cycles 16 248 512 0.36 0.36 0.36 PMS Statistics 16 248 216 176 16 219 0.36 PMS Statistics 16 216 176 16 216 1.32 PMS Statistics 16 216 176 | Stor Calmary are batter 19 308 12 2 16 19.25 19.25 FIU dation Total wree patter 34 63.2 24.8 32 5.60 5.67 FIU dation Total wree patter 34 63.2 5.67 5.56 5.56 SSA & SRU Ouput Data 2.8 440 72 2.64 7.2 6.55 5.56 VDE & EEE Data 2.8 4.40 72 2.64 7.2 6.55 5.56 5.56 SSA & STU Ouput Data 2.8 4.40 72 2.64 7.2 6.51 0.23 8.7 SSA & STU Ouput Data 1.2 2.48 7.6 6.4 5.12 0.23 7.6 6.5 5.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 6.7 0.34 | | SIU: Star 1 & 2 Uata | 10 | 184 | ≁ ≈ | 4 | 46.00 | 8% |
| AV Maneuver Data 12 243 13 256 9.91 RNA Output Data 9 176 1 32 256 0.97 RNA Output Data 2 244 1 32 256 0.97 RVA Output Data 2 244 1 2 256 0.97 RVA Output Data 2 6 96 7 32 256 0.19 RVA Output Data 14 200 7 256 0.19 172 SSA & SNU Statistics 16 176 164 512 0.19 176 RVA Statistics 16 216 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 <td>AV Maneuver Data 12 243 12 243 244 494 494 SNA S NU Ouput Data 2 176 176 176 172 291 172 291 256 0.97 27 SNA S SNU Ouput Data 2 2 440 2 26 172 27 26 0.97 27 255 0.91 255 0.91 255 0.91 255 0.91 265 0.91 265 0.91 265 0.91 265 0.91 265 0.91 265 0.93 265 0.93 265 176 265 177 265 176 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 261 1.16</td> <td>20</td> <td>SID: Calibration-Tyme Data</td> <td>16</td> <td>308</td> <td>~ :</td> <td>16</td> <td>19.25</td> <td>3%</td> | AV Maneuver Data 12 243 12 243 244 494 494 SNA S NU Ouput Data 2 176 176 176 172 291 172 291 256 0.97 27 SNA S SNU Ouput Data 2 2 440 2 26 172 27 26 0.97 27 255 0.91 255 0.91 255 0.91 255 0.91 265 0.91 265 0.91 265 0.91 265 0.91 265 0.91 265 0.93 265 0.93 265 176 265 177 265 176 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 0.19 265 261 1.16 | 20 | SID: Calibration-Tyme Data | 16 | 308 | ~ : | 16 | 19.25 | 3% |
| IRU & ACC Output Data 9 1/5 6 9 1/5 8 5.50 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | IRU & ACC Output Data 9 1/6 4 2 0.9/ 1/2 SSA S RU Output Data 22 264 1 2 64 1/2 2 64 1/2 2 64 1/2 0.9/3 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | 21 | AV Maneuver Data | 12 | 248 | 3 2 7 | 128 | 4.94 | 1% |
| SSA & SRU Output Data 22 264 1 2 5 4 0 3 2 6 3 2 6 1 7 2 1 7 2 1 7 2 1 7 3 2 6 3 2 6 1 7 3 2 1 7 2 1 7 2 1 7 2 1 7 2 1 7 3 2 5 1 7 2 1 2 1 2 1 3 2 1 2 1 3 2 1 3 2 1 3 2 1 3 2 1 3 2 1 3 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 <td>SSA & SPU Output Data 22 264 5 256 172 WNC Output Data 28 440 52 56 172 VDE & EGE Data 14 200 96 512 0.23 8.25 SSA & SUC statistics 6 96 512 0.36 1.72 0.36 SSA & SUC statistics 16 248 64 512 0.33 6.25 0.34 FNMS Statistics 16 248 64 512 0.34 0.36 PMS Thuster Cycles 16 248 64 512 0.34 1.69 PMS Thuster Cycles 16 216 175 0.34 1.69 0.34 PMS Thuster Cycles 16 216 16 216 1.69 0.34 PMS Thuster Cycles 16 216 1.64 512 0.34 1.69 PMS Thuster Cycles 16 216 1.64 512 0.56 0.73 PMS Entime 17 216<td></td><td>IRU & ACC Output Data</td><td>6</td><td>176</td><td>∛ ▼</td><td>32</td><td>0.97 5 50</td><td>%0</td></td> | SSA & SPU Output Data 22 264 5 256 172 WNC Output Data 28 440 52 56 172 VDE & EGE Data 14 200 96 512 0.23 8.25 SSA & SUC statistics 6 96 512 0.36 1.72 0.36 SSA & SUC statistics 16 248 64 512 0.33 6.25 0.34 FNMS Statistics 16 248 64 512 0.34 0.36 PMS Thuster Cycles 16 248 64 512 0.34 1.69 PMS Thuster Cycles 16 216 175 0.34 1.69 0.34 PMS Thuster Cycles 16 216 16 216 1.69 0.34 PMS Thuster Cycles 16 216 1.64 512 0.34 1.69 PMS Thuster Cycles 16 216 1.64 512 0.56 0.73 PMS Entime 17 216 <td></td> <td>IRU & ACC Output Data</td> <td>6</td> <td>176</td> <td>∛ ▼</td> <td>32</td> <td>0.97 5 50</td> <td>%0</td> | | IRU & ACC Output Data | 6 | 176 | ∛ ▼ | 32 | 0.97 5 50 | %0 |
| VIDE activatives 28 440 32 256 1.72 NUE & ACC Statistics 6 9 6 6 5 6 25 RU & ACC Statistics 6 9 7 6 512 0.36 6 25 RU & ACC Statistics 1 200 7 6 512 0.36 6 25 RWA Statistics 1 2 184 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.36 512 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0. | Merry Def & EEG balance 28 440 % 32 256 172 VUE & ECC Statistics 1 4 200 1 6 512 0.36 6 55 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 172 0.36 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 | 23 | SSA & SRU Output Data | 22 | 264 | ** ** | 32 | 8.25 | 1% |
| FIU & ALCE Class 14 200 1 4 32 6.25 6.25 SSA & SRU Statistics 6 12 184 5 12 0.19 0.19 0.19 SSA & SRU Statistics 15 120 54 512 0.33 0.19 FWG Statistics 16 248 16 248 16 176 184 16 196 16 194 16 194 16 194 16 194 16 16 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 176 | FIU & ACC Data 14 200 14 200 14 32 6.25 6.25 SSA & SRU Statistics 6 12 12 12 12 0.19 13 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.10 0.11 <td< td=""><td>05 4</td><td></td><td>28</td><td>440</td><td>\$ 35</td><td>256</td><td>1.72</td><td>%0</td></td<> | 05 4 | | 28 | 440 | \$ 35 | 256 | 1.72 | %0 |
| SSA & SFU Statistics 8 120 90 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 <td>SSA & SFU Statistics 8 120 16 248 120 16 210 194 512 0.19 PMS Thuster Cycles 15 176 1 64 512 0.34 0.19 PMS Thuster Cycles 16 216 176 1 64 512 0.34 0.19 PMS Thuster Cycles 16 280 176 18 216 176 18 219 0.49 PMS Afrefine 8 216 16 280 16 166 169 0.19 PMS Afrefine 8 216 16 280 16 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166</td> <td>26</td> <td>IRU & ACC Statistics</td> <td>4</td> <td>200</td> <td>~ , 4 ,</td> <td>32</td> <td>6.25</td> <td>1%</td> | SSA & SFU Statistics 8 120 16 248 120 16 210 194 512 0.19 PMS Thuster Cycles 15 176 1 64 512 0.34 0.19 PMS Thuster Cycles 16 216 176 1 64 512 0.34 0.19 PMS Thuster Cycles 16 280 176 18 216 176 18 219 0.49 PMS Afrefine 8 216 16 280 16 166 169 0.19 PMS Afrefine 8 216 16 280 16 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 | 26 | IRU & ACC Statistics | 4 | 200 | ~ , 4 , | 32 | 6.25 | 1% |
| EGA Statistics 12 184 53 512 0.03 PINS Afficies 16 248 15 248 15 0.48 0.023 PINS Latrivations 16 248 15 0.48 512 0.36 0.023 PINS Afficience 8 216 176 16 248 15 0.48 0.023 PINS Afficience 8 216 176 16 219 0.04 PINS Afficience 8 216 176 176 176 176 176 176 176 176 176 176 176 164 0.73 0.75 0.73 0.75 0.73 0.73 0.75 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73 | EGA Statistics 12 184 53 512 0.43 PINS Afficiencies 16 248 512 0.48 512 0.48 PINS Afficiencies 16 248 512 0.48 512 0.48 PINS Afficiencies 8 216 75 512 0.34 0.48 PINS Afficiencies 8 216 75 0.48 512 0.36 0.48 PINS Afficiencies 8 216 75 0.48 512 0.56 0.48 PINS Afficiencies 8 216 144 54 512 0.56 0.73 0 AFC Errors 28 540 64 512 0.73 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <td>27</td> <td>SSA & SRU Statistics</td> <td>000</td> <td>120</td> <td>5 4 5 4</td> <td>512</td> <td>0.19</td> <td>%0</td> | 27 | SSA & SRU Statistics | 000 | 120 | 5 4 5 4 | 512 | 0.19 | %0 |
| HWA Statistics 16 248 176 176 176 64 512 0.48 169 0 PMS LatchValve & ME Statistics 15 176 176 176 176 176 176 176 176 128 169 0 0 34 0 PMS TheThere 8 216 176 15 128 1.69 0 0 34 0 0 34 0 0 34 0 0 34 0 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 0 34 34 34 34 34 34 32 34 32 34 34 34 34 34 34 34 32 34< | HWA Statistics 16 248 64 512 0.48 4 PMS A FireTime 8 216 176 16 280 16 2.19 0.48 PMS A FireTime 8 216 176 16 280 16 2.19 0.34 PMS A FireTime 8 216 16 280 16 16 2.19 0.34 PMS A FireTime 8 216 16 280 16 2.19 0.34 PMS CatBedHeater Cycles 13 284 64 512 0.56 0.56 0.55 Recent Errors 28 54 512 0.52 0.56 0.73 0.56 0.73 0.56 0.73 0.56 0.73 0.56 0.73 0.56 0.73 0.55 0.73 0.55 0.52 0.73 0.55 0.73 0.55 0.73 0.55 0.73 0.55 0.73 0.55 0.73 0.55 0.55 0.73 0.55 <td< td=""><td>28</td><td>EGA Statistics</td><td>12</td><td>184</td><td></td><td>512</td><td>0.23</td><td>%0</td></td<> | 28 | EGA Statistics | 12 | 184 | | 512 | 0.23 | %0 |
| PMS Intruster Gycles 15 176 16 280 176 16 216 176 16 219 16 219 16 219 16 219 16 219 16 219 16 219 16 219 16 216 176 16 216 16 216 16 216 16 216 16 216 16 216 16 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 216 | PMS Batter Statistics 15 176 64 512 0.34 1 PMS The Time 8 216 1 5 128 1.69 0 PMS FrieTime 8 216 1 5 128 1.69 0 PMS AFrieTime 8 216 16 280 16 5 1.69 0 PMS AFrieTime 8 216 16 280 16 5 1.69 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 50 | RWA Statistics | 16 | 248 | 64 | 512 | 0.48 | %0 |
| PMS of FireTime 16 280 1 15 128 2.19 0 PMS A FireTime 8 216 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Mms FireTime 16 280 1 16 216 1 16 219 16 169 169 169 169 169 169 169 169 169 169 169 169 169 169 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 166 | 21 | PMS LatchValve & ME Statistics | 15 | 176 | ~ 64 | 512 | 0.34 | %0 |
| PMS. B FreiTime B 216 TS 128 1.69 0 PMS. B FreiTime 8 216 1 6 512 1.69 0 AFC Errors 13 280 1 6 512 0.59 0 AFC Errors 13 280 16 540 6 512 0.59 0 FRest Counters 15 144 6 512 0.52 0 0 ACS Bus Errors 20 404 6 512 0.52 0 0 Backup AFC Hardware Status 20 404 6 512 0.52 0 0 Backup AFC Errors 9 184 6 512 0.52 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0< | PMS. B FreFine B 216 7 6 128 1.69 0 AFC Errors 13 286 16 13 286 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 | 32 | PMS A FireTime | 16 | 280 | 1 13 | 128 | 2.19 | %0 |
| PMS CatBedHeater Cycles 16 210 1 512 0.56 0 AFC Errors 13 288 540 16 512 0.56 0 AFC Errors 13 288 540 16 64 512 0.56 0 Reset Counters 15 144 1 64 512 0.28 0 Arcos 30 264 6 512 0.28 0 0 Arcos 9 184 6 512 0.52 0 0 Arcos 9 184 6 512 0.56 0 0 Backup AFC Errors 20 372 6 512 0.58 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | PMS CatBedHeater Cycles 16 280 1 16 280 1 16 128 1.69 0 AFC Errors 13 280 1 64 512 1.69 0 AFC Errors 28 540 64 512 0.56 0 Reset Counters 15 144 64 512 0.52 0 0 ACS Bus Errors 30 264 6 512 0.52 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 33 | PMS B FireTime | 0 0 | 216 | يد : بي : | 128 | 1.69 | %0 |
| AFC Errors 13 288 164 512 0.56 0 EFC Errors 28 540 64 512 0.56 0 Reset Counters 15 144 64 512 0.56 0 Arcs Bus Errors 30 264 6 512 0.56 0 Arcs Bus Errors 20 404 6 64 512 0.56 0 Backup AFC Errors 20 328 64 512 0.54 0 35 0 Backup FFC Errors 20 372 1 64 512 0.54 0 0 64 512 0.53 0 0 64 512 0.73 0 0 64 512 0.73 0 0 64 512 0.73 0 0 64 1.19 0 64 1.19 0 0 64 1.19 0 0 64 1.19 0 64 512 4 | AFC Errors 13 288 6.4 512 0.56 0 EFC Errors 28 540 16 144 6.4 512 0.56 0 Rese tounters 15 144 6.4 512 0.56 0 Acces to counters 20 404 6.4 512 0.52 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 34 | PMS CatBedHeater Cycles | 16 | 280 | - - - - | 128 | 1.69 | %0 |
| Factories 28 540 1 64 512 1.05 0 Resel Counters 15 144 16 144 16 512 0.28 0 ActS Bus Errors 30 264 512 0.52 0 0 52 0 0 512 0.52 0 0 52 0 0 52 0 0 512 0.52 0 0 52 0 0 52 0 0 53 0 0 52 0 0 53 0 0 512 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< td=""><td>EFUCETORS 28 540 6 512 1.05 0 Reset Counters 15 144 6 512 0.28 0 28 512 0.28 0 0 28 512 0.28 0 0 28 512 0.28 0 0 28 512 0.28 0 0 33 30 328 6 512 0.36 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33</td><td>35</td><td>AFC Errors</td><td>13</td><td>288</td><td>₹ 6&</td><td>512</td><td>0.56</td><td>%0</td></t<> | EFUCETORS 28 540 6 512 1.05 0 Reset Counters 15 144 6 512 0.28 0 28 512 0.28 0 0 28 512 0.28 0 0 28 512 0.28 0 0 28 512 0.28 0 0 33 30 328 6 512 0.36 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 | 35 | AFC Errors | 13 | 288 | ₹ 6& | 512 | 0.56 | %0 |
| Treset counters 15 144 64 512 0.28 0 Prime Status 20 404 1 64 6.31 1 1 Prime AFC Hardware Status 20 404 1 64 6.31 1 1 Backup AFC Errors 9 184 1 64 6.31 1 1 Backup AFC Errors 20 328 1 64 6.31 1 1 Backup AFC Errors 20 372 1 64 512 0.73 0 Backup AFC Hardware Status 20 372 1 64 512 0.73 0 Backup AFC Hardware Status 17 412 1 64 1.19 0 76 8 512 0.73 0 65 275 0 64 1.19 0 0 1 19 8 512 1.19 0 0 1 16 8 512 0.73 0 1 <td>AccS Bus Errors 15 144 6.4 512 0.28 0 Prime ACC Bardinare Status 20 404 1 6.4 6.31 1 1 Backup AFC Hardware Status 20 404 1 6.4 6.31 1 1 Backup AFC Errors 20 328 6.4 6.31 1 1 Backup AFC Errors 20 372 6.4 5.12 0.52 0 Backup AFC Hardware Status 20 372 6.4 5.12 0.64 0 Backup AFC Hardware Status 20 372 6.4 5.12 0.64 0 Bus Message Status 20 372 6.4 5.12 0.64 0 Bus Message Status 17 412 6.4 5.12 0.73 0 Anomaly Status 13 176 8 32 17 8 32.00 6 Anomaly Status 12.8 2.80 × 8 6.4 1.19 0</td> <td>37</td> <td>EFU Emors</td> <td>28</td> <td>540</td> <td>1 6.4</td> <td>512</td> <td>1.05</td> <td>%0</td> | AccS Bus Errors 15 144 6.4 512 0.28 0 Prime ACC Bardinare Status 20 404 1 6.4 6.31 1 1 Backup AFC Hardware Status 20 404 1 6.4 6.31 1 1 Backup AFC Errors 20 328 6.4 6.31 1 1 Backup AFC Errors 20 372 6.4 5.12 0.52 0 Backup AFC Hardware Status 20 372 6.4 5.12 0.64 0 Backup AFC Hardware Status 20 372 6.4 5.12 0.64 0 Bus Message Status 20 372 6.4 5.12 0.64 0 Bus Message Status 17 412 6.4 5.12 0.73 0 Anomaly Status 13 176 8 32 17 8 32.00 6 Anomaly Status 12.8 2.80 × 8 6.4 1.19 0 | 37 | EFU Emors | 28 | 540 | 1 6.4 | 512 | 1.05 | %0 |
| Prime AFC Hardware Status 20 204 1 64 512 0.52 0 Backup AFC Errors 9 184 1 6 512 0.52 0 31 1 Backup AFC Errors 20 328 1 6 512 0.52 0 36 0 36 512 0.53 0 36 37 0 37 1 6 512 0.54 0 36 32 0 36 32 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <td>Prime AFC Hardware Status 20 204 1 64 512 0.52 0 20 313 1 1 1 8 64 6.31 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <th1< th=""> 1 1 <th1< th=""></th1<></th1<></td> <td>38</td> <td>AACS Bus From</td> <td>15</td> <td>144</td> <td>* * *</td> <td>512</td> <td>0.28</td> <td>%0</td> | Prime AFC Hardware Status 20 204 1 64 512 0.52 0 20 313 1 1 1 8 64 6.31 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <th1< th=""> 1 1 <th1< th=""></th1<></th1<> | 38 | AACS Bus From | 15 | 144 | * * * | 512 | 0.28 | %0 |
| Backup AFC Errors 9 184 5 6 5 6 6 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Backup AFC Errors 9 184 5 6 6.31 1 Backup EFC Errors 20 328 6.4 5.12 0.36 3 Backup FFC Errors 20 372 1 6.4 5.12 0.64 0 Backup AFC Hardware Status 20 372 1 6.4 5.12 0.36 3 Bus Message Status 17 412 1 6.4 5.12 0.36 3 Bus Message Status 13 176 6 32 12 6.4 5.12 0.73 0 Anomaly Status 13 176 8 6.4 2.75 0 0 Anomaly Status 128 280 x 8 6.4 1.19 0 0 Anomaly Status 128 280 x 8 6.4 5.12 4.38 1 Anomaly Status 128 280 x 8 6.4 5.12 4.38 1 Art Covariance Data 2 36 6.0 6.4 | 39 | vare | 00 | 204 | , | 512 | 0.52 | %0 |
| Backup EFC Errors 20 328 64 512 0054 0 Backup AFC Hardware Status 20 372 1 64 512 064 0 Backup AFC Hardware Status 20 372 1 64 512 064 0 Bus Message Status 17 412 1 64 512 073 0 Fault Protection Status 13 176 1 64 1.19 0 Anomaly Status 13 176 76 8 64 1.19 0 Anomaly Status 12 176 8 64 1.19 0 Anomaly Status 128 280 x 8 64 1.19 0 0 Promaly Status 128 280 x 8 64 1.19 0 0 Anomaly Status 1776 0 64 512 4.38 1 ATE Covariance Data 2//5 105 1776 0 64 512 4.38 | Backup EFC Errors 20 328 64 512 030 0.64 0 Backup AFC Hardware Status 20 372 64 512 030 0 64 512 030 0 6 Bus Message Status 17 412 1 8 32.00 6 32.00 6 1 9 32.00 6 4 1.19 0 6 4 1.19 0 6 4 1.19 0 6 4 1.19 0 6 4 1.19 0 0 6 4 1.19 0 0 0 6 4 1.19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <td< td=""><td>40</td><td></td><td>6</td><td>184</td><td>, , , , ,</td><td>64</td><td>6.31</td><td>1%</td></td<> | 40 | | 6 | 184 | , , , , , | 64 | 6.31 | 1% |
| Backup ArC Hardware Status 20 372 56 1 64 512 0.73 0 Bus Message Status 18 256 1 84 512 0.73 0 Bus Message Status 17 412 1 8 32.00 6 Anomaly Status 13 176 8 64 1.19 0 Anomaly Status 128 280 x 8 64 1.19 0 0 Anomaly Status 128 280 x 8 64 1.19 0 0 Anomaly Status 128 280 x 8 64 1.19 0 0 Persistence High Water Marks 128 280 x 8 600 0 64 1.19 0 ATE Kalman Gain Data 2 36 600 0 64 1.19 0 ATE Kalman Gain Data 2 36 600 0 64 1.19 0 ATE Kalman Gain Data 2 36 600 0 64 1.19 0 | Backup ArC Hardware Status 20 372 56 5 512 0.73 0 Bus Message Status 17 412 56 1 84 512 0.73 0 Bus Message Status 17 412 4 2 6 1 19 2 6 7 8 32.00 6 2 7 8 32.00 6 6 1 19 2 75 0 7 8 64 1 19 0 6 4 1 19 0 0 6 4 1 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 41 | | 20 | 328 | 64 | 512 | 0.64 | %0 |
| Dust wreesage clauts 18 256 1 8 32.00 6 Fault Protection Status 17 412 4 32 12.88 2 Anomaly Status 13 176 7 4 32 12.88 2 Anomaly Status 10 76 7 6 3 6.4 1.19 0 Anomaly Status 128 280 x 8 6.4 1.19 0 0 High Water Marks 128 280 x 8 6.4 1.19 0 0 Persistence High Water Marks 128 280 x 8 6.4 1.19 0 0 ATE Covariance Data 2//5 105 1776 0 6.4 1.19 0 0 ATE Kalman Gain Data 2 36 600 0 6.4 1.19 0 0 0 ATE Kalman Gain Data 2 36 600 0 6.4 138.5 534.33 95 ATE Kalman Gain Data 2 1094 13865 | Dues mescage clauds 18 256 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | 4 2 7 | e | 20 | 372 | \$ 64 _ | 512 | 0.73 | %0 |
| Anomaly Status 1 412 3 4 32 12.88 2 Anomaly Status 1 1 76 1 76 1 8 64 2.75 0 High Water Marks 128 280 x 8 1 64 1.19 0 Persistence High Water Marks 128 280 x 8 64 1.19 0 ATE Covariance Data 2/5 105 1776 0 64 1.19 0 ATE Covariance Data 2/5 105 1776 0 64 1.19 0 ATE Kalman Gain Data 36 600 0 64 1.19 0 0 ATE Kalman Gain Data 36 600 0 64 1.19 0 0 0 ATE Kalman Gain Data 36 600 0 64 1.19 0 0 ATE Kalman Gain Data 7041 #bits 7041 #bits 7041 9 71 ATE Kalman | Anomaly Status 1 412 3 4 32 12.88 2 Anomaly Status 1 76 8 64 2.75 0 High Water Marks 128 280 x 8 5 64 1.19 0 Persistence High Water Marks 128 280 x 8 5 64 1.19 0 Persistence High Water Marks 128 280 x 8 5 64 1.19 0 ATE Covariance Data 2//5 105 1776 6 6 0 0 0 0 ATE Kalman Gain Data 2 36 600 6 #DIV/0! 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 44 | Fault Protection Status | 18 | 256 | ~ | 8 | 32.00 | 6% |
| Anomaly Status 2 10 76 5 64 2.75 0 High Water Marks 128 280 × 8 5 512 4.38 1 Persistence High Water Marks 128 280 × 8 5 512 4.38 1 ATE Covariance High Water Marks 128 280 × 8 5 512 4.38 1 ATE Covariance Data 2/5 105 1776 0 6.4 1.19 0 ATE Kalman Gain Data 2 36 600 0 6.4 100 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 100 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 100 0.00 0 ATE Kalman Gain Data 2 1094 13865 1064 13865 534.33 95 * This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (5) Orbital Ops; (6) delta V; (7) ATE (Attitude Estimator) Calibration. 100 0 0 0 0 0 0 | Anomaly Status 2 10 76 6 64 2.75 0 High Water Marks 128 280 x 8 512 4.38 1 9 64 1.19 0 Persistence High Water Marks 128 280 x 8 512 4.38 1 9 64 1.19 0 Persistence High Water Marks 128 280 x 8 54 512 4.38 1 ATE Covariance Data 2//5 105 1776 0 64 1.19 0 ATE Kalman Gain Data 2 36 600 64 1.19 0 0 ATE Kalman Gain Data 2 36 600 64 1.19 0.00 0 ATE Kalman Gain Data 2 36 600 64 13865 7 1000 0 0 ATE Kalman Gain Data 2 1094 13865 13865 534.33 95 534.33 95 • This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; 534.33 95 | 45 | Anomaly Status | 13 | 412 | ~ , 4 (| 32 | 12.88 | 2% |
| High Water Marks 128 280 x 8 1 & 4 512 4.38 1 Persistence High Water Marks 128 280 x 8 1 & 512 4.38 1 ATE Covariance Data 2//5 105 1776 0 & 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 & 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 & 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 664 #DIV/01 0.00 0 ATE Kalman Gain Data 2 1094 Total #bits Total #bits Total bps Total 1094 13865 13865 534.33 95 534.33 95 * This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (5) Orbital Ops; (6) delta V; (7) ATE (Attitude Estimator) Calibration. 3000 95 | High Water Marks 128 280 x 8 1 84 512 4.38 1 Persistence High Water Marks 128 280 x 8 1776 9 64 512 4.38 1 ATE Covariance Data 2//5 105 1776 9 64 512 4.38 1 ATE Kalman Gain Data 2 36 600 0 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 7041 13865 13865 95 534.33 95 This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; 534.33 95 (4) Slow Cruise; (5) Orbital Ops; (6) delta V; (7) ATE (Attitude Estimator) Calibration. A Cardinal vs Ordinal Bating of Devision E (0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 | 46 | Anomaly Status 2 | 10 | 76 | . a | 64 | 2.75 | %0 |
| Persistence High Water Marks 128 280 x 8 6.4 5.12 4.38 1 ATE Covariance Data 2//5 105 1776 0 6.4 #DIV/0! 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/0! 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/0! 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/0! 0.00 0 ATE Kalman Gain Data 2 36 600 6.4 #DIV/0! 0.00 0 ATE Kalman Gain Data 2 70tal #ch's Total #bits Total #bits Total bps Total 1094 13865 13865 534.33 95 534.33 95 * This 'Record'' Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (5) Orbital Ops; (6) delta V; (7) ATE (Attitude Estimator) Calibration. 300 Kouise; | Persistence High Water Marks 128 280 x 8 6.4 5.12 4.38 1 ATE Covariance Data 2//5 105 1776 9 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 7041 #bits 7041 #bits 7041 9 6.4 #DIV/01 0.00 0 A Total 1094 13865 13865 534.33 95 534.33 95 • This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; (4) Slow Cruise; (5) Orbital Ops; (6) delta V; (7) ATE (Attitude Estimator) Calibration. A Cardinal vs Ordinal Bating of Desirodicine Codd of Codd of Codd of Codd of Codd | -54 | High Water Marks | 128 | 280 x 8 | - - - - - | 510 | 61.1 | %0 |
| ATE Covariance Uata 2//5 105 1776 0 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 Total #ch's Total #bits Total #bits Total #bits Total bps Total 1094 13865 13865 534.33 95 534.33 95 * This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; (3) Medium Slow Cruise; 95 | ATE Covariance Uata 2//5 105 1776 0 64 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 ATE Kalman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0 Total #ch's Total #bits Total #bits Total #bits 7014 0.00 0 This "Record" Telemetry Mode is one out of 7 modes: (1) Record: (2) Nominal Cruise; (3) Medium Slow Cruise; 534.33 95 (4) Slow Cruise; (5) Orbital Ops; (6) delta_V; (7) ATE (Attitude Estimator) Calibration. A Cardinal vs Ordinal Bating of Designeting Estimator) Calibration. A Cardinal vs Ordinal Bating of Designeting Estimator) A Calibration. | -62 | Persistence High Water Marks | 128 | 280 x 8 | 64 | 512 | 4.30 | 1% |
| ATE Natiman Gain Data 2 36 600 0 6,4 #DIV/0! 0.00 0 Total #ch's Total #bits Total #bits Total #bits Total bps Total 1094 13865 13865 534.33 95 * This "Record" Telemetry Mode is one out of 7 modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; (4) Slow Cruise; (5) Orbital Ops; (6) delta_V; (7) ATE (Attitude Estimator) Calibration. | A ¹ E Natiman Gain Data 2 36 600 0 6.4 #DIV/01 0.00 0. Total #ch's Total #bits Total #bits Total #bits Total bps | 6// | ALE Covariance Data 2//5 | 105 | 1776 |) 64 | #DIV/0i | 0.00 | %0 |
| s Total #bits Total bps Total 13865 534.33 95 modes: (1) Record: (2) Nominal Cruise: (3) Medium Slow Cruise: (7) ATE (Attitude Estimator) Calibration. (3) Medium Slow Cruise: | s Total #bits Total bps Total bps 13865 534.33 95 modes: (1) Record: (2) Nominal Cruise; (3) Medium Slow Cruise; (7) ATE (Attitude Estimator) Calibration. 0.0112 | | ALE Naman Gain Data 2 | 36 | 600 | - 0* | #DIV/0! | 0.00 | %0 |
| 13865 10181 10181 10181 modes: (1) Record: (2) Nominal Cruise: (3) Medium Slow Cruise: (7) ATE (Attitude Estimator) Calibration. | 13865 13865 534.33 95 modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; (7) ATE Atitude Estimator) Calibration. | | | + | otal #bits | | | | |
| modes: (1) Record; (2) Nominal Cruise; (3) Medium Slow Cruise; (7) ATE (Attitude Estimator) Calibration. | modes: (1) Record: (2) Nominal Cruise; (3) Medium Slow Cruise; (7) ATE (Attitude Estimator) Calibration. | | | _↓ | 13865 | | | | 95% |
| (4) Slow Cruise; (5) Orbital Ops; (6) delta_V; (7) ATE (Attitude Estimator) Calibration. | (4) Slow Cruise; (5) Orbital Ops; (6) delta_V; (7) ATE (Attitude Estimator) Calibration. A Cardinal vs Ordinal Dation of Datio | | * This "Record" Telemetry Modo is a | | | | | | |
| | vs Ordinal Rating of Deriodicity: E | | (4) Slow Cruise; (5) Orbital Ops; | (6) delta_V; (7) A | VTE (Attitude Es | Nominal (stimator) Cal | Cruise; (3) Med ibration | lium Slow Cruise | ; |

| Table 5. | AACS | Telemetry | Dictionary - | sorted by | y Mini | Packet# | (page | 1 of X | x) |
|----------|------|-----------|--------------|-----------|--------|---------|-------|--------|------------|
|----------|------|-----------|--------------|-----------|--------|---------|-------|--------|------------|

| сь | Ch# (new# | Mnemonica) | Min Pkt | | Hardware associat'n | Softwar object | | | Тур | e Bit | Scale Facto |
|----|--------------|-----------------------|------------|-------------|------------------------|--------------------|--------|---------------------------------------------------------------------------------------------------------------|----------|-------|----------------|
| E | 1121 | BODY_Z_RA | 1 | Est_Att | Cfrie | | _ | | | | |
| Е | 1122 | BODY_Z_DEC | 1 | Est_Att | Sfwe Sfwe | ATE | F | 20 bit: 6 μ rad resolution | I | 20 | 2^19, |
| Е | 1123 | BODY_Z_TWI: | | Est_Att | Siwe | ATE ATE | F | 20 bit: 6 μ rad resolution | I | 20 | 2^19, |
| E | 1124 | X_rate | 1 | Est_Att | Sfwe | ATE | F | 20 bit: 6 μ rad resolution | Ι | 20 | 2^19, |
| Е | 1125 | Y_rate | 1 | Est_Att | Sfwe | ATE | F | | I | 16 | 2.0 E |
| Е | 1126 | Z_rate | 1 | Est_Att | Sfwe | ATE | F | | I | 16 | 2.0 E |
| _ | | | 1 | | | | | | I | 16 | 2.0 E |
| E | 1381 | BUS_prime | 2 | Hdwe_config | EFC | CFG | м | | D | 16 | 1 |
| E | 1382 | SNSR_pwr | 2 | Hdwe_config | Hdwe | CFG | М | | D | 8 | 1 |
| E | 1383 | ACTR_pwr | 2 | Hdwe_config | Hđwe | CFG | м | | D | 8 | 1 |
| E | 1384 | SNSR_prime | 2 | Hdwe_config | Hdwe | CFG | м | | D | 4 | 1 |
| E | 1385 1386 | ACTR_prime | 2 | Hdwe_config | Hdwe | CFG | М | | D | 8 | 1 |
| Ξ | 1387 | SNSR_hlth | 2 | Hdwe_config | Hdwe | CFG | М | | D | 16 | 1 |
| 3 | 1388 | ACTR_hlth | 2 | Hdwe_config | Hdwe | CFG | м | | D | 16 | 1 |
| 3 | 1389 | VDE_pwr VDE_prime | 2 | Hdwe_config | PMS | CFG | м | | D | 12 | 1 |
| 2 | 1390 | VDE_plime VDE_hlth | 2 2 | Hdwe_config | PMS | CFG | М | | D | 12 | 1 |
| 5 | 1391 | RCS_prime | 2 | Hdwe_config | PMS | CFG | М | | D | 20 | 1 |
| 2 | 1392 | RCS_prime | 2 | Hdwe_config | PMS | CFG | м | | D | 8 | 1 |
| 2 | 1393 | RCS_B_hlth | 2 | Hdwe_config | PMS | CFG | м | | D | 16 | 1 |
| - | 1375 | NCO_B_IIICII | 2 | Hdwe_config | PMS | CFG | м | | D | 16 | 1 |
| : | 1021 | momUNLOADst | | Sfwe_State | 0.6 | | | | | | |
| 2 | 1022 | MANUVR_st | 3 | | Sfwe | ACL | FM | RCS/ACL: "inactive/THRUSTR_WARMUP/UNloadi | s | 2 | 1 |
| : | 1061 | TURN_status | 3 | Sfwe_State | Sfwe | ACL | FM | TVC/RCS_deltaV/ACL: "off/TVC_enabled/RCS | s | 2 | 1 |
| : | 1127 | SunEphm_chk | 3 | Sfwe_State | Sfwe | ACM | FM | "Completed/Rate_Matching/POS_matching/COA | s | 2 | 1 |
| | 1541 | CMT_status | 3 | Sfwe_State | Sfwe | ATE | FM | SSA sun_vect not equal (with tolerance) t | s | 1 | 1 |
| | 1741 | AACS_mode | 3 | Sfwe_State | Sfwe | CMT | FM | "Nominal/noJ2000/withJ2000/timeout" | s | 2 | 1 |
| | 1742 | AACS_stat1 | 3 | Sfwe_State | Sfwe | MOD | FM | | s | 4 | 1 |
| | 1743 | AACS_stat2 | 3 | Sfwe_State | Sfwe | MOD | FM | | D | 16 | 1 |
| | | | 3 | Sfwe_State | Sfwe | MOD | FM | | D | 16 | 1 |
| | 1023 | ATT_CNTR_st | 4 | Sfwe_State2 | Sfwe | NOT | | | | | |
| | 1062 | ATT_CMD_st | 4 | Sfwe_State2 | Sfwe | ACL | м | | s | 4 | 1 |
| | 1111 | ADC_state | 4 | Sfwe_State2 | Sfwe | ACM | М | | s | 4 | 1 |
| | 1128 | ATT_EST_st | 4 | Sfwe_State2 | Sfwe | ADC | M | | s | 4 | 1 |
| | 1129 | deltaV_ESst | 4 | Sfwe_State2 | | ATE | M | | S | 4 | 1 |
| | 1542 | AVOID_state | 4 | Sfwe_State2 | Sfwe Sfwe | ATE | м | TVC/RCS_delta_V/ACL: "idle/acc/timer/impu | S | 2 | 1 |
| | 1543 | - PTGviolatST | 4 | Sfwe_State2 | Sfwe | CMT | м | "Celestial_vect/body_vect" | s | 4 | TBD |
| | 1001 | ACCstate | 4 | Sfwe_State2 | ACC | CMT HdweMgr | м | "body_vect/thermal violation_duration" | s | 4 | TBD |
| | | EGAA_state | 4 | Sfwe_State2 | EGA | HdweMgr HdweMgr | м | | s | 2 | 1 |
| | | EGAB_state | 4 | Sfwe_State2 | EGA | - | M | | S | 2 | 1 |
| | 1711 | IRUA_state | 4 | Sfwe_State2 | IRU | HdweMgr HdweMgr | м | | S | 2 | 1 |
| | 1712 | IRUB_state | 4 | Sfwe_State2 | IRU | - | | "on/off" | S | 2 | 1 |
| | 1713 | IRUA_status | 4 | Sfwe_State2 | IRU | HdweMgr HdweMgr | M M | "on/off" | s | 2 | 1 |
| | 1714 | IRUB_status | 4 | Sfwe_State2 | IRU | HdweMgr | м | <pre>max_pulse_viol;max_acc_viol;A&B_consiste</pre> | D | 8 | 1 |
| | 1761 | PMSA_state | 4 | Sfwe_State2 | PMS | HdweMgr | M | <pre>max_pulse_viol;max_acc_viol;A&B_consiste con(cff_id); vide_vide_vide_vide_vide_vide_vide_vide_</pre> | D | 8 | 1 |
| | | PMSB_state | 4 | Sfwe_State2 | PMS | HdweMgr | M | on/off;idle;ME_critical_enabled;ME_pulse | | 8 | 1 |
| 1 | 1791 | RWA1_state | 4 | Sfwe_State2 | RWA | HdweMgr | м | on/off;idle;ME_critical_enabled;ME_pulse | D | 8 | 1 |
| | 1792 | RWA2_state | 4 | Sfwe_State2 | RWA | HdweMgr | м | | S | 3 | 1 |
| | 1793 | RWA3_state | 4 | Sfwe_State2 | RWA | HdweMgr | м | | s | 3 | 1 |
| 1 | 1794 | RWA4_state | 4 | Sfwe_State2 | RWA | HdweMgr | м | | S | 3 | 1 |
| 1 | 1931 | SRUA_state | 4 | Sfwe_State2 | SRU | HdweMgr | м | | S | 3 | 1 |
| 1 | 1932 : | SRUB_state | 4 | Sfwe_State2 | SRU | HdweMgr | м | | S | 2 | 1 |
| 1 | 1961 : | SSAA_state | 4 | Sfwe_State2 | SSA | HdweMgr | | on/off" | S | 2 | 1 |
| 1 | 1962 3 | SSAB_state | 4 | Sfwe_State2 | SSA | HdweMgr | 8 | on/off" | S | 2 | 1 |
| 1 | 1963 3 | SSAA_status | 4 | Sfwe_State2 | SSA | HdweMgr | 9 | | s | 2 | 1 |
| 1 | 1964 9 | SSAB_status | 4 | Sfwe_State2 | SSA | HdweMgr | м | auto/grd_cmd'd_thrshld;sun_there;sun_sta | D | 8 | 1 |
| | | [VP_status | 4 | Sfwe_State2 | Sfwe | IVP | Ma | auto/grd_cmd'd_thrshld;sun_there;sun_sta la GLL IVP_Stat | D | 8 | 1 |
| | | SID_state | 4 | Sfwe_State2 | Sfwe | SID | a | taton in two-it: 11 | s | 4 | 1 |
| | | ACStlmMode | 4 | Sfwe_State2 | Sfwe | TLM | M | | s | 4 | 1 |
| 1 | .982 5 | SCtlm_mode | 4 | Sfwe_State2 | Sfwe | TLM | м | | S | 4 | 1 |
| | | | 4 | | | | | | s | 4 | 1 |
| | | mdSC_Q1 | 5 | SC_pointing | Sfwe | ACM | MS "1 | base_attitude" | - | | |
| | | mdSC_Q2 | 5 | SC_pointing | Sfwe | ACM | | bogo ottilulu | | | 2768 |
| | | mdSC_Q3 | | SC_pointing | Sfwe | ACM | 8 | and attitudes | | | 2768 |
| | | mdSC_Q4 | | SC_pointing | Sfwe | ACM | | ando officienza | | | 2768 |
| е | tc. | etc. | etc. | etc. | etc. | etc. | etc. | | I 1 | 6 3 | 2768 |