

Minutes, Technology and Standards Group

9 May 2005

Advanced Television Systems Committee
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Washington, D.C. 20006
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The Advanced Television Systems Committee, Inc., is an international, non-profit organization developing voluntary standards for digital television. The ATSC member organizations represent the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries.

Specifically, ATSC is working to coordinate television standards among different communications media focusing on digital television, interactive systems, and broadband multimedia communications. ATSC is also developing digital television implementation strategies and presenting educational seminars on the ATSC standards.

ATSC was formed in 1982 by the member organizations of the Joint Council on InterSociety Coordination (JCIC): the Electronic Industries Association (EIA), the Institute of Electrical and Electronic Engineers (IEEE), the National Association of Broadcasters (NAB), the National Cable Television Association (NCTA), and the Society of Motion Picture and Television Engineers (SMPTE). Currently, there are approximately 140 members representing the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries.

ATSC Digital TV Standards include digital high definition television (HDTV), standard definition television (SDTV), data broadcasting, multichannel surround-sound audio, and satellite direct-to-home broadcasting.

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Minutes, ATSC Technology and Standards Group

9 May 2005, 11:00 a.m. until 5:00 p.m. EST
Hilton Crystal City, Arlington, VA

1. WELCOME, INTRODUCTIONS, AND DETERMINATION OF QUORUM

Chairman Bill Miller (SMPTE) called the meeting to order at 11:00 a.m. at the Hilton Crystal City Hotel in Arlington, VA. He welcomed those in attendance and asked each person to identify him or herself. He reminded all participants of the confidentiality requirements of this meeting and the ATSC Patent Policy. The attendance list is given in **Attachment 1**. Secretary Jerry Whitaker (ATSC) reported that a quorum was present.

2. APPROVAL OF PROPOSED AGENDA

Chairman Miller asked for consideration of the draft agenda, distributed to the TSG reflector on April 18 with updates posted on April 29 and May 6 (**Attachment 2**). He suggested the addition of an agenda item on "Report of the AHG on the Use of Advanced Codecs in the Main Stream" as Item No. 12. No further changes were requested and the draft agenda was approved as modified.

3. APPROVAL OF THE DRAFT MINUTES OF THE 9 FEBRUARY 2005 MEETING

Chairman Miller called members attention to the draft Minutes of the February 9 TSG meeting, distributed to the TSG reflector on April 11 (**Attachment 3**). Mr. Whitaker reported that editorial changes were requested by Mike Dolan (TBT) to clarify his company's representation on TSG/S13 issues. No further changes were requested and the document was approved as amended.

4. OPENING REMARKS

Chairman Miller noted that TSG has a very full agenda today. He encouraged members to move the discussions along expeditiously.

5. COMMENTS BY THE PRESIDENT (MARK RICHER)

Mark Richer (ATSC) reported on current activities within the ATSC.

5.1 Status of Ballots

Mr. Whitaker reported on the status of TSG ballots, specifically:

- **PS/52Br4**, "Digital Audio Compression (AC-3, E-AC-3), Revision B." This ballot was issued on 22 March 2005 and closed on 19 April 2005. It was approved: 18 yes, 0 no, 4 abstain; editorial privilege 19 yes, 0 no, 3 abstain. Editorial comments were received during the ballot and resolved to the satisfaction of the commenter. The appropriate documents can be found on the Ballot Status page of the ATSC Members Web site: http://www.atscmembers.org/sg/Ballot/ballot_status.html. The membership ballot on PS/52Br4 will be issued on May 16.
- **Amendment No. 1**, "ATSC Standard: Program and System Information Protocol for Terrestrial Broadcast and Cable." This ballot was issued 23 February 2005 and closed on

23 March 2005. It was approved: 20 yes, 0 no, 9 abstain; editorial privilege 21 yes, 0 no, 8 abstain.

For membership ballots,

- **Amendment No. 1**, “ATSC Standard: Program and System Information Protocol for Terrestrial Broadcast and Cable.” This ballot was issued on 31 March 2005 and closed on 28 April 2005. It was approved: 18 yes, 1 no, 5 abstain; editorial privilege 20 yes, 2 no, 2 abstain.
- **Corrigendum No. 1**, “A/53C with Amendment No. 1.” This ballot was issued on 23 February 2005 and closed on 23 March 2005. It was approved: 35 yes, 0 no, 5 abstain; editorial privilege 36 yes, 0 no, 3 abstain.

5.2 Other

Other items covered in the President’s report included the following:

- Mr. Richer called attention to the ATSC Annual Meeting, set for tomorrow at the Hilton Crystal City Hotel. The event begins at 8:00 a.m. and ends at 5:00 p.m. Among the speakers will be Richard Wiley, Eddie Fritts, Kyle McSlarrow, and Gary Shapiro. Mr. Richer encouraged all TSG members to attend.
- Mr. Richer briefed the committee on the successful DTV technology exhibit featured at the NAB Convention in Las Vegas last month. A dozen organizations participated in the event. He thanked the sponsors and participating companies and organizations for their support.
- Mr. Richer reported on the results of a recent ATSC trip to Korea to brief Korean members and government/industry leaders on current work. He said the trip was quite productive and thanked all members of the delegation for their support and assistance.
- Mr. Richer noted the ATSC has been participating in ITU-R activities, including a trip to Geneva for the latest round of Study Group 6 meetings. Among the current ITU efforts are to update appropriate ATSC document references.

6. BRIEF REPORTS ON ACTIONS FROM THE PREVIOUS MEETING

Chairman Miller called attention to the action items developed at the February 9 meeting of TSG:

- 1) Chairman Miller to report to the ATSC Board of Directors the consensus of T3 to support renaming of the Technology Group on Distribution to “Technology and Standards Group.”
Completed. The Board gave its approval to the name change at its March 14 meeting.
- 2) Sam Narasimhan to post a summary of relevant MPEG standards to the T3 reflector prior to the May 9 meeting.
Carried forward.
- 3) Jerry Whitaker to set up a reflector for an MPEG Liaison AHG and to post a note to the “admin” reflector inviting participation.
Completed. The reflector was established and the posting sent to the “admin” reflector on February 24.
- 4) Mark Eyer to forward to Mark Richer a liaison request relating to DVB TR 101154 and other documents as appropriate.
Completed.

- 5) ATSC staff to issue a T3 letter ballot on CS/T3-606A as a Proposed Standard.
Completed. The ballot was issued on February 23.
- 6) Jerry Whitaker to update the posted versions of CS/T3-608B and CS/T3-609B to indicate that the Candidate Standard period ends on 10 May 2005.
Completed.
- 7) Jerry Whitaker to update the posted version of CS/T3-614A to indicate that the Candidate Standard period ends on 10 May 2005.
Completed.
- 8) Pat Waddell and T3/S6 to consider proposed corrections and updates to PS/52Br2 and, upon consensus agreement in the specialist group, to forward said document to ATSC staff for issuance of a T3 letter ballot.
Completed. The TSG ballot was issued on March 22.
- 9) Craig Smithpeters to post to T3 a summary sheet of the “irresolvable by T3/S2” comments received during the T3 ballot of PS/101.
Completed. The document was posted to the TSG reflector on March 21 (**Attachment 4**).
- 10) Charles Einolf to forward the latest version of the E-VSB Implementation Guidelines document to Mark Richer, along with an appropriate cover letter, for distribution to the ATSC “admin” reflector.
Completed. The posting to the “admin” reflector was made on February 25.
- 11) Charles Einolf to forward to ATSC staff the Corrigendum on A/53C with Amendment 1, Annex D, (T3S9-259) for issuance of a membership ballot. Mr. Einolf is also to work with Jerry Whitaker to draft text describing the reason(s) for the change, which will accompany the membership ballot.
Completed. The membership ballot was issued on February 23.
- 12) Chairman Miller to report to the Board on the current T3/S9 Work Plan.
Completed. This information was included in Chairman Millers report to the Board on March 14.
- 13) ATSC staff to review the consensus recommendation of the A-Team regarding the virtual channel informational service and develop a Web-based service accordingly.
Completed. The virtual channel directory may be found at:
http://www.atsc.org/standards/virtual_channels.html
- 14) Chairman Miller to report to the Board renewed interest on the part of T3 in conveying emergency messages using the DTV system, and to ask for guidance.
Completed. This information was included in Chairman Miller’s report to the Board on March 14.
- 15) Dane Ericksen and T3/S3 to bring to T3 at its May 9 meeting a draft Work Plan and statement of need.
Completed. A first-draft of the Work Plan was posted to the TSG reflector on March 18, and a final draft was posted on May 2 (**Attachment 5**).
- 16) Bob Rast, Bill Miller, Wendy Aylsworth, and Craig Tanner to draft a document summarizing the one-versus-more-than-one new codec issue for T3 consideration. [2004-11-16]
Completed. On agenda.

- 17) Jim Williams to lead an AHG of T3 focusing on SRM issues. The AHG is to develop a Requirements Document, with input from appropriate organizations and individuals, and to develop a Work Statement, keeping in mind the T3/S8 output previously given. [2004-11-16]

Completed. On agenda.

- 18) Jerry Whitaker to work with Mark Richer and Mike Dolan, as chair of the Architecture Team, to draft text for inclusion in the Code Points Registry calling attention to the current RRT process.

Completed. The Registry has been updated accordingly.

7. NEW WORK ITEMS FOR DISCUSSION

7.1 Assigned by Board of Directors

Mr. Richer reported that the ATSC Board of Directors approved the following motion at its March 14 meeting:

“TSG should explicitly describe the elements and parameters of A/53 and A/65 that must be verified in an ATSC transport stream for it to be considered a proper emission; and that the TSG should develop an Informational Document once the work has progressed to the point where the relevant factors are exposed for consideration; and that there is no authorization to develop a standard.”

Chairman Miller reported that the Architecture Team discussed this issue earlier in the day, and that Rich Chernock (Triveni), as TSG Vice-Chair, agreed to lead an AHG to study and respond to the Board motion. He asked TSG members interested in participating in this work to contact Mr. Chernock. Mr. Whitaker was asked to set up a reflector to support the effort.

8. ARCHITECTURAL TEAM

Chairman Miller reported on an A-Team discussion held earlier in the day regarding the management of A/53, which is growing increasingly difficult to maintain as new amendments are proposed and adopted. John Henderson (Hitachi) will lead that effort and report back to TSG at the September 21 meeting with recommendations.

9. SRM AHG REPORT (JIM WILLIAMS)

Jim Williams (MPAA), chair of the TSG System Renewability Messages (SRM) ad-hoc group, reported on the work completed and presented to TSG for consideration. With reference to the November 16 action item (see agenda item 6, #17 above), Mr. Williams called attention to two deliverables, posted to the TSG reflector on May 5:

- Draft Requirements for proposed SRM Carriage Recommended Practice, dated 5 May 2005 (**Attachment 6**)
- Draft Work Plan for proposed SRM Carriage Recommended Practice, dated 5 May 2005 (**Attachment 7**)

Mr. Williams went on to summarize the recommendations contained in the documents listed above. He said the AHG set out to develop a set of Requirements and a Work Statement for a proposed Recommended Practice for the carriage of content protection system renewability messages in ATSC transport streams and in MPEG-2 single program transport streams. He asked

TSG to accept the output documents as the finished work product of the SRM AHG, and said the AHG should be dissolved since its work has been completed (**Attachment 8**).

Chairman Miller opened the floor for discussion. Ralph Justus (CEA) noted that when this topic first came up at TSG, it was suggested that SRM carriage could be accomplished via existing data broadcast structures. Mr. Williams said that while this point was discussed, the committee did not focus on any particular solutions. Adam Goldberg (Sharp) questioned what body—TSG or the Board—will determine whether this work goes forward. Mr. Richer provided background on this point. He said that the plan was for TSG to decide on the appropriate recommendation to the Board, after which the Board would make its decision. Sam Narasimhan (Motorola) offered his thoughts on the criteria that should be used to determine whether SRM work goes forward in ATSC. Mr. Chernock said he felt that insufficient information has been presented by the AHG for TSG to make an informed decision today. Jeff Krauss (NCTA) echoed Mr. Chernock's view. Mr. Williams said he believed that sufficient information was provided, pointing out that the scope of the action item from TSG was narrowly focused. He went on to argue that SRM carriage is an important issue and that work on it should move forward.

Mr. Williams **moved** that the SRM AHG output work—namely, the draft Requirements and draft Work Statement—be accepted by TSG and forwarded to the Board with the recommendation that the work outlined be assigned back to TSG for development. **Second** by Wendy Aylsworth (Warner Bros.). Discussion followed on the specific elements of the motion. Ms. Aylsworth noted the recent “Broadcast Flag” court ruling, but pointed out that the ruling was not a judgement on the appropriateness of the Broadcast Flag, but rather a judgement on FCC jurisdiction. She added that since the Broadcast Flag exists as an ATSC Standard, it is entirely appropriate to specify how to update the receiving device appropriately. Graham Jones (NAB) suggested approving the draft Work Statement and forwarding it to the Board, but to simply accept the Requirements Document as input for possible future work. Mr. Williams agreed with this change. Restating the motion:

Mr. Williams **moved** that the SRM AHG draft Work Statement be accepted by TSG and forwarded to the Board with the recommendation that the work outlined be assigned back to TSG for development; furthermore, that the draft Requirements Document be accepted as input for that possible future work.”

This revised wording was accepted by Ms. Aylsworth (the seconder).

Additional comments on the motion were offered by the following persons:

- Merrill Weiss (MWG) said the fundamental question for ATSC is whether there is utility in having one mechanism for sending SRM information through the digital television system.
- Mr. Krauss suggested there is a mechanical problem with the suggested procedure, saying that changes are needed in the draft Work Statement. Right now, he argued, the Work Statement does not specify what work needs to be done.
- Craig Todd (Dolby) said the core issue is whether we want a standard way of doing SRM updates. He likened this issue to the software update download function, which was successfully addressed by ATSC last year.
- Mr. Goldberg said the core issue is whether there is utility in the proposed work, particularly in light of the recent court ruling on the Broadcast Flag. If there is—indeed—utility, he suggested that any work on the part of ATSC may be premature.
- Art Allison (NAB) noted that considerable work has gone into development of the SRM AHG output documents. He suggested we find a way to get the information to the Board,

perhaps by sending the draft Work Statement and draft Requirements Document to the Board without TSG taking any specific action on the documents.

- Mr. Narasimhan agreed in general with Mr. Allison's comments.
- Mr. Justus spoke against the motion. He said that in light of current events, action by ATSC on this question is premature.

Mr. Williams addressed some of the points raised by commenters. He said, in conclusion, SRM carriage needs to be done in an organized manner in order to ensure interoperability. He said that work on this project should go forward, and that delay would not be in the best interest of the industries involved.

Craig Tanner (Sharp) suggested that a working group be formed to examine the issues outlined here today and to report back to TSG. Mr. Williams argued that sufficient discussion has already taken place. He urged the Chair to call the question.

Chairman Miller called the question. The motion **failed** on a roll call vote: 12 yes, 13 no, 15 abstain.

Pat Griffis (Microsoft) **moved** that TSG accept the output report of the SRM AHG and forward it to the Board for disposition. **Second** by Mr. Allison. Discussion followed on the intent of Mr. Griffis's motion. Mr. Tanner said he felt that TSG should provide some input to the Board on the SRM issue. Mr. Richer said the Board is aware of this work and, he believes, expects a recommendation from TSG. Mr. Goldberg said he felt TSG should provide a recommendation to the Board. He added it is not clear whether this particular copy protection facility is necessary.

Mr. Weiss said he felt TSG should make a recommendation to the Board. He said more work on the SRM AHG documents would be beneficial prior to moving them forward. Mr. Chernock echoed Mr. Weiss's comments. Mr. Narasimhan said he was uncomfortable with the motion on the table, since it fails to include a specific recommendation to the Board. Robert Rast (Micronas, ATSC Board Chairman) said it was unclear whether this issue would go very far at the Board, given the vote previously taken by TSG.

Mr. Williams argued that sufficient detail is currently provided in the SRM AHG output documents. He said this work is important to ATSC and important to the industries involved. He said TSG should move it forward. This argument was supported by Mr. Allison, who said that while there may be room for improvement in the SRM AHG documents, delay is unnecessary. In response to a question from Robert Siedel (CBS), Mr. Williams provided an update on the status of related work in other industries and organizations.

Mr. Griffis acknowledged that while there are business and technical issues regarding SRM carriage, the Board should have visibility of the SRM AHG work. He said the lack of consensus in TSG on this matter will doubtlessly be communicated to the Board. Mr. Tanner suggested the creation of a small working group to develop a recommendation to the Board that all parties can agree to.

Chairman Miller called the question. It **failed**: 13 yes, 13 no, 15 abstain. Chairman Miller said he will report the substance of the discussion on this issue to the Board.

Mr. Weiss suggested it might be beneficial for TSG to authorize the development of additional documentation that it would consider at its next meeting in order to make a decision. Mr. Richer said any discussion needs to include the stakeholders. He said this discussion could be undertaken in TGS, the Planning Committee, or the Board. In response to a question from Chairman Miller, Mr. Williams said he would be willing to participate in such an effort, but added that simply rehashing the same arguments would not likely be productive.

The meeting broke for lunch at 12:45 p.m.

The meeting resumed at 1:35 p.m.

Mr. Henderson **moved** that TSG accept the SRM AHG draft Work Statement and add to the Work Statement the following sentence: “TSG to assign to an AHG the task of developing a Recommended Practice to facilitate carriage of SRMs.” **Second** by Brian Smith (Philips). Discussion followed on the motion. Mr. Goldberg said this motion does not resolve the fundamental question, which is whether the proposed work is needed at this time. Mr. Tanner concurred. Mr. Rast said he would prefer to see more specificity in the recommendation to the Board. Robert Blanchard (Sony) argued that moving the SRM AHG Work Statement forward today is inappropriate since most TSG members have only recently had visibility of the draft output documents. Arturo Rodriguez (Scientific Atlanta) echoed those sentiments.

Chairman Miller sought a way forward. Mr. Henderson and Mr. Rast proposed the following revised motion:

Moved that TSG accept the SRM AHG draft Work Statement and add to the Work Statement the following sentence: “TSG to assign to an AHG the task of recommending to TSG whether a document needs to be created—and if so—the type of document to facilitate the carriage of SRMs.

Chairman Miller asked Mr. Goldberg if he would lead such an AHG; Mr. Goldberg said that he would. Following further discussion, it was suggested that a motion might not be needed to refer the SRM issue back to a TSG ad-hoc group for further work. Mr. Henderson said he would be willing to withdraw his motion if it would facilitate a timely resolution of the matter. This offer was accepted by Chairman Miller and the committee, including Mr. Smith (the seconder).

Chairman Miller directed that an AHG led by Mr. Goldberg and consisting of interested TSG members work toward arriving at an agreement on the question: “Should ATSC embark upon SRM work, and if so, what form should the document take? The response to TSG from the AHG should include the reasoning for the recommendation. The AHG was directed to use the output documents developed by the SRM AHG as input. Chairman Miller observed the consensus of TSG on this approach.

10. REPORT OF THE SPECIALIST GROUP ON PSIP METADATA COMMUNICATION, TSG/S1 (GRAHAM JONES)

Graham Jones (NAB), Chair of TSG/S1, reported on current work within the specialist group (**Attachment 9**).

10.1 Status Report

Mr. Jones said no meetings of S1 have taken place since the last TSG meeting. He called attention to the following issues relating to current projects:

- *Registration of PMCP metadata terms in the SMPTE metadata dictionary.* Mr. Jones said more work is required in this area before the PMCP data terms can be registered smoothly. S1 previously intended to have the PMCP registration work completed by the end of June 2005, but a more realistic date is now the end of September.
- *Guide to the Use of the PMCP Standard.* Mr. Jones said the current goal is to have this document to Proposed RP status by September 21, but a more realistic date would probably be the end of December.

- *Support for data broadcasting/ACAP metadata to PMCP.* Mr. Jones said this work has been largely on hold pending resolution of ACAP announcement and signaling issues in other ATSC specialist groups. As these issues are resolved, he said, the S1 work will move forward. The current goal is to have the PMCP extension for ACAP/data broadcast support to Proposed Standard by May 9; he said a more realistic goal is now probably Q3 2005.

Mr. Jones said that, with TSG approval, the TSG/S1 Work Plan will be revised to reflect the new target dates given above. Chairman Miller observed the consensus of the committee to accept these dates.

Chairman Miller also announced that due to pressing business issues, Mr. Jones will be unable to continue as the Chair of TSG/S1. He reported that Mr. Allison has agreed to assume his duties as the new Chair of S1. Chairman Miller and the committee expressed their appreciation for Mr. Jones' hard work in the development of the PMCP Standard.

11. REPORT OF THE SPECIALIST GROUP ON ACAP, TSG/S2 (CRAIG SMITHPETERS)

Craig Smithpeters (Cox Communications), Chair of TSG/S2, reported on current work within the specialist group (**Attachment 10**).

11.1 Presentation of Revised ACAP Specification, TSGS2-006r9 (PS/101B)

Mr. Smithpeters reported that comment resolution work on PS/101 has been completed. He said S2 members have worked exclusively on comment resolution since the last TSG meeting, holding a total of seven teleconferences. He reminded the committee that a total of 123 comments were received from 7 organizations during the TSG ballot, which passed on 24 November 2004. He reported that all comments had been closed except for:

- 1 small issue that was considered but declined
- 12 issues classified as "not resolvable by S2" (**Attachment 4**)

Mr. Smithpeters called attention to the following documents posted to the TSG reflector on May 8:

- T3S2-006r9, the revised ACAP Standard (**Attachment 11**)
- T3S2-006r9-cmp-r8, the red-lined comparison of Rev. 9 to Rev. 8, which was published as CS/101A (**Attachment 12**)
- T3S2-046r12, the final version of the TSG ballot comment resolution matrix (**Attachment 13**)

11.2 TSG Decision on Next Step for PS/101B

Mr. Smithpeters reported the consensus recommendation of the S2 ballot reconciliation committee that T3S2-006r9 be approved for membership ballot. He noted that substantive changes are being proposed to the ACAP specification.

Mr. Smithpeters **moved** that TSG accept the changes proposed to T3S2-006r9, which would then send it to a vote of the full membership.

Because of the late delivery of the revised ACAP document, voting on the changes today was observed to be problematic by several TSG members. Mr. Allison suggested that, since there were substantive changes, a fast-turnaround TSG ballot would be appropriate; he suggested two weeks. Mr. Smithpeters agreed, and Chairman Miller observed the consensus of TSG to proceed in this manner. Restating the motion:

Mr. Smithpeters **moved** that the changes proposed to T3S2-006r9 by the S2 ballot reconciliation committee be accepted by TSG through a letter ballot of two weeks length.

The motion was **approved** as amended. Chairman Miller asked Mr. Smithpeters to prepare a change summary sheet to accompany the TSG ballot.

11.3 Future Work Items for TSG/S2

Mr. Smithpeters suggested the following near-term Work Plan for TSG/S2:

- Assist ATSC staff in any final editing on T3S2-006r9
- Continue to collect ACAP-related specification issues
- Await further direction from TSG

This recommendation was accepted by TSG.

12. REPORT OF THE SPECIALIST GROUP ON DIGITAL ENG, TSG/S3 (DANE ERICKSEN)

Dane Ericksen (Hammett & Edison, representing SBE), Chair of TSG/S3, outlined current work of the specialist group.

12.1 Status Report

Mr. Ericksen reported that six meetings of S3 have taken place since the February 9 TSG meeting, including an in-person meeting (with 15 attendees) on April 16 in Las Vegas, coincident with the 2005 NAB Convention. He said the current membership of S3 numbers approximately 35 persons, which includes about a half-dozen new members, as a result of contacting parties that had not responded to the original e-mail invitations but who nevertheless appeared to have a “stakeholder” interest in the work of S3. He said there is a core group of about a dozen persons that have participated on nearly all of the conference calls.

Mr. Ericksen said S3 has looked very closely at A/110, “Synchronization Standard for Distributed Transmission,” because the RF watermark signal is of considerable interest in the data return link (DRL) work. In addition, he said a TIA standard relating to “APCO Project 25” has been identified as potentially useful for a planned emissions mask measurement Recommended Practice. Liaison with TIA regarding this document is pending.

12.2 Draft Work Plan

Mr. Ericksen reported that S3 has completed an updated draft version of its Work Plan and Statement of Need (**Attachment 5**). He noted the following major goals from the document:

- *Remote ENG Communications project*: Working Draft specification ready for TSG distribution for comment by September 21; request for elevation to Candidate Standard on December 14.
- *ENG-RO Data Return Link project*: Working Draft specification ready for TSG distribution for comment by September 21; request for elevation to Candidate Standard on December 14.

Mr. Ericksen asked for TSG acceptance of the S3 draft Work Plan. Mr. Krauss questioned whether the planned Candidate Standard phase was necessary. Mr. Whitaker, acting Secretary of S3, said the CS phase was built into the draft Work Plan to permit implementers to begin working with the specifications as quickly as possible. Chairman Miller noted that S3 can always recommend to TSG that the CS step be bypassed if the committee feels it is not needed.

Chairman Miller observed the consensus of TSG to accept the proposed S3 Work Plan.

13. REPORT OF THE AHG ON THE USE OF ADVANCED VIDEO CODECS (ROBERT RAST)

Mr. Rast reminded TSG members that the Advanced Coded AHG was created at the 16 November 2004 TSG meeting to study the codec question and report back to TSG with recommendations. Members of the AHG include Mr. Rast (Chair), Ms. Aylsworth, Mr. Tanner, and Chairman Miller. Mr. Rast reviewed the status of the group's work (**Attachment 14**). He said preliminary agreement has been formed on the general approach, although more work is needed on some details. He said the AHG expects to complete its work by next TSG meeting.

Mr. Rast went on to outline the AHG's preliminary recommendations, the major element of which is to conduct a vote within TSG on two questions:

- 1) TSG supports the consensus reached in S6 that ATSC standardize at least one video codec, in addition to MPEG-2, for use in E-VSB. (Yes or No)
- 2) Should the ATSC standardize two video codecs, in addition to MPEG-2? (Yes or No)

Mr. Rast said that if the TSG voting does not result in a clear resolution, the ATSC Chairman may authorize a vote of the entire ATSC membership. Before voting, he said, appropriate briefing(s) would occur and an explanatory statement would accompany the membership ballot.

Mr. Rast recognized the requirement to "do nothing to preclude the use of advanced codecs in the main stream," which has been agreed to by TSG previously. Mr. Einolf pointed out that considerable work has been done by TSG/S6 and that this documentation should be made available at any briefing. Further discussion focused on how the work of the AHG could best move forward by maximizing the amount of information available to members. The expected timeline for the ongoing work of the AHG was also reviewed. Mr. Richer suggested that the AHG could establish a set of milestones, and Mr. Rast agreed this would be useful.

A straw poll of TSG members showed general support for the approach proposed by the AHG. Mr. Rast thanked TSG for their comments.

14. REPORT OF THE SPECIALIST GROUP ON VIDEO AND AUDIO CODING, TSG/S6 (PAT WADDELL)

Pat Waddell (Harmonic), Chair of TSG/S6, reported on current work within the specialist group (**Attachment 15**).

14.1 S6-1 AHG Status

Mr. Waddell updated the committee on the work of the S6 AHG on 1080P, S6-1, which has been considering:

- Inclusion of 1080P/60 in Table 3 of each draft Annex F
- Mandating the use of AVC High Profile for SD

Mr. Waddell said the discussion regarding the inclusion of 1080P/60 has been completed, and the consensus is "yes, but constrained to not be available in the robust stream." He said draft language for each draft Annex F (AVC and VC-1) is currently being written.

Mr. Waddell reported that work continues regarding the use of AVC HP for SD coding, adding that S6 would appreciate participation in this discussion by receiver chipset manufacturers.

Several members, including Mr. Narasimhan, Matthew Goldman (Tandberg), and Arturo Rodriguez (Scientific Atlanta), expressed support for AVC HP for both SD and HD, noting its

superior performance over MP. Mr. Rodriguez said silicon vendors providing solutions for CE devices/products are supporting AVC HP.

Mr. Waddell encouraged TSG members to participate in the ongoing work of the ad-hoc group.

14.2 Closed Captions

Mr. Waddell called attention to the joint CEA/ATSC/SMPTE Revision Steering Committee focusing on DTV closed captioning. He reported that Mr. Dolan (TBT) has drafted a proposed change to A/53C Annex A, Section 5.2, which defines `cc_data()` in a manner that permits it to be cleanly removed and placed into CEA-708-C. Annex A would then normatively reference the CEA-708-C definition.

14.3 Advanced Video Codec Documentation

Mr. Waddell, while acknowledging the difficulty of this task, nonetheless reported some progress. He said interaction with transport issues to make potential low-bitrate applications more efficient may impact work now underway in S6. He said some minor fixes to A/53C Annex A will also need to be made relating to MPEG-2 use in E-VSB. He added that the “one codec or more-than-one codec” issue still looms. He commented that that the “two Annex F” approach is cumbersome and that a single Annex to document both codecs might be cleaner.

14.4 Low Delay Mode

Mr. Waddell briefed the committee on the background of this discussion, which began several months ago. He said there is support for documenting low delay as some MPEG-2 encoders make use of it now and some do not. Therefore, he stated, there is a need for appropriate documentation to ensure interoperability. Mr. Waddell encouraged interested parties to participate in this ongoing S6 discussion.

14.5 CS/T3-614 Status

Mr. Waddell noted that CS/T3-614A, the proposed A/53C Annex G describing E-AC-3, will revert to Working Draft status on May 10 unless some action is taken by TSG today. He asked that TSG direct S6 to evaluate CS/T3-614A at its next meeting to ensure that any necessary technical changes resulting from the approval of PS/52Br4 are made, and once this is done to issue a TSG letter ballot as a Proposed Standard.

Mr. Allison **moved** that CS/T3-614A be sent to a letter ballot of TSG as a Proposed Standard, following a brief review period for integration of any modifications necessary because of changes specified in PS/52Br4. **Seconded** by Mr. Todd. The motion was approved without objection.

Chairman Miller asked Mr. Todd to develop a brief “change document” to accompany the ballot.

15. REPORT OF SPECIALIST GROUP ON DATA MULTIPLEX/TRANSPORT, T3/S8 (MARK EYER)

Mark Eyer (Sony), Chair of TSG/S8, reported on current activities within the specialist group (**Attachment 16**).

15.1 AHG Status

Mr. Eyer reported on the status of TSG/S8 ad-hoc groups, specifically:

- **S8-1, E-VSB Transport.** Mr. Eyer said this AHG has reviewed the use of low delay modes in MPEG-2 and specified still pictures for MPEG-2 in TS-E. Regarding CS/T3-608B, the AVC version of the proposed A/53C amendment, the AHG has updated the video PES constraints and inherited constraints present in ETSI TR 101 154 v1.7.7. For CS/T3-609B, the VC-1 version of the proposed A/53C amendment, the AHG has updated SMPTE references to VC-1 as needed and addressed various transport issues.
- **S8-4, Transport Standards Update.** Mr. Eyer reported that the AHG has completed its work on maintenance revisions of A/53C and A/65B. The AHG has also developed the appropriate “change description and motivation” documents. Mr. Eyer thanked Mr. Chernock for his work in leading this AHG.

15.2 Presentation of WD/53D, Working Draft Revision to A/53C

Mr. Eyer reported that work has been completed on a full revision of A/53C. The document, TSGS8-580r1 was posted to the TSG reflector on April 28 in “clean” and “change-tracked” versions; changes are shown against the current A/53C, with Amendment 1 and Corrigendum 1 rolled up (**Attachment 17**). Document TSG-628 reviews the proposed changes and the reasoning behind them (**Attachment 18**). Key items addressed in this revision include the following:

- Reference updates
- Tightened standards language
- Clarified that ATSC does not define a NIT PID
- Restricted use of descriptors to one of a given tag in a given loop (except ATSC Private Information descriptor)
- In two years, the ISO-639 language code in the AC-3 Audio Descriptor indicates audio language; ISO-639 Language Descriptor is deprecated
- Reference to A/74 replaces Annex E (Receiver Characteristics)

Mr. Eyer reported the consensus recommendation of S8 to send TSGS8-580r1 to a letter ballot of TSG as a Proposed Standard. He so **moved**. Mr. Einolf noted that other amendments to A/53C are in progress and that it would be beneficial to have all changes rolled up into “A/53D” at the end of the approval process. Mr. Richer clarified the procedure for moving forward. He recommended that the changes to A/53, and for that matter A/65, be called “revisions” in order to permit folding the changes into a new version of the standard. Restating his motion, Mr. Eyer offered the following revised text:

Moved that the proposed revision of A/53C described in TSGS8-580r1 be sent to a letter ballot of TSG as a Proposed Standard.

The motion was **approved** without objection.

15.3 Presentation of WD/65C, Working Draft Revision to A/65B

Mr. Eyer reported that work has been completed on a full revision of A/65B. The document, TSGS8 581r1 was posted to the TSG reflector on April 28 in “clean” and “change-tracked” versions; changes are shown against A/65B (**Attachment 19**). Document TSG-629 reviews the changes and the reasoning behind the proposed changes (**Attachment 20**). Key items addressed in this revision include the following:

- Updated references
- Tightened standards language
- Added table and descriptor length extensions
- Disallowed duplicate major/minor number pairs in the VCT
- Various changes to the Caption Service Descriptor for clarity
- Added Genre Descriptor
- Annex B changed to address possible channel numbering issues after repacking
- Updated Annex G (PSIP on Cable)
- Deleted Annex H, Table of County Codes, as FIPS 6-4 is now correct

Mr. Eyer reported the consensus recommendation of S8 to send TSGS8-581r1 to a letter ballot of TSG as a Proposed Standard. He **moved** that the proposed revision of A/65B described in TSGS8-581r1 be sent to a letter ballot of TSG as a Proposed Standard. The motion was **approved** without objection.

Chairman Miller noted that in Amendment No. 1 to A/65B (approved by the membership but not published) may need to be reconciled with the changes specified in TSGS8-581r1. Furthermore, he observed that the normative reference issue needs to be examined. He asked Mr. Eyer and S8 to review “PS/606” and report back with recommendations.

15.4 Recommendation to Allow CS/T3-608/609 to Revert Back to Working Draft Status

Mr. Eyer noted that the Candidate Standard periods for the two E-VSB transport specifications—CS/T3-608B, the AVC version of the proposed A/53C amendment; and CS/T3-609B, the VC-1 version of the proposed A/53C amendment—expire on May 10. He reported that S8 does not recommend extending the Candidate Standard status of these documents, thus allowing them to revert to Working Draft status.

Dick Streeter (CBS) questioned whether consensus was reached within S8 on this point. Mr. Eyer confirmed that it was. Mr. Einolf argued against letting CS/T3-608B and CS/T3-609B return to Working Draft status. He said having the documents disappear from public access would be a considerable mistake, and would do a disservice to implementers. Mr. Allison pointed out that errors currently exist in both documents.

15.4.1 Reconsideration of Approach to E-VSB Transport Documentation

Mr. Eyer reported that S8 recommends temporary suspension of advanced codec transport documentation in favor of completing a basic E-VSB transport specification, which would take the form of an amendment to A/53C. He said that, in the meantime, S8-1 would continue to work on refinement of TSG-608B and TSG-609B. In other words, Mr. Eyer explained, S8 proposes to postpone description of any new video codec in the E-VSB transport specification until related work on video codecs in S6 has progressed further.

He stated that the proposed approach would retain the following Robust Mode functionality:

- Fallback audio-only via AC-3 or E-AC3
- Fallback audio + MPEG-2 video
- “Unassociated/small-screen service” reserved for future definition

This approach to specifying the E-VSB transport would, thus, enable purely private use of E-VSB. Mr. Eyer reported that S8-1 has produced a draft E-VSB-enabled Annex C by deleting the new-codec-specific portions of CS/T3-608B and CS/T3-609B.

Mr. Eyer reported the consensus recommendation from S8 to request TSG approval of this documentation change. Chairman Miller summarized the situation. He pointed out that if TSG does nothing on 608/609, they will revert to Working Draft on May 11. Discussion followed on the choices available to TSG on this point.

Mr. Goldberg said the question is whether we want to put forward a correct document, or continue with an incorrect document. Mr. Allison outlined the reasons for suggesting this change, adding that work would continue to revise and update the existing, codec-specific documents. Ms. Aylsworth spoke in favor of the approach, saying it would allow broadcasters to move forward with E-VSB applications. Mr. Reitmeier spoke in favor of the change, saying his organization is interested in fallback audio applications, which this proposal would facilitate. Mr. Narasimhan questioned whether this proposal would result in a Candidate Standard. Mr. Eyer said S8 has not discussed this as of yet.

Chairman Miller determined the consensus of TSG to proceed as recommended by S8.

15.5 Proposed A/69 Update

Mr. Eyer reported that A/69, "PSIP Implementation Guidelines for Broadcasters" (June 2002), needs some attention. He said there is at least one known error: "The System Time data is required to be no less accurate than plus or minus four seconds". He said this document should be brought in line with the planned A/53D and A/65C.

Chairman Miller observed the consensus of TSG that S8 should move forward on this project.

16. REPORT OF THE SPECIALIST GROUP ON RF TRANSMISSION, T3/S9 (CHARLES EINOLF)

Charles Einolf (UPN), Chair of TSG/S9, reported on current activities in the specialist group (**Attachment 21**).

16.1 Status Report

Mr. Einolf reviewed the S9 Scope and Work Plan, updating committee members on the progress made toward meeting key milestones (see **Attachment 21**). Activities within the three S9 ad-hoc groups (S9-1 "Multiple Transmitter Networks," S9-2 "E-VSB Implementation Guidelines," and S9-3 "Signaling Extensions and Enhancements") are reported in the sections below.

16.2 Draft Corrigendum 1 to A/110, Request for Elevation to Proposed Standard

Mr. Einolf reported that a Corrigendum to A/110 has been developed (TSGS9-672A) by S9-1 that involves rewording of sections related to timing to reduce potential misinterpretation. The Working Draft document was posted to the TSG reflector on May 3 (**Attachment 22**). He said a summary document explaining the reasoning for the proposed corrigendum has also been developed and provided to TSG (**Attachment 23**).

Mr. Einolf reported the consensus recommendation of S9 to elevate TSGS9-672A to Proposed Standard, after which it would be forwarded to the ATSC membership for ballot. He so **moved**. The motion was **approved** without objection.

16.3 Draft Amendment 1 to A/110, Request for Elevation to Proposed Standard

Mr. Einolf reported that S9-1 has developed a proposed amendment to A/110 that modifies the RF watermark signal to permit increased data rates (TSGS9-271r1). This document was posted

to the TSG reflector on May 3 (**Attachment 24**). He said a summary document explaining the reasoning for the proposed amendment has also been developed and provided to TSG (**Attachment 25**).

Mr. Einolf reported the consensus recommendation of S9 to elevate TSGS9-271r1 to Proposed Standard, after which it would be forwarded to the ATSC membership for ballot. Mr. Einolf also reported the consensus recommendation of S9 that upon approval, Corrigendum 1 and Amendment 1 to A/110 be editorially merged into A/110 to form A/110A. Chairman Miller voiced his preference that the proposed amendment be sent to a letter ballot of TSG. The committee agreed.

Mr. Einolf **moved** that the proposed revision of A/110 with Corrigendum No. 1 as described in TSGS9-171r1 be sent to a letter ballot of TSG as a Proposed Standard. **Second** by Mr. Weiss. The motion was **approved** without objection.

16.4 Draft Amendment to "A/53C with Amendment 1 and Corrigendum 1" for TSG Ballot Approval

Mr. Einolf reported that S9-3 has developed a proposed amendment to "A/53C with Amendment 1 and Corrigendum 1" that facilitates future extensions and enhancements to 8-VSB transmission. This document, TSGS9-266r2, was posted to the TSG reflector on May 3 (**Attachment 26**), along with a rationale for the proposed changes (**Attachment 27**).

Mr. Einolf reported the consensus recommendation of S9 to send TSGS9-266r2 to a letter ballot of TSG as a Proposed Standard. He therefore **moved** that the proposed revision of A/53C described in TSGS9-266r2 be sent to a letter ballot of TSG as a Proposed Standard. The motion was **approved** without objection.

16.5 Request for Approval to Re-organize the EVSB Implementation Guideline Document

Mr. Einolf reported that work continues within S9-2 on the Implementation Guidelines document. He said the draft IG currently contains substantial portions of completed material but that some sections are awaiting resolution of issues currently being discussed in other ATSC specialist groups. Therefore, Mr. Einolf said, S9 requests approval from TSG to modify the S9 work plan to re-organize the E-VSB IG document so as to facilitate more expeditious release of the material already developed. Chairman Miller observed the consensus of TSG to proceed in this manner.

17. REPORT OF THE SPECIALIST GROUP ON DATA BROADCAST, T3/S13 (MIKE DOLAN)

Mike Dolan (TBT), Chair of TSG/S13, reported on activities within the specialist group (**Attachment 28**).

17.1 ACAP Announcement

Mr. Dolan reminded the committee that this work item involves an S1 requirement to add ACAP support to PMCP, including announcement. S2 previously deferred this activity to S13. He said the requirements have been completed and a basic design proposed, which is expected to result in a small separate standard. Mr. Dolan reported that consideration of a new DVB work item for MHP announcement could obsolete this work. Depending on DVB input, he added, S13 might have a document ready for consideration at the next TSG meeting.

17.2 A/9x Revision

Mr. Dolan reported that work continues on A/9x harmonization with the ACAP transport specification. He said the A/90 revision will follow the ACAP announcement design, and that the DST and DSD will be optional. Mr. Dolan said there was no progress to report on the planned A/95 revision, adding that the schedule for completion of this work is uncertain. He encouraged interested members to participate in this work.

17.3 Caption Carriage in E-VSB and with New Codecs

Mr. Dolan reported that a caption carriage Requirements document has been completed. The document, S13-270r3, was posted to the TSG reflector on February 25 (**Attachment 29**). He reported S13 agreement on:

- *Normal programming.* “Normal” is when video has an encoded frame for each display frame. Mr. Dolan said the consensus is to include the caption packet in the video ES (SEI, Userdata, etc., depending on codec). He reported a minority position from broadcast members that captions should be in a separate PES stream.
- *Non-normal programming.* “Non-normal” consists of the following scenarios: 1) audio only (including fallback audio), 2) no video or audio (captions only), and 3) video encoded with less than one encoded picture per display picture (i.e., low_delay or still frame modes).

Mr. Dolan noted the group is re-evaluating the following technical approaches:

- “Black frame” minimal MPEG video ES with Userdata
- Separate PES with cc_data()
- Audio (AC-3) metadata
- Adaptation header

Mr. Dolan said the goal is to have a CS document ready for TSG consideration by the September 21 meeting.

17.4 S13 Priorities

Mr. Dolan outlined the current priorities of S13, namely: 1) caption carriage, 2) ACAP announcement and PSIP integration, and 3) A/9x harmonization with ACAP transport. TSG endorsed this approach.

17.5 Coordination of Caption Standards among CEA, SMPTE, and ATSC

Mr. Dolan reminded the committee that at the last TSG meeting there was a brief discussion of coordination activities among ATSC, CEA, and SMPTE regarding closed caption standards. He noted there is a need to reconcile these organizations’ existing standards without changing how the caption system works.

Mr. Dolan called attention to an analysis of DTVCC standards scopes prepared by CEA (**Attachment 30**) and posted to the TSG reflector on May 2. He suggested that the issues relevant to TSG are:

- Moving cc_data definitions from A/53 Annex A to CEA 708
- The relationship of the Caption Service Layer to A/65
- Whether DTVCC authoring and encoding for transmission should be covered in ATSC documents

Mr. Dolan invited interested persons to contact Mr. Whitaker and ask to be added to the DTVCC reflector.

18. SCHEDULE OF NEXT T3 MEETING

The next meeting of the ATSC Technology and Standards Group will be held on 21 September 2005.

19. ADJOURNMENT

There being no further business before the committee, the meeting was adjourned at 5:00 p.m. EDT.

Action Items Developed at this Meeting

The following action items were developed at today's meeting. Items carried forward from a previous meeting are noted by [date]:

- 1) Sam Narasimhan to post a summary of relevant MPEG standards to the TSG reflector for information purposes. [2005-02-09]
- 2) Rich Chernock to lead an AHG to study and respond to the Board motion regarding verification of ATSC transport streams.
- 3) Jerry Whitaker to set up a reflector and document repository, if needed, to support the AHG on Transport Stream Verification.
- 4) John Henderson to lead an Architecture Team study of the A/53 document structure and report back to TSG at the September 21 meeting with recommendations.
- 5) Adam Goldberg to lead an AHG consisting of interested TSG members to work toward arriving at an agreement on the question: "Should ATSC embark upon SRM work, and if so, what form should the document take? The response to TSG from the AHG should include the reasoning for the recommendation. The AHG is to use the output documents developed by the SRM AHG as input.
- 6) Jerry Whitaker to set up a reflector and other necessary facilities for use by the new TSG AHG on SRM.
- 7) ATSC staff to issue a 2-week TSG ballot on T3S2-006r9.
- 8) Craig Smithpeters to prepare a change summary sheet to accompany the TSG ballot on T3S2-006r9.
- 9) ATSC staff to issue a TSG ballot on CS/T3-614A, following a brief review period for integration of any modifications necessary because of changes specified in PS/52Br4.
- 10) Craig Todd to develop a brief "change document" to accompany the ballot on CS/T3-614A.
- 11) ATSC staff to issue a TSG letter ballot on the proposed revision of A/53C described in TSGS8-580r1 as a Proposed Standard.
- 12) ATSC staff to issue a TSG letter ballot on the proposed revision of A/65B described in TSGS8-581r1 as a Proposed Standard.
- 13) Mark Eyer and TSG/S8 to review "PS/606" and report back with recommendations on how to proceed, specifically how to deal with the open normative reference issue.
- 14) ATSC staff to issue a membership ballot on TSGS9-672A as Corrigendum No. 1 to A/110.
- 15) ATSC staff to issue a TSG letter ballot on the proposed revision of A/110 with Corrigendum No. 1 described in TSGS9-171r1 as a Proposed Standard.
- 16) ATSC staff to issue a TSG letter ballot on the proposed revision of A/53C described in TSGS9-266r2 as a Proposed Standard.

Attachments

- Attachment 1.** Attendance List (* denotes attending by telephone)
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_1_attendance_05_09_05.xls
- Attachment 2.** Draft Agenda
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_2_TSG-626r2_draft_TSG_agenda_2005-05-09.doc
- Attachment 3.** Draft Minutes from T3 Meeting of 9 February 2005
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_3_T3-622r2.doc
- See also:
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_3a_T3-622r3.doc
- Attachment 4.** TSG/S2 ACAP Issues Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_4_TSGS2-050.doc
- Attachment 5.** TSG/S3 Draft Work Plan
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_5_T3S3-005r4.doc
- Attachment 6.** TSG SRM AHG Draft Requirements
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_6_ATSC%20SRM%20Draft%20Requirements%20rev1.0.doc
- Attachment 7.** TSG SRM AHG Draft Work Statement
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_7_ATSC%20SRM%20Draft%20Work%20Statement%20rev1.0.doc
- Attachment 8.** TSG SRM AHG Status Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_8_TSG-SRM-AHG_Status_Report_5-05d.ppt
- Attachment 9.** TSG/S1 Status Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_9_T3-S1%20report%202-09-05.doc
- Attachment 10.** TSGS2 Status Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_10_TSGS2-051.ppt
- Attachment 11.** T3S2-006r9, ACAP
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_11_T3S2-006r9.pdf
- Attachment 12.** T3S2-006r9, ACAP Document Comparison
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_12_T3S2-006r9_cmp_r8.pdf
- Attachment 13.** T3S2-046, ACAP Comment Resolution Spreadsheet
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_13_T3S2-046r12.xls
- Attachment 14.** Video Codec AHG Status Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_14_05-09%20S6%20Impasse%20Ad%20Hoc%20Status.ppt#538,5,S6_Impasse_Ad_Hoc_Group
- Attachment 15.** TSG/S6 Status Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_15_TSGS6-353r3%20S6%20status%202005-05-09.ppt
- Attachment 16.** TSG/S8 Status Report
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_16_TSGS8-585r2_S8_Status_Report_5-05.ppt
- Attachment 17.** TSGS8-580r1 WD Revision of A/53C
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_17_TSGS8-580r1_WD_Revision_A53C_Cln.pdf
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_17a_TSGS8-580r1_WD_Revision_A53C_TrkChg.pdf
- Attachment 18.** TSG-628, Proposed A/53C Changes
http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_18_TSG-628_A53C_changes.doc

Attachment 19. TSGS8-581, WD Revision of A/65Bhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_19_TSGS8-581r1_WD_Revision_A65B%20Cln.pdfhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_19a_TSGS8-581r1_WD_Revision_A65B%20TrkChg.pdf**Attachment 20.** TSG-629, Proposed A/65B Changeshttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_20_TSG-629_A65B_Changes.doc**Attachment 21.** TSG/S9 Status Reporthttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_21_ATSC%20T3S9%20Status%20May%202005.pdf**Attachment 22.** TSGS9-672, Draft A/110 Corrigendumhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_22_TSG672-A_110_Corrigendum%201_WDr1.pdf**Attachment 23.** A/110 Corrigendum Explanationhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_23_A-110%20Corrigendum%201%20Explanation.pdf**Attachment 24.** TSGS9-271r1, Working Draft Amendment to A/110http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_24_TSGS9doc271r1-WD-A110%20Amend1-RF_Watermark_Modulation.pdf**Attachment 25.** Proposed A/110 Amendment Explanationhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_24_TSGS9doc271r1-WD-A110%20Amend1-RF_Watermark_Modulation.pdf**Attachment 26.** TSGS9-266r2, Proposed Amendment to A/53Chttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_26_S9-266r2_Amendment%20%20to%20A-53C%20with%20Amd1&Corr1.pdf**Attachment 27.** Proposed A/53C Amendment Explanationhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_27_TSGS9doc268r1-AspectsofVSBExt-bits.pdf**Attachment 28.** TSG/S13 Status Reporthttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_28_S13-289R1-Status-20050509.ppt**Attachment 29.** S13-270r3, E-VSB Caption Requirements[http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_29_S13-270R3-CaptionRequirements\(non-redline\).doc](http://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_29_S13-270R3-CaptionRequirements(non-redline).doc)**Attachment 30.** DTVCC Standards Scope Reviewhttp://www.atscmembers.org/sg/T3/2005_05_09/documents/Attachment_30_TSG-630_CEA-708_Scope_review.doc