

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

**Fall 2010
TSCC Meeting
San Diego, CA**

**October 25, 2010
Town and Country Hotel
San Diego, CA**

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

Call to Order and Attendance

October 25, 2010
Town and Country Hotel
San Diego, CA

Members		Alternate	
Last	First	Last	First
Bender	Mark		
Brierley	Scott	McNatt	William
Eccles	Lee	Grant	Robert
Grebe	David	Klein	Wayne
Horan	Sheila	Marcellin	Michael
Kazz	Greg	Greenberg	Edward
Klein	Lorin	Buckley	Mark
Kolb	John	Corry	Diarmuid
Macias	Filiberto	Balizan	Ernesto
Mayer	Gerhard	Freaud	Gilles
Nicolo	Steve	Carlson	John
Moodie	Myron	Abbott	Ben
Skelley	Dan	Malatesta	William
Yates	James	Dunn	Wiley
Weaver	Charles		
Fleury	Brad		
Givens	Bob		
Rymer	Bill		
MacMedan	Merv		
Straehley	Erwin		

Agenda

800 Call to Order Horan

810 Attendance and determination of Quorum Horan

815 Review and Approve Agenda Horan
Action item review into Chair report

0830 Officer Reports

Chair	Horan
Vice Chair	Nicolo
Secretary-Treasurer	Horan for Grebe
Approval and review of last Minutes	
Financial Status	

Agenda

0900 Committee Reports

Nominating Committee
Radio Frequency
Data Multiplex
Networking and Protocols
Transducers
Coding/Data Compression
Recorder / Reproducer
ETSC Report

Yates
Brierley
Nicolo
Yates
Eccles
Horan
Klein
Mayer

1100 Old Business

Joint panel session
2010 TSCC Best Standards Paper

Horan

1130 New Business

Future Meetings
Future Work

All

1200 Adjourn

All

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

Chairman's Report

October 25, 2010
Town and Country Hotel
San Diego, CA

Significant Activity (2010)

- i-net site access has been achieved
- Best telemetry standards paper will be awarded at ITC 2010 – Steve Nicolo will report on that
- Best Standards Paper rules updated
- Two new members have been added to the TSCC
- 2 meetings of the TSCC were held - 2010
 - (Spring) April 20 in Newport News/Hampton VA.
 - (Fall) October 25th in San Diego in conjunction with ITC

Significant Activity (2010)

- Special Session on Wednesday Oct 27:
Session 13
 - TSCC volunteers: Lorin Klein, Lee Eccles, and Dan Skelley. James Yates will moderate the session
 - This session has been created to allow for disseminating information and stimulating discussion about future telemetry standards. Three TSCC members will present information about their connection with and application of Draft iNET standards. The last hour of the meeting will be the RCC (including any news on the future of Telemetry Spectrum and implementation of C-band telemetry at the Ranges.

Significant Activity (2010)

- Review Requests:
 - Pink Sheets for IRIG 106 chapters 4 and 9
 - Pink Sheets for IRIG 106 chapter 10
 - TG TMATS handbook
 - TG Standard 118

Current TSCC Focus Areas

- New Telemetry Standards – i-net
- Web improvements
 - Updated the TSCC Website to include more information on the Standards Paper Rules and past winners
- Best paper and special sessions for ITC (Panel at ITC)

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

Vice Chair Report

October 25, 2010
Town and Country Hotel
San Diego, CA

2010 Rauch Best Standards Paper Award:

IHAL AND WEB SERVICE INTERFACES TO VENDOR CONFIGURATION ENGINES

**John Hamilton, Timothy Darr, Ronald
Fernandes Knowledge Based Systems, Inc.
Joe Sulewski L-3 Telemetry East Charles
Jones 812TSS/ENTI Edwards AFB, CA**

As Incoming Chair:

Any comments?

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

Secretary-Treasurer Report

October 25, 2010
Town and Country Hotel
San Diego, CA

Treasurer Report

for the Period 10/25/09 thru 10/22/10

■ INCOME	
• Funding Received, IFT	\$1,000.00
■ EXPENDITURES	
• Award Plaques	\$ 417.30
• Web Hosting	\$ 119.70
• Spring Dinner	\$ 302.94
■ Net Increase (Decrease) in Cash	\$ 160.06
■ Beginning Cash Balance	\$ 1285.46
■ Ending Cash Balance	\$1,445.22

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

TSCC Fall 2010 Committee Reports

**October 25, 2010
Town and Country Hotel
San Diego, CA**

TELEMETERING STANDARDS COORDINATION COMMITTEE



SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING

TSCC Fall 2010

Nominating Sub-Committee Report

October 25, 2010
Town & Country Hotel
San Diego, CA

Membership

- James Yates - L-3 Communications
- Scott Brierley - United Launch Alliance
- Lee Eccles - Boeing

Sub-Committee Focus

- **The nominating sub-committee shall propose TSCC members and officers for approval by the membership.**
- **Prospective TSCC members and officers can be nominated by the TSCC membership or by a nominating subcommittee.**
- **All nominations must be approved by a membership vote.**

TSCC Membership Rules

- Adequate representation shall always exist from the diverse groups constituting the telemetry community
- Representatives of government and commercial entities shall each constitute a minimum of one-third of the regular TSCC Membership
- The remaining one-third may include, but is not limited to those in commercial, governmental, and academic organizations
- Membership by representatives of non-US entities shall not exceed 25% of the total regular membership

TSCC Group Definitions

- Government entities are defined to include agencies of the United States Government, foreign governments, and not-for-profit organizations under contract to them
- Commercial entities are defined as manufacturers or vendors of equipment, software, or systems, for-profit companies that use telemetry equipment, and suppliers of telemetry-related services, such as consulting, on a for-profit basis.

TSCC Membership Terms

- TSCC Membership Terms are for five years
 - Terms are staggered so that the terms of 20% (rounded to the nearest integer) of the regular membership end each year
 - Members may be re-nominated for additional terms by the nominating sub-committee.
- Three Membership slots expire this year
 - The TSCC year begins immediately following the TSCC Annual Meeting, held in conjunction with the International Telemetry Conference.
 - Kazz, Macias, Nicolo

TSCC Makeup

- The TSCC currently consists of
 - 2 academic organization members
 - 6 government entity members
 - 8 commercial entity members
- Members from commercial entities belong in two different groups:
 - Telemetry equipment suppliers
 - Telemetry equipment users

TSCC Membership

**as of October 2010*

■ Academia

- Sheila Horan, PhD
- Gerhard Mayer

■ Government

- Loren Klein
- Greg J. Kazz
- Filiberto Macias
- Dan Skelley
- Myron Moodie
- Mark Bender

■ Industry

- Scott Brierley
- Lee Eccles
- David Grebe
- ***John Kolb**
- Steve Nicolo
- ***James A. Yates**
- Brad Fleury
- Chuck Weaver

■ Ex-Officios

- Robert Givens
- Bill Rymer

■ Members Emeritus

- Merv MacMedan
- Erwin (Terry) Straehley

TSCC member breakdown

1	Mark Bender	Government	The Aerospace Corporation
2	Scott Brierley	Industry	The Boeing Company
3	Lee Eccles	Industry	Boeing Commercial Airplane Co.
4	Brad Fleury	Industry	Edge Consulting
5	David Grebe	Industry	Apogee Labs, Inc.
6	Sheila Horan, PhD	Academia	College Associate Professor, Freshman Advisor
7	Greg J. Kazz	Government	NASA- Jet Propulsion Laboratory
8	Lorin Klein	Government	Air Force Flight Test Center
9	John Kolb	Industry	ACRA CONTROL INC
10	Filiberto Macias	Government	White Sands Missile Range
11	Gerhard Mayer	Academia	GVM-Consulting
12	Myron Moodie	Government	Southwest Research Institute (SwRI)
13	Steve Nicolo	Industry	GDP Space Systems
14	Dan Skelley	Government	NAVAIR
15	Chuck Weaver	Industry	Dynetics, Inc
16	James A. Yates	Industry	L-3 Communications - Telemetry

Ex-Officios

1	Robert Givens, TG-Chair	Government	RCC-telemetry Group
2	Bill Rymer - IFT Rep	Industry	Spiral Technology

Members Emeritus

1	Merv MacMedan	retired	
2	Erwin (Terry) Straehley	retired	

TSCC Membership Terms

Slot	Name	Group	Affiliation	Term Expires
1	Mark Bender	Government	The Aerospace Corporation	2013
2	Scott Brierley	Industry	The Boeing Company	2011
3	Lee Eccles	Industry	Boeing Commercial Airplane Co.	2014
4	Brad Fleury	Industry	Edge Consulting	2014
5	David Grebe	Industry	Apogee Labs, Inc.	2012
6	Sheila Horan, PhD	Academia	College Associate Professor, Freshman Advisor	2013
7	Greg J. Kazz	Government	NASA- Jet Propulsion Laboratory	2010
8	Lorin Klein	Government	Air Force Flight Test Center	2012
9	John Kolb	Industry	ACRA CONTROL INC	2012
10	Filiberto Macias	Government	White Sands Missile Range	2010
11	Gerhard Mayer	Academia	GVM-Consulting	2014
12	Myron Moodie	Government	Southwest Research Institute (SwRI)	2014
13	Steve Nicolo	Industry	GDP Space Systems	2010
14	Dan Skelley	Government	NAVAIR	2011
15	Chuck Weaver	Industry	Dynetics, Inc	2015
16	James A. Yates	Industry	L-3 Communications - Telemetry	2011

Two Open Membership Slots

- With the resignation of John Kolb and James Yates There are two open membership slots in the TSCC
- Open to suggestions on future member mix/background

New Membership

- Possible new members
 - Diarmuid Corry (John Kolb's alternate)
 - Other?

TSCC Chair

- TSCC Chair Term will expire after the 2010 Fall meeting
 - Officers shall serve for a two year term of office
 - The term of office shall begin at the start of the TSCC Year in even calendar years
 - Traditionally the Vice-Chair succeeds to the Chair's position to fulfill a two year term as Chair
 - The Secretary-Treasurer may be re-elected

Second Nominating Committee Member Required

- The Nominating sub-committee shall consist of three members of the TSCC of any category
- The membership shall consist of:
 - the immediate past Chair (or the most recent prior chair if the immediate past chair is unable to serve) who shall chair the sub-committee, and
 - Two Members at Large elected by the TSCC membership

Open Actions

Nominating Committee Motions and Action Items:

- Two (new) open membership slots
- Members at large to vote on two members to assist the new nominating committee chairman (Sheila)

TELEMETERING STANDARDS COORDINATION COMMITTEE



SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING

TSCC Fall 2010 RF Subcommittee Report

October 25, 2010
Town & Country Hotel
San Diego, California

Membership

- Scott Brierley

- Mark Bender
- Mark Dapore
- Brad Fleury
- Lloyd Lautzenhiser
- Eugene Law
- Warren Martin
- Bill McNatt
- Rich Siegal

- New Member, Brad Fleury, has joined the RF Subcommittee

Subcommittee Focus

- RF Subcommittee reviews standards dealing with the Radio Frequency (RF) telemetry link
- Current standards
 - **RCC IRIG-106**
 - **RCC IRIG-118**
 - **RCC RF Handbook**
 - **CCSDS-401**
 - **CCSDS-411**
 - **SGLS**
 - **STDN**
 - **1451.5**

Significant Activity

- No standards reviewed since the Spring meeting

TELEMETERING STANDARDS COORDINATION COMMITTEE



SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING

TSCC Fall 2010 Data Multiplex Subcommittee Report

October 25, 2010
Town & Country Hotel
San Diego, California

Membership

■ Steve Nicolo

- Bob Downing (NEW)
- Howard Eckstien (To be Removed)
- Alain Hackstaff (To be Removed)
- Bill Rymer
- Jack Sheldon (NEW)
- Dave Sniffin
- Erwin Straehley
- Duane Weaton

Sub-Committee Focus

■ Current standards

- IRIG-106

- Part 1: Telemetry Standards

- Chapter 3: FM Data Standards
 - Chapter 4: PCM Data Standards
 - Chapter 8: Bus Data Formatting Standards
 - Chapter 9: TMATS

- Part 2: Telemetry Networks

- Chapter 4: Packet Telemetry Standards

- RCC IRIG-118: Test Methods

- RCC IRIG-119: Telemetry App's Handbook

Significant Activity

- TSCC Meeting in Texas April 2010
- TMATS
 - RCC Released (1st release) of TMATS Handbook (Pink Sheets). TSCC Reviewed and submitted comments.
- Best Source Selection (BSS) Standards
 - Continued pushing need for standard for BSS. RCC to start discussions in March 2011

Open Actions

■ New Work Tasks

- Support RCC ongoing efforts on future TMATS Handbook releases
- Support RCC ongoing effort to keep TMATS IRIG 106 Chapter 9 and XML Scheme Current
- Explore possible related INET activities
- Support RCC efforts to generate standard for BSS. RCC to start discussions in March 2011

TELEMETERING STANDARDS COORDINATION COMMITTEE



SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING

TSCC Fall 2010
*Networking & Protocol
Sub-Committee Report*

October 25, 2010
Town & Country Hotel
San Diego, California

Membership

- James Yates, L-3 Communications Telemetry & RF Products
 - Mark McMillan – CEO Amergint
 - David Grebe – Apogee labs
 - Ken Fischer – L-3 Communications Nova
 - Myron Moodie – SWRI
 - Looking for recommendations from other TSCC members

Subcommittee Focus

Focus area 1 - iNet

- RFNE_Standard_Experimental_v0.5
- MD_Standard_Proposed_v0.5
- SM_Standard_Proposed_v0.5
- TA_Standard_Proposed_v0.5

* March iNet newsletter. iNET standards have been successfully matured to the point that system design followed by system integration and test can begin. As of January 31st, the latest update (V0.7) of the iNET Standards was completed. The V0.7 Standards should be approved for Public Release and available on the iNET website in a few months.

Subcommittee Focus

Focus area 1 - CCSDS

CCSDS 921.1-R-1	Cross Support Transfer Service--Specification Framework	Red Book	08/2010	1	10/18/2010
CCSDS 506.0-R-2	Delta-Differential One Way Ranging (Delta-DOR) Operations	Red Book	04/10	2	6/28/2010
CCSDS 702.1-R-4	IP over CCSDS Space Links	Red Book	04/10	4	6/18/2010
CCSDS 131.0-P-1.1	TM Synchronization and Channel Coding	Pink Book	11/2009	1.1	2/1/2010
CCSDS 652.0-R-1	Audit and Certification of Trustworthy Digital Repositories	Red Book	10/2009	1	12/16/2009
CCSDS 650.0-P-1.1	Reference Model for an Open Archival Information System (OAIS)	Pink Book	08/2009	1.1	11/13/2009
CCSDS 735.1-R-2	Asynchronous Message Service	Red Book	06/2009	2	9/25/2009
CCSDS 505.0-R-2	XML Specification for Navigation Data Messages	Red Book	06/2009	2	9/1/2009

Subcommittee Focus

CCSDS - Continued

CCSDS 871.0-R-2, 871.1-R-2, 872.0-R-2	Spacecraft Onboard Interface Services-- Application Support Services	Red Book	06/2009	2	8/7/2009
CCSDS 301.0-P-3.1	Time Code Formats	Pink Sheets	11/2008	3.1	2/27/2009
CCSDS 132.0-P-1.1	TM Space Data Link Protocol	Pink Sheets	12/2008	1.1	2/18/2009
CCSDS 732.0-P-2.1	AOS Space Data Link Protocol	Pink Sheets	12/2008	2.1	2/18/2009
CCSDS 353.0-R-1	Symmetric Encryption	Red Book	10/2008	1	1/9/2009
CCSDS 521.1-R-1	Spacecraft Monitor and Control--Common Services	Red Book	09/2007	1	11/30/2007
CCSDS 522.0-R-1	Spacecraft Monitor and Control--Core Services	Red Book	09/2007	1	11/30/2007
CCSDS 873.0-R-1	Spacecraft Onboard Interface Services	Red Book	06/2007	1	9/14/2007
CCSDS 505.0-R-1	XML Specification for Navigation Data Messages	Red Book	11/2005	1	3/31/2006

Subcommittee Focus

- **IEEE-1588** - (no change)
 - Still at IEEE 1588-2008 (version 2) since July 24, 2008.

Significant Activity

- No real significant activity since the spring meeting
- Hopefully with the restart of iNet working groups TmNs standards will start to go to the RCC-TG

Open Actions

- None

TELEMETERING STANDARDS COORDINATION COMMITTEE



SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING

Transducer Subcommittee Fall 2010 Report

October 25, 2010
Town & Country Hotel
San Diego, California

Membership

- Lee Eccles, Chair – Boeing Test & Evaluation
 - No active members

Subcommittee Focus

- Transducer Standards
- Current Standards
 - IEEE 1451 Family

Significant Activity

- IEEE 1451.2
- Point to Point Digital Transducer Standard
 - UART Interface Standard
 - SPI Interface Standard
 - USB was considered but dropped because it is multi-drop
- This revised standard is approaching the balloting stage

Significant Activity

- IEEE 1451.7
- TEDS in RFID Chips
 - Released in 2010
 - Can include a transducer in battery powered devices

Significant Activity

- IEEE 1451.4
- Small TEDS Associated with a Transducer
- Re-affirmation ballot invitation was issued and then withdrawn

Not New But Of Interest

- **IEEE Std 260.1™-2004**
- **IEEE Standard Letter Symbols for Units of Measurement**
- **(SI Units, Customary Inch-Pound Units, and Certain Other Units)**
- **Recently reaffirmed**

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

Coding and Data Compression Subcommittee

**October 25, 2010
Town and Country Hotel
San Diego, CA**

Membership

- Sheila Horan, Chair - NMSU
 - Michael Marcellin, Alternate - Univ. of Arizona
 - Chuck Creusere – NMSU;
 - Stephen Horan – NMSU;
 - Aaron Kiely – JPL;
 - Matt Klimesh – JPL;
 - M. MacMedan – emeritus;

Membership - Continued

- George Nelson - Delta Information System;
- Jimmie Perkins – Raytheon;
- Khalid Sayood - Univ. of Nebraska – Lincoln;
- Pen-Shu Yeh - NASA – Goddard;
- Gary Thom - Delta Information System;
- Steve Nicolo - GDP Space Systems

Sub-Committee Focus

- Data Compression and Coding
- Current standards – updates

Significant Activity

- JPEG updates - <http://www.jpeg.org/>
 - JPEG is pleased to announce the formation its Innovations group. JPEG Innovations is chartered to increase awareness of JPEG family of standards, to identify, explore and investigate new image related standard topics, to engage with industry and academia to hold workshops and seminars on these areas and raise the momentum for starting new standardization work items. All interested parties are invited to collaborate with JPEG Innovations by contacting the chair, Dr. Touradj Ebrahimi at innovations@jpeg.org.

Significant Activity

- JPEG updates - <http://www.jpeg.org/>. In JPEG XR, JPEG is pleased to announce that it has completed its work on all four parts of the JPEG XR image coding system
- The Part 1 system architecture technical report (ISO/IEC TR 29199-1) has been approved to proceed to final technical report. This technical report will provide valuable information to aid in the effective deployment of a variety of products that support the JPEG XR standard.
- A new edition of the Part 2 image coding specification (ITU-T Rec. T.832 and ISO/IEC 29199-2) has been prepared for publication, which resolves the identified needs for correction and clarification of the coding specification text. (at <http://www.itu.int/rec/T-REC-T.832>).

Significant Activity

- The Part 3 Motion JPEG XR specification (ISO/IEC 29199-3) has been finalized, enabling the use of JPEG XR encoding for motion (video) compression. This new standard, ISO/IEC 29199-3 Motion JPEG XR, specifies how JPEG XR may be stored in the family of file formats based on the ISO Base Media File Format. This parallels the use of the classic JPEG codec for "Motion JPEG" and the use of the JPEG 2000 codec for Motion JPEG 2000 (ITU-T Rec. T.802 and ISO/IEC 15444-3). This support is suitable for use when interframe coding is not needed or desirable, or when the JPEG XR codec is already available (for example, in a still camera using JPEG XR that can also shoot motion sequences). In the file format, the logically repeated codec configuration information is stored once, both compacting the file and reducing the number of times a decoder must be initialized.

Significant Activity

- The Part 4 conformance testing specification is now available to the public as a prepublication of the approved ITU-T Rec. T.834 (available at <http://www.itu.int/rec/TREC-T.834>). It will soon be published by ISO/IEC as 29199-4.
- The Part 5 reference software specification is now available to the public as a prepublication of the approved ITU-T Rec. T.835 (available at <http://www.itu.int/rec/T-REC-T.835>). It will soon be published by ISO/IEC as 29199-5.

Significant Activity

- JPEG updates
- ISO/IEC 24800 JPSearch, the committee produced the Final Draft International Standards for Part 2, Registration, identification, and management of schema and ontology, and Part 4, File format for metadata embedded in image data. Final Committee Draft for JPSearch Part 5, Data interchange format between image repositories, is also produced at this meeting. JPSearch enables standardized framework for search, retrieval, and exchange of images with or without accompanying metadata.

Significant Activity

- JPEG updates
- Part 2 provides standardized metadata schema (JPSearch Core Metadata) and supports minimal interoperability among systems with heterogeneous metadata format. In this meeting, discussion on the benchmark description for JPSearch framework has started and a draft call for requirements was issued. All interest parties in benchmarking image retrieval systems are invited to submit requirements of benchmark description framework with relevant usage scenarios.

Significant Activity

- JPEG updates
- The Advanced Image Coding and Evaluation Methodologies subgroup (ISO/IEC 29170 - AIC) continues its effort in defining common guidelines for the evaluation of image coding technologies. The committee will publish a technical report (TR), which includes recommendations on quality assessment, complexity and functionality evaluation and also application dependent methodologies such as for medical, security and camera sensors imaging. AIC will also evaluate the performance of the fast mode of the JPEG 2000 coding standard. JPEG is pleased to announce the production of calls for technologies, use cases, requirement, evaluation procedures and test material for three targeted applications: medical imaging, camera sensors imaging and security applications.

Significant Activity

- JPEG upcoming:
- JPEG Innovations has initiated a workshop to explore together with potential stakeholders of emerging imaging applications, opportunities for new JPEG standards such as stereoscopic digital camera. The workshop will take place in Tokyo, Japan, on Feb. 23, 2011, during the 54th WG1

Significant Activity

- **CCSDS**
 - **Multispectral & Hyperspectral Data Compression Working Group**
 - **Continuing work on lossy compression MHDC-A-1005-6**
 - **Completing work comparing two methods and will hopefully finalize results this week**

Open Actions

- Complete information table for website
- Update membership

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

Recorder/Reproducer Subcommittee

**October 25, 2010
Town & Country Hotel
San Diego, CA**

Membership

- Lorin Klein (AAC, Eglin AFB, FL, USA), Chairman
- Mark Buckley (JDA Associates, Concord, CA, USA)
Alternate Chairman
 - Balázs Bagó (Heim Systems GmbH, Bergisch Gladbach, Germany)
 - Bob Baggerman (Georgia Tech Research Institute, Atlanta, GA, USA)
 - Tim Chalfant (AFFTC, Edwards AFB, CA, USA)
 - Tim Gatton (Wyle Laboratories, California, Maryland, USA)
 - Mike Lockhard (EMC Corp, Irvine, California, USA)

Sub-Committee Focus

- Data Recorders, Ground and Airborne
- Standards in Place

- IRIG 106-09 -- Range Commanders Council (RCC) Telemetry Standards

<http://www.irig106.org/docs/106-09/>

- STANAG 4575 – North Atlantic Treaty Organization (NATO) Standard Agreement (STANAG) – NATO Advanced Data Storage Interface (NADSI) Allied Engineering Documentation Publication (AEDP)

<http://www.nato.int/STRUCTUR/AC/224/standard/4575/4575.htm>

- ANSI INCITS 175-1999 (R2004) 19mm Type ID-1 Recorded Instrumentation Digital Cassette Tape Format (revision and redesignation of ANSI X3.175-1990 (R1995))
- MIL-STD-2179 – Helical Digital Recording Format For 19-MM Magnetic Tape Cassette Recorders/Recorders

Significant Activity

- RCC Telemetry Group Recorder Reproducer Committee August 2010
“Pink Sheets”

Changes effect:

- 118 Test Methods
- 106 Ch-10 (Digital Recorders)
- 106 Ch-9 (TMATS)
- 106 Ch-6 (Recorder C&C)
- STANAG 4575, AEDP-3, AEDP-6

Significant Activity

RCC Document 118-10 Test Methods August 2010 Pink Sheet Summary

- Title Change: Document 118 Volume IV - TEST METHOD FOR DIGITAL RECORDER/REPRODUCER SYSTEMS AND RECORDER MEMORY MODULES – Completely new document describing how to test digital recorders and RMMs.
- Specifies test methods for RCC Document 106-09 with subsequent releases trailing each release of 106 by 2 years
- Only the basic packet types covered by the METS-231 are included in this release
- Future interoperability workshop will produce a set of "Golden Files" for potential incorporation

Significant Activity

RCC Document 106-11 Ch 9

Telemetry Attributes Transfer Standard (TMATS)

August 2010 Pink Sheet Summary

- Provided guidance on case sensitivity and blanks
- Added new group relationships involving the “R” (Recorder/Reproducer) Group
- Recorder/Reproducer (R) Group Attributes added:
 - Increased field size for Manufacturer and Model
 - User Defined Data Packets and Channel ID
 - Recording Events Channel ID
 - Event Data Processing Enabled
 - Event processing
 - Recording Index Channel ID
 - Input Stream Derandomization
- Added new TSPI/CTS data type

Significant Activity

RCC Document 106-11 Ch 10 Pink Sheet August 2010 Pink Sheet Summary

The Committee is using a Change Request (CR) protocol to manage the activities under the -11 Update Release task.

- CR 11 –Added note clarifying bit settings with one channel (Section 10.6.5.2)
- CR 17 - Provide a method of partitioning memory (Section 10.5.2)
- CR 19 - Added new data type TSPI/CTS (Time-Space-Position Information and Combat Training System) data type (Section 10.6.16)
- CR 32 – Added and refined definitions of Reproduction and Reconstruction (Section 10.2 and 10.6)

Significant Activity

RCC Document 106-11 Ch 10 Pink Sheet August 2010 Pink Sheet Summary (cont.)

- CR 33 - Changed “can not” to “shall not ” in “Packets shall not contain only filler or shall not be idle or empty. All packets that are generated shall contain data.” (Section 10.6.1.e.); included a note for duplicated text from STANAG 4575 variations, updated the Table of Contents, and corrected other minor errors
- CR 37 – Updated Directory Block Format (Section 10.5.2.c)
- CR 38 - Removed the statement: “The TMATS file identifies the number of samples contained within each packet” (Section 10.6.5.2.b)

Significant Activity

RCC Document 106-11 Ch 10 Pink Sheet August 2010 Pink Sheet Summary (cont.)

- CR 40 – Specifies the “Discrete Packet Channel Specific Data Word” length to be 32 bits (Section 10.6.6.2.a)
- CR 41 – Clarified PCM format and removed redundant language in Section 10.6.2.2

Significant Activity

STANAG 4575

From 16 Sep 2010 Custodial Support Team Meeting Minutes

■ Current Status

- Latest version is Edition 3, 8 May 2009
- Defense IT Standards Registry (DISR)
 - AEDP-3 (Allied Engineering Documentation Publication) Advanced Data Storage Technology Memory Systems Sanitization Guide – No changes
 - AEDP-6 NATO Advanced Data Storage Interface (NADSI) Implementation Guide - Change 1 approved in Jan 2010

■ Technical Considerations

Significant Activity

STANAG 4575 Technical Considerations

- Partitioning (segmenting) of RMM – CST issued an Action item to solicit recommended approaches to segmenting future RMMs including supporting download.
- Desire for a low cost alternate RMM physical interface; begin looking at next generation download interface (NADSI after Fibre-Channel; or, NADSI II -- “Attack of the Clones”)

Significant Activity

STANAG 4575 Technical Considerations

- RMM Power Issues – Need was highlighted to reevaluate current technology and trends. -- expect call for recommendations from users and manufacturers
- Given current issues with partitioning, physical interface, power, future STANAG 4575 activity will be HIGH.

Significant Activity

Next STANAG CST Meeting

- Next STANAG 4575 Custodial Support Team (CST) meeting January – Late April, United States venue.

Open Actions

- RCC publication of Documents 118-10 and 106-11
- STANAG CST – TBD (Jan-Apr, USA)
 - Upcoming request for recommended approach for segmenting (partitioning) of RMM with “use case” and ground station implementation
 - Strong consideration for substantive update to 4575 in the near future. “

“Heads-up” to the user and vendor communities!

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

ETSC Report

October 25, 2010
Town and Country Hotel
San Diego, CA

Membership

- **Committee Chair**

Gerhard Mayer , Gilles Freaud (A)

- **Subcommittee Chair**

- **SC-1: RF Spectrum & Frequ. M´nt**

Jean-Claude Ghnassia, Jean Isnard (A)

- **SC-2: Data Acquisition & Processing**

Werner Lange, Christian Herbepin (A)

- **SC-3: Data Recording & Storage**

Steve Lyons , Balasz Bagó (A)

(A)...Alternate

Subcommittee Focus(1)

- SC-1: Spectrum availability & efficient use, data integrity in the transmission channel
- Current Standards
 - IRIG 106-09, Chapter 2+Annex A&M
 - IRIG 118-02, Vol.2
 - IEEE 802.11n/15.3/15.4
 - DVB-T & OFDM derived industry standards (ETSI EN300 744 V1.6.1)

Subcommittee Focus(2)

- SC-2: Ensure acquisition and time tagging in high-rate data streams
- Current Standards
 - IEEE 1344 & addendum
 - IEEE 1451
 - IEEE 1588
 - IEEE 802.11.n/15.1/3/4
 - IRIG 106-09, Chapter 3
 - IRIG 218-07 (TMoIP)

Subcommittee Focus(3)

- SC-3: Info collection / dissemination on recording system and techniques
- Current Standards
 - IRIG 106-09, Chapter 10
 - XidML 3.0

Significant Activity

- ETSC open meeting at the ETC 2010
- Reviewing RF classical modulation standards, comparison with OFDM-based techniques
- Review and comments on IRIG 106-Ch.10

ETSC Open Meeting

ETC 2010, Hamburg, 20 May 2010

Agenda

1. Committee Reports: *ETSC, RCC TG, TSCC.*
2. Technical Reports:
 - *Mass data storage on USB stick; standard products & evaluation for integration in avionic applications.*
 - *New storage medium for recording & archiving.*
 - *Multipath resistant mod. techniques, COFDM vs. SC-CP.*
 - *Review of emerging standards for “Cognitive Radio”.*

Open Actions

- “WRC`07” C-band for AMT, RF standards
- IEEE 802.n and UWB as a basic standard for wireless intra-aircraft RDA-networking
- Track emerging standards of Cognitive Radio Systems, IEEE 801.15&22, IEEE1900
- New Subcommittee on Networked TM (SC-4), call for officers & nomination
- ETTC 2011: ETSC Open Meeting
(*Venue: Toulouse Centre de Congrès, 16 June, 2011*)

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

TSCC Fall 2010 Old Business

**October 25, 2010
Town and Country Hotel
San Diego, CA**

TSCC Fall 2010

Old Business

- Joint session TSCC/RCC
- 2010 Best Standards
Paper Award

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

TSCC Fall 2010 New Business

**October 25, 2010
Town and Country Hotel
San Diego, CA**

New Business

- Future Meetings:
- Spring Meeting 2011:
 - March 1-3, 2011
 - With the RCC
 - Buellton, CA
- Fall Meeting 2011:
 - October/November 2011
 - With the ITC/CCSDS
 - Bally's in Las Vegas, NV

New Business – Future Work

■ Future Work

- Liaisons with CCSDS, RCC and/or other standard organizations – Could we have a representative from each of these groups on appropriate TSCC committees to increase communication?
- What other organizations should we have on the TSCC or involved with the TSCC?

New Business – Future Work

■ Future Work

- c-band telemetry project at WSMR
- Next Fall Special Session:
 - Looking at what standards are needed

New Business – Membership

- ITC liaison – Standards Paper Coordinator, ITC room coordinator – would/could the IFT representative serve here? Could we seek to have someone else involved with ITC to be a member-at-large?
- Increase TSCC membership? Bylaws limit membership to 16 members. Should we look into increasing this number to bring in other groups – more international, more government?

New Business – Membership

- Commercial Space enterprises/Private space programs
- Government
 - NASA-MSFC
 - NASA-GSFC
- Other possibilities: Range Support Contractors
 - JT3
 - CSC

TELEMETERING STANDARDS COORDINATION COMMITTEE



**SPONSORED BY
INTERNATIONAL FOUNDATION FOR TELEMETERING**

TSCC Fall 2010 Adjourn

**October 25, 2010
Town and Country Hotel
San Diego, CA**