

February 28, 1991

To: Distribution
From: Birney Dayton, Chairman SS/WP-1
Subject: 1991 Meeting and Deadline Schedule

In order to support the work of SS/WP-2 and the ATTC, SS/WP-1 will need to follow a very tight schedule throughout 1991. The following list of dates works around major events such as industry shows as much as possible. Due to the need to avoid events with meeting dates, some proponents will need to submit final system data somewhat earlier than 90 days prior to test.

- Feb 28: Last date for receipt of digital system descriptions from MIT, Zenith and ATRC.
- Mar 8: Last date for receipt of final system description of Narrow Muse from NHK.
- Mar 20-22: Three day WP-1 meeting for presentation and pre-certification of Zenith, ATRC, and MIT digital systems and final certification of NHK Narrow Muse.
- Apr 14: Revised final report on Narrow Muse due from Analysis Task Force.
- May 24: Last date for receipt of final system description of DigiCipher system from General Instrument.
- Jun 6: WP-1 meeting for final certification of DigiCipher system
- Jun 27: Revised final report on DigiCipher system due from Analysis Task Force.
- Jul 25: Last date for receipt of final system description of Zenith Digital system.
- Aug 8: WP-1 meeting for final certification of Zenith Digital system.
- Aug 22: Revised final report on Zenith Digital system due from Analysis Task Force.
- Sep 26: Last date for receipt of final system description of ATRC Digital System.
- Oct 10: WP-1 meeting for final certification of ATRC Digital System.
- Oct 31: Revised final report on ATRC Digital System due from Analysis Task Force.

- Dec 3: Last date for receipt of final system description of MIT Channel Compatible System.
- Dec 17: WP-1 meeting for final certification of MIT Channel Compatible System.
- Jan 9, '92: Revised final report on MIT Channel Compatible System due from Analysis Task Force.

At this time, barring special circumstances, I anticipate that all the WP-1 meetings will be held in Washington D.C.

**FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE
SYSTEMS SUBCOMMITTEE
WORKING PARTY ON SYSTEM STANDARDS (SS/WP4)**

OUTLINE FOR 1992 FINAL REPORT

- 1. Executive Summary**
- 2. Introduction**
- 3. Background and History**
- 4. Contributions from the Planning Subcommittee**
 - 4.1. WP1 — Working Party on Technology Attributes and Assessment
 - 4.2. WP2 — Working Party on Testing and Evaluation Specifications
 - 4.3. WP3 — Working Party on Spectrum Utilization and Alternatives
 - 4.4. WP4 — Working Party on Alternative Media Technology and BC Interface
 - 4.5. WP5 — Working Party on Economic Factors and Market Penetration
 - 4.6. WP6 — Working Party on Systems Subjective Assessment
 - 4.7. WP7 — Working Party on Audience Research
 - 4.8. AG1 — Advisory Group on Creative Issues
 - 4.9. AG2 — Advisory Group on Consumer/Trade Issues
- 5. Contributions from the Systems Subcommittee**
 - 5.1. WP1 — Working Party on Systems Analysis
 - 5.2. WP2 — Working Party on Testing and Evaluation
 - 5.2.1. ATTC Report
 - 5.2.2. CableLabs Report
 - 5.2.3. CRC Report
 - 5.2.4. Field Test Report
 - 5.3. WP3 — Working Party on Economic Assessment
 - 5.4. WP4 — Working Party on System Standards
- 6. Contributions from the Implementation Subcommittee**
 - 6.1. WP1 — Working Party on Policy and Regulation
 - 6.2. WP2 — Working Party on Transition Scenarios

7. Selection Criteria

- 7.1. Policy and Regulatory Issues
- 7.2. Spectrum Utilization
 - 7.2.1. Coverage Area
- 7.3. Economics
 - 7.3.1. Cost to Broadcasters
 - 7.3.2. Cost to Alternative Media
 - 7.3.3. Cost to Consumers
 - 7.3.3.1 Receivers
 - 7.3.3.2 VCRs
 - 7.3.3.3 Antennas/Receiving Equipment
- 7.4. Technology
 - 7.4.1. Total Viewing Experience Compared to NTSC
 - 7.4.2. Transmission Robustness
 - 7.4.3. Range of Services and Features
 - 7.4.4. Extensibility
 - 7.4.5. Interoperability Considerations

8. Analysis of System Data

- 8.1. System A
 - 8.1.1. Policy and Regulatory Issues
 - 8.1.2. Spectrum Utilization
 - 8.1.3. Economics
 - 8.1.4. Technology
- 8.2. System B
 - 8.2.1. Policy and Regulatory Issues
 - 8.2.2. Spectrum Utilization
 - 8.2.3. Economics
 - 8.2.4. Technology
- 8.3. System C
 - 8.3.1. Policy and Regulatory Issues
 - 8.3.2. Spectrum Utilization
 - 8.3.3. Economics
 - 8.3.4. Technology
- 8.4. Other Sections as necessary (one per system)

9. Recommendations

- 9.1. Policy
- 9.2. Technology and Standards
- 9.3. Regulatory Issues

- 10. Implementation Plan**
- 11. Future Work**
 - 11.1. Development of Standards
- 12. Conclusions**
- 13. Notes and Comment**
- 14. Bibliography**
- 15. Acknowledgements**

Appendices

- A1. Raw Data
- A2. Methods of Data Reduction

Philosophy for 1992 Final Report

This attachment to the draft "Outline for 1992 Final Report" of the Working Party on System Standards (SS/WP4) has been written to articulate clearly the philosophy contained in the outline.

The primary goal of the final report is to help the FCC choose an ATV terrestrial broadcasting standard. SS/WP4 results must be usable to that end. The work must take into account issues of inter-operability with alternative media. Secondly, the report should provide the affected industries with information needed to plan and implement an ATV system. The second goal is important, but only after the first is satisfied.

The first three chapters are self-explanatory and will be written by SS/WP4. Chapters 4, 5, and 6 are intended to be input contributions from the various groups named. Detailed outlines for these chapters will be written by SS/WP4 in early 1991 and distributed to the other groups as a means of guiding their input to SS/WP4. The rest of the final report is the output of SS/WP4.

The substantive work of SS/WP4 begins with Chapter 7 entitled "Selection Criteria". Its existence was suggested by a need to develop, understand, and write down those issues which will set the context for a recommendation. While not completely separable, those issues are, in general, independent of any specific implementation. This chapter is intended to be a discussion, based on real-world constraints and considerations, of what is important, and why. It is, in a very real sense, the foundation upon which the rest of the report and the rest of SS/WP4's work will be based. Logically, then, it will be the first chapter written.

The four sections of Chapter 7 — "Policy and Regulatory Issues", "Spectrum Utilization", "Economics", and "Technology" — identify a set of critical objectives to guide the work of SS/WP4. There may be other considerations identified and added later, but these four topics address issues which are critical to the success of any system. The first section, "Policy and Regulatory Issues", will ask, and hopefully answer, questions such as: Can existing television licensees be granted additional allocations for a simulcast ATV broadcast, or must all interested parties be given an equal opportunity to compete for any available spectrum? This is clearly an issue requiring legal review and SS/WP4 will seek advice from the Implementation Subcommittee. It is also an issue which applies equally to any and all specific systems under consideration and, in that sense, is independent of which proponent system is being discussed.

Having answered the first series of questions, Chapter 7 will then proceed to consider issues of spectrum utilization. Is enough additional spectrum available to accommodate all existing licensees? If not, what is an acceptable accommodation percentage? Must any new ATV system respect existing NTSC coverage contours? If yes, what D/U does that imply? If no, what new contours are acceptable? How does the new coverage pattern change the existing concept of markets or ADIs? What impact will the new definition have on the number of viewers, and on spot rates, the true bottom line for a broadcaster. Must some systems be eliminated from further consideration because they cannot be broadcast with sufficient power to maintain current contours without adversely affecting adjacent or co-channel ATV stations, or existing NTSC stations? This kind of information is clearly critical to help the FCC make a decision, and important for the industry.

Economics are also critically important, to the broadcasters, alternative media, receiver manufacturers, and consumers. No system will be accepted, regardless of the signal quality transmitted, if reasonably priced receivers cannot be manufactured or TV stations cannot afford the necessary production and transmission equipment. These issues, as well as scenarios for projected receiver penetration rates at various prices and consumer willingness-to-pay information (if any is available) will be discussed in this section of Chapter 7.

The last section of Chapter 7 deals with issues of technology. In particular, section 7.4.1 requires some explanation. SS/WP4 intends to discuss some very amorphous matters. Picture and sound quality are certainly part of the total viewing experience, as is sound image, the number and psychoacoustic arrangement of the sound channels and their relationship to the video. Artifacts, or freedom from them, also contribute to the experience, as does the availability of ancillary services. There are other factors as well, but the point of this section is to try to understand whether, after paying a substantial amount of money for an ATV system, consumers will be happy with the result.

Chapter 8 contains the analysis of the actual system test data. The word "system" in the title underscores this fact. While Chapter 7 discusses issues relevant to all systems, Chapter 8 takes a different, but equally important, perspective. It looks simultaneously at all the information collected about a single system. The system data is grouped into the same categories as were explored in Chapter 7. The yardstick created is then used to judge system performance. A very practical benefit of this approach is that each section of Chapter 8 can be written in a pipeline fashion as the test data becomes available.

After all the groundwork is completed, Chapter 9 gets to the very heart of the matter, the recommendation and its rationale. The real-world constraints and considerations of what is important are described in Chapter 7 and the systems in Chapter 8. Hopefully, by comparing the two, a course of action will be clear.

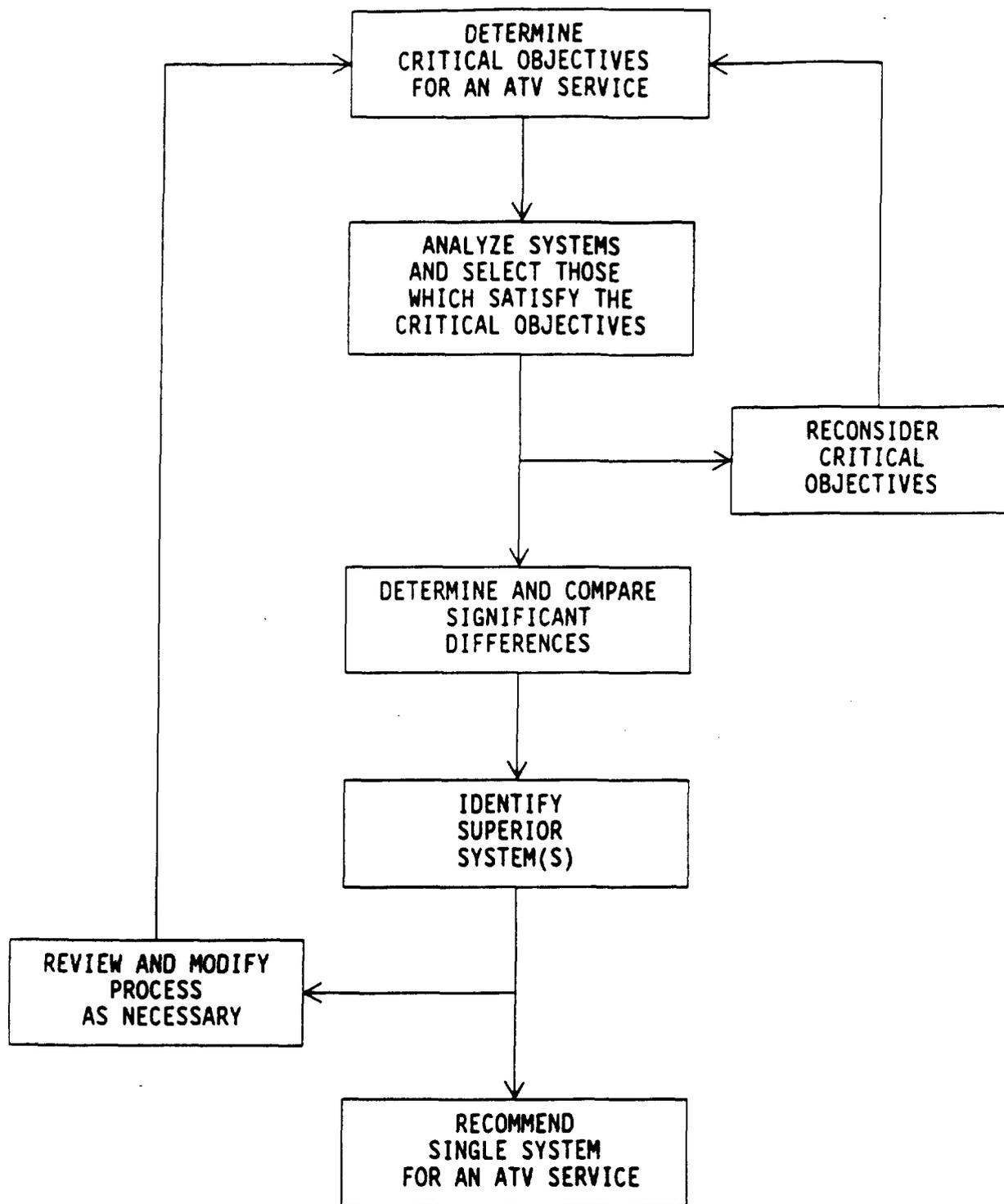
Comparative analyses of the systems will be heavily based on differences among the systems. If there are insignificant differences, that information will be given in the report, but it will not be part of the selection process. The analyses will be performed with respect to the individual issues raised in Chapter 7. If different systems excel in different areas, with respect to the Chapter 7 issues, it will be necessary to determine the relative importance of each of the issues.

The Scope of Activity given to the Systems Subcommittee states in part, "Recommend advanced television system(s) now under development as candidate(s) for implementation, or specify the design of an appropriate system." Specifying the design of an appropriate system may offer the best system, but risk and delay are introduced by such an approach. The job of SS/WP4 will be greatly simplified if any one proponent's system closely matches the critical objectives that are viewed as desirable features of an ATV service.

Once a recommendation is made, the next step is to help assure its adoption by developing an implementation plan. This is the subject of Chapter 10.

Chapter 11 is entitled "Future Work". For example, SS/WP4 has agreed that it will not be writing a standard in the manner of standards committees. That will be left, as necessary, to others. Suggestions for further work which should be done and how those tasks might be accomplished will be placed in this chapter.

Chapter 12 will contain any additional conclusions. The remainder of the chapters are self-explanatory.

SS/WP4 SELECTION PROCESS

**FCC ADVISORY COMMITTEE
ON ADVANCED TELEVISION SERVICE**

SYSTEMS SUBCOMMITTEE

Chairman:

Irwin Dorros (Bellcore)

Vice Chairman:

Tyrone Brown (Steptoe and Johnson)

Vice Chairman:

John Abel (NAB)

**WORKING PARTY 1
SYSTEMS ANALYSIS**

**WORKING PARTY 2
SYSTEM EVALUATION &
TESTING**

**WORKING PARTY 3
ECONOMIC ASSESSMENT**

**WORKING PARTY 4
SYSTEM STANDARD**

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**Hugo Gaggioni (Sony)
Bruce Sldran (Bellcore)
Louis Williamson (ATC)**

Listing of Systems Subcommittee Meetings

<u>Date</u>	<u>Location</u>
1/25/88	Washington, DC
4/13/88	Las Vegas, NV
8/10/88	Washington, DC
10/19/88	New York, NY
2/9/89	Washington, DC
5/31/89	New York, NY
8/1/89	New York, NY
11/28/89	Washington, DC
2/27/90	Washington, DC
6/21/90	Washington, DC
11/6/90	Alexandria, VA
2/21/91	Washington, DC

SS - 0000
07 Feb 91

ATV SYSTEMS SUBCOMMITTEE

Numbered Documents

<i>SS Number</i>	<i>Date</i>	<i>To/From/Subject</i>
0286	03/05/91	Dorros/Dayton/Submission for Fourth Interim Report
0285	02/11/91	Dorros/Richer/Submission for Fourth Interim Report
0284	02/15/91	SS/Dorros/2/15/91 Draft of Fourth Interim Report
0283	02/06/91	Richer/Dorros/Field Tests
0282	02/06/91	Dorros/Thorp/Submission for Fourth Interim Report
0281	02/20/91	Dorros/Hopkins/Submission for Fourth Interim Report
0280	01/14/91	Dayton/ID/New test schedule
0279	12/18/90	Wiley/Bingham, Carnes, Donahue/Proponent changes
0278	12/27/90	Chairs/Dorros/Advisory meeting - interim report
0277	12/14/90	Chairs/Dorros/Fourth interim report
0276	11/26/90	Dayton/Dorros/
0275	12/12/90	SS/Dorros/Next SS meeting
0274	12/10/90	SS/Dorros/Meeting minutes transmittal
0273	12/06/90	Meeting Minutes
0272	10/19/90	SS/ID/Mtg reminder letter
0271	10/15/90	Dorros/Richer/Completion of test procedures
0270	09/24/90	Wiley/Dorros/WP4 - Weighted voting
0269	09/24/90	Hopkins/Wiley/WP4 - Weighted voting
0268	09/20/90	Dayton/ID/Complete tech analysis
0267	09/11/90	Wiley/ID/Consensus conclusions
0266	09/11/90	Dorros/Wiley/Pearlman letter re: consensus conclusions
0265	09/06/90	Richer/Dorros/Retesting of systems
0264	08/16/90	SS/ID/SS Mtg notice change
0263	08/08/90	SS/ID/SS Mtg notice
0262	07/13/90	SS/Dorros/6/21/90 SS Meeting Minutes
0261	06/21/90	Weiss/NBC Statement on Prioritization of Testing of Systems
0260	06/21/90	Dayton/Dorros/Development of complete tech. analysis
0259	06/21/90	SS Committee/Bob Hopkins/CCIR IWP 11/6
0258	06/05/90	Gerdes/Dorros/Withdrawal of PSI
0257	05/21/90	Dorros/Gerdes/Withdrawal of PSI
0256	05/18/90	Dayton/Gerdes/Inappropriate meeting scheduling
0255	05/15/90	Flaherty-Dorros/Wiley/Redundancy of efforts
0254	05/14/90	Richer/ID/confirmations
0253	05/01/90	Gerdes/ID/grant

0252	04/25/90	SS/Dorros/6/21 SS Meeting
0251	04/24/90	Dorros/Blake/On-site review by WP1
0250	04/24/90	Dorros/Sugimoto/Response on grant
0249	04/18/90	Gerdes/Dorros/Pursuit of preliminary system certification
0248	04/16/90	Dorros/Crutchfield/Resignation letter
0247	04/13/90	Crutchfield/Dorros/Thank you letter
0246	04/13/90	Lim/Dorros/Grant of preliminary system certification
0245	04/13/90	Faroudja/Dorros/Grant of preliminary system certification
0244	04/13/90	Richer/Dorros/Welcome letter
0243	04/12/90	SS/Dorros/Crutchfield resignation - Richer announcement
0242	04/09/90	Wiley-Dorros/Rankin/Creation of ABS of Canada
0241	04/03/90	Dorros/Carnes/Test Slot Requirement
0240	04/02/90	Dayton-Crutchfield-Thorpe-Hopkins/Dorros/Effects on other
0239	04/02/90	Dorros/Luplow/Home recording of ATV System
0238	03/12/90	Lim/Dorros/Pursue preliminary system certification
0237	03/12/90	Gerdes/Dorros/Pursue preliminary system certification
0236	03/12/90	Faroudja/Dorros/Pursue preliminary system certification
0235	03/12/90	Greebe/Dorros/Grant of preliminary system certification
0234	03/12/90	Carnes/Dorros/Grant of preliminary system certification
0233	03/12/90	Sugimoto/Dorros/Grant of preliminary system certification
0232	03/12/90	Hanson/Dorros/Grant of preliminary system certification
0231	02/27/90	SS Meeting Minutes
0230	02/13/90	SS/Dorros/Third Interim Report & Wiley Package
0229	01/11/90	SS/WP4 Progress Report
0228	01/25/90	SS/Dorros/Feb. 27 mtg. notice and agenda
0227	01/26/90	Wiley/Dorros/SS Statement on release of subjective
0226	12/27/89	Dayton/Dorros/Transmittal letter for 0225
0225	12/21/89	Dorros/Felker/ATV system submission
0224	12/22/89	Dorros/Topol/Development of multiport receiver interface
0223	12/18/89	Luplow/Dorros/Format for 12/31 system descrip.
0222	12/08/89	11/28 Meeting Minutes
0221	12/04/89	McKinney/Dorros/Transmittal of WP4 documents
0220	12/04/89	Topol/Dorros/Transmittal of WP4 documents
0219	11/08/89	Dorros/Sikes/Continue to serve on AC
0218	11/07/89	Dorros/Luplow/Response to 10/6 Letter
0217	10/31/89	SS Members/Dorros/11/28 SS mtg
0216	10/20/89	Dayton, Crutchfield, Hopkins, Thorpe/Dorros/
0215	11/03/89	Schine/Dorros/Availability of Testing Time
0214	10/04/89	Dorros/Sugimoto
0213	10/06/89	Luplow/Dorros/Clarification of Testing Process
0212	10/04/89	Dayton/Dorros/Flowchart for System Certification
0211	09/22/89	Dorros/Schine/Wiley Meeting
0210	09/12/89	Dorros/Iredale/Response to 8/25
0209	09/13/89	Dorros/Tietja/Response to 8/11

0208	09/14/89	Dorros/Rosner/Response to 8/11
0207	09/14/89	Dorros/Luplow/Response to 8/11
0206	09/15/89	Dorros/Gerdes/Response to 8/11
0205	09/01/89	Dorros/Sawchuk/Recommendation of CABSC
0204	08/29/89	Dorros/Solomon/Testing
0203	08/25/89	Dorros/Cavallerano/Info for 09/28/89 Meeting
0202	08/29/89	Dorros/Robinson/Hardware Availability
0201	08/25/89	Schine/Dorros/HRS Testing Participation
0200	08/25/89	Iredale/Dorros/Proponent status
0199	08/22/89	8/1 SS Meeting Minutes
0198	08/16/89	Dorros/Ohmura/Removal from proponent list
0197	08/11/89	Dorros/Iredale/Removal from proponent list
0196	08/11/89	Sie/Dorros/
0195	08/11/89	Luplow/Dorros/Info for ATTC
0194	08/11/89	Gerdes/Dorros/Info for ATTC
0193	08/11/89	Toth/Dorros/Info for ATTC
0192	08/11/89	Sugimoto/Dorros/Info for ATTC
0191	08/11/89	Solomon/Dorros/Info for ATTC
0190	08/11/89	Schreiber/Dorros/Info for ATTC
0189	08/11/89	Faroudja/Dorros/Info for ATTC
0188	08/11/89	Tietjen/Dorros/Info for ATTC
0187		Not issued
0186	08/04/89	Lippel/Dorros/Removal from prop.list
0185	08/04/89	Osborne/Dorros/Removal from prop.list
0184	08/04/89	Ilkovics/Dorros/Removal from prop.list
0183	08/04/89	Forshay/Dorros/Removal from prop.list
0182	08/04/89	Lucas/Dorros/Removal from prop.list
0181	08/04/89	Conner/Dorros/Removal from prop.list
0180	08/04/89	Iredale/Dorros/Removal from prop.list
0179	08/04/89	Ohmura/Dorros/Removal from prop.list
0178	08/04/89	Seigel/Dorros/Removal from prop.list
0177	07/25/89	Status of Proponent Hardware Availability
0176	07/25/89	Dorros/Sie/Advisory Committee
0175	07/26/89	Dayton/Dorros/Certification of ATV systems
0174	07/12/89	WP4 ATV Systems Models
0173	07/11/89	WP3 Meeting Minutes
0172	07/14/89	Dorros/Seigle/Hardware availability
0171	07/20/89	Beasley/Dorros/Response to "Notes on HDTV"
0170	07/11/89	Dorros/Conner/Hardware availability
0169	07/18/89	Wiley/Dorros/Letter to remaining proponents
0168	07/12/89	Dorros/Faroudja/Hardware availability
0167	07/13/89	SS Officers, Members/Dorros/8/1 Meeting Notice
0166	07/05/89	Wiley, Fannon, Green/Dorros/Proponent responses
0165	07/03/89	Dorros/Dayton/WP1 status

0164	06/30/89	Dorros/Sugimoto/Hardware availability
0163	06/30/89	Dorros/Tsinberg/Hardware availability
0162	06/30/89	Dorros/Gerdes/Hardware availability
0161	06/27/89	Dorros/Tietjen/Hardware availability
0160	06/29/89	Dorros/Forshay/Hardware availability
0159	06/30/89	Dorros/Ohmura/Hardware availability
0158	07/01/89	Dorros/Stow/Test Parameter Plan
0157	06/29/89	Wiley/Test Procedures & Test Mgmt. Plans
0156	06/27/89	Dorros/Schreiber/Hardware availability
0155	06/28/89	Dorros/Crutchfield/WP2 status
0154		Not issued
0153	06/27/89	Dorros/Luplow/Hardware availability
0152	06/23/89	Dorros/Faroudja/Hardware availability
0151	06/21/89	Dorros/Kettler/Alternative approach to ATV studies
0150	06/21/89	Dorros/Solomon/Hardware availability
0149	06/15/89	Dorros/Wiley/Hanover nomination
0148	06/22/89	5/31 SS Meeting Minutes
0147	06/21/89	Hanover/Confirmation as WP2 VC
0146	06/21/89	Dayton/Reply on hardware availability
0145	05/31/89	Dorros/CRC/Input on ATV system model
0144	05/19/89	Dorros/Toth/Input on ATV system model
0143	05/19/89	Dorros/Rau/Input on ATV system model
0142	05/04/89	Dorros/Schreiber/Input on ATV system model
0141	05/18/89	Dorros/Heimbach/Input on ATV system model
0140	05/24/89	Dorros/Bellisio/Input on ATV system model
0139	05/22/89	Dorros/Engel/Input on ATV system model
0138	06/16/89	Dorros/Iredale/Hardware availability
0137	05/31/89	Dorros/Wiley/Proponent letters
0136	06/09/89	Forshay/Hardware availability
0135	06/09/89	Ilkovics/Hardware availability
0134	06/09/89	Conner/Hardware availability
0133	06/09/89	Lippel/Hardware availability
0132	06/09/89	Luplow/Hardware availability
0131	06/09/89	Lucas/Hardware availability
0130	06/09/89	Gerdes/Hardware availability
0129	06/09/89	Osborne/Hardware availability
0128	06/09/89	Marsiglio/Hardware availability
0127	06/09/89	Sugimoto/Hardware availability
0126	06/09/89	Glenn/Hardware availability
0125	06/09/89	Schreiber/Hardware availability
0124	06/09/89	Faroudja/Hardware availability
0123	06/09/89	Iredale/Hardware availability
0122	06/09/89	Carnes/Hardware availability
0121	06/09/89	Ohmura/Hardware availability

0120	06/09/89	Siegel/Hardware availability
0119	06/07/89	Dayton, Thorpe, Hopkins/ATTC memo, re: 2nd marathon session
0118	06/05/89	Ciciora/Memo on HDTV/workstations
0117	06/05/89	Wiley/Zenith letter on aspect ratio
0116	05/18/89	Wiley/Commitments for testing
0115	05/17/89	SS officers/PS activities
0114	05/15/89	R. Lehtinen/Letter from R.Iredale
0113	05/11/89	SS Members/Wiley's 2nd Interim Report
0112	05/05/89	Flaherty/Test parameter plans
0111	04/20/89	Crutchfield/Test procedure & test mgmt. plans
0110	04/20/89	SS Members/5/31 mtg notice
0109	04/10/89	Wiley/Final Second Interim Report
0108	04/07/89	S. Bonica/Comments on Second Interim Report
0107	04/07/89	T. Ohmura/Comments on Second Interim Report
0106	04/07/89	A. Toth/Comments on Second Interim Report
0105	04/07/89	G. Robinson/Comments on Second Interim Report
0104	04/07/89	W. Schreiber/Comments on Second Interim Report
0103	04/07/89	R. Rau/Comments on Second Interim Report
0102	04/07/89	Wiley/March 31 Draft Second Interim Report
0101	03/30/89	Flaherty/Test Plans
0100		Not issued
0099	03/14/89	SS officers/Draft Second Interim Report
0098	03/13/89	Wiley/Draft Second Interim Report
0097	03/08/89	R. Iredale/Del Rey Proposal
0096	03/08/89	Wiley/SS Interim Report
0095	02/27/89	2/9 SS mtg minutes
0092	02/03/89	SS officers/HDTV article
0091	02/03/89	P. Fannon/ATTC Testing procedures and key issues
0090	02/01/89	P. Fannon/ATTC
0089	01/04/89	R. Ducey/PS WP7
0088	12/20/88	SS officers/Second Interim Report
0087	12/09/88	SS officers/Items of interest from D. Wiley
0086	12/09/88	SS officers/Second Interim Report
0085	12/09/88	SS officers/2/9 mtg notice
0084	12/05/88	SS officers/Endorsements of 1125/60 standard
0083	12/01/88	SS officers/Work statements for PS and its WPs
0082	11/28/88	Wiley/Reimbursement request for B. Jones
0081	10/31/88	SS officers/Second Interim Report
0080	10/31/88	10/19 SS meeting minutes
0079	10/21/88	Flaherty/comments on PS work plan
0078	10/11/88	Dayton/treatment of systems proponents
0077	09/20/88	SS officers/10/19 mtg notice
0076	09/18/88	Flaherty/Inputs from PS

0075	09/01/88	SS officers/doc distr & preview
0074	08/29/88	SS officers/Sawchuck mtg
0073	08/26/88	8/10 SS meeting minutes
0072	08/23/88	Tietjen/coord. proponent contacts
0071	08/22/88	Wiley/Thorpe req. for funds
0070	08/16/88	SS officers/corr. to 0069
0069	08/11/88	SS officers/OA receivers
0068	08/08/88	WP chairs/PS work descr. review
0067	08/04/88	WP chairs/Sawchuck mtg on 8/10
0066	07/13/88	Iredale/WP mtg coordination
0065	07/13/88	SS officers/14 comments on Interim Report
0064	07/13/88	SS officers/ 8/10 mtg notice
0063	07/05/88	SS officers/ 6/24 conf call minutes
0062	06/24/88	SS officers/final version Interim Report
0061	06/22/88	Hubbard/response to his letter
0060	06/22/88	Crutchfield/Hubbard offer re testing
0059	06/07/88	Dayton/Philips submission
0058	06/06/88	SS officers/ 6/24 conf call
0057	06/02/88	Glenn/response to 5/17 ltr re FIR filter
0056	06/02/88	Dayton/Zenith,NHK,BTA submissions
0055	05/31/88	Dayton/Digideck submission
0054	05/27/88	Wiley/comments on draft report
0053	05/25/88	Dayton/Osborne submission
0052	05/24/88	Dayton/Faroudja submission
0051	05/23/88	SS officers/draft report
0050	05/20/88	Crutchfield/WP2 activities
0049	05/12/88	Bingham/IS WP2 distributions
0048	05/12/88	Seigel/invite participation
0047	05/12/88	Conner(Digideck)/invite participation
0046	05/02/88	SS officers/ 3/10 SC minutes
0045	05/02/88	SS officers/Glenn submission
0044	04/29/88	4/13 SS meeting minutes
0043	04/15/88	Wiley/
0042	04/15/88	Gerde/ 6/3 AC mtg(PSI)/invite participation
0041	03/31/88	Hagemann(BTA-Japan)/invite participation
0040	03/31/88	Annegarn(Philips-Eindhoven)/invite participation
0039	03/31/88	Lucas(SciAtl)/invite participation
0038	03/31/88	Faroudja/invite participation
0037	03/31/88	Sugimoto(NHK)/invite participation
0036	03/31/88	Glenn(NYIT)/invite participation
0035	03/31/88	Rzeszewski(AT&T)/invite participation
0034	03/31/88	Fuhrer(Sarnoff)/invite participation
0033	03/31/88	Iredale(Del Rey)/invite participation
0032	03/31/88	Osborne/invite participation

0031	03/31/88	Lager(A-Vision)/invite participation
0030	03/31/88	Toth(Philips)/invite participation
0029	03/31/88	Lippel(Quanticon)/invite participation
0028	03/31/88	Schreiber(MIT)/invite participation
0027	03/17/88	Williamson/confirmation as WP4 VC
0026	03/17/88	Sidran/confirmation as WP4 VC
0025	03/17/88	Grefe/confirmation as WP3 VC
0024	03/17/88	Rosser/confirmation as WP3 VC
0023	03/17/88	Tingley/confirmation as WP2 VC
0022	03/17/88	Kettler/confirmation as WP1 VC
0021	03/16/88	SS officers/note re 3/10 SC mtg
0020	03/15/88	Hassinger/SS directory of officers
0019	02/29/88	SS officers/ 4/13 SS mtg
0018	02/22/88	SS officers/2nd draft oper. proc.
0017	02/18/88	SS officers/ 1/25 SS mtg minutes
0016	02/17/88	SS officers/Schreiber paper
0015	01/29/88	SS officers/ 1/5 SC mtg minutes
0014	12/29/87	SS officers/ 1/25 SS mtg
0013	12/09/87	Gaggioni/confirmation as WP4 VC
0012	12/09/87	Niles/confirmation as WP4 VC
0011	12/09/87	Hopkins/confirmation as WP4 C
0010	12/09/87	Loveless/confirmation as WP3 VC
0009	12/10/87	Eilers/confirmation as WP1 VC
0008	12/09/87	Thorpe/confirmation as WP3 C
0007	12/09/87	Engel/confirmation as WP2 VC
0006	12/09/87	Ciciora/confirmation as WP2 VC
0005	12/09/87	Crutchfield/confirmation as WP2 C
0004	12/09/87	Swanson/confirmation as WP1 VC
0003	12/09/87	Dayton/confirmation as WP1 C
0002	12/09/87	Abel/confirmation as SS VC
0001	12/09/87	Brown/confirmation as SS VC
0000		Document Index

SS/WP-1 STATUS REPORT Jan 31, 1991, Revised Mar 5, 1991

**Systems Subcommittee
Working Party 1**

**Chairman's Status Report
January 31, 1991**

**Submitted to:
Irwin Dorros
Chairman, Systems Subcommittee**

**Submitted by:
Birney Dayton, Chairman, SS/WP-1
President
Nvision, Inc.
P.O. Box 1658
Nevada City, CA 95959**

1. Introduction

Since the last WP1 interim report exactly one year ago, much change has again occurred. The Faroudja SuperNTSC system and the MIT channel compatible system were granted pre-certification at the April 4 meeting in Atlanta. Subsequently, both Faroudja and Production Services Inc. dropped out of the running. Faroudja on the basis that no rule change was necessary for the implementation of SuperNTSC, and PSI because the required disclosure of technology would allegedly damage other business opportunities for their proprietary techniques.

NBC, Thomson, Philips, and Sarnoff Research Center joined forces to form the Advanced Television Research Consortium (ATRC). ATRC subsequently dropped the ACTV II system and renamed ACTV I to simply ACTV. AT&T also joined forces with Zenith Corp. to aid in chip development for the Zenith Spectrum Compatible System.

Mid-year, General Instrument entered as a proponent with their Digi-Cipher system. This all-digital proposal received pre-certification on June 22, 1990. By year-end, both ATRC and Zenith/AT&T announced all digital proposals. The ATRC digital proposal will replace the Philips HDS-NA system, and the Zenith Spectrum Compatible System will change to an all-digital system. January 29, 1991 General Instrument and MIT announced that they were joining forces to form the American Television Alliance, and that the MIT channel compatible system will change to an all-digital proposal. Sufficient information for pre-certification of all three altered systems is due to WP-1 by February 28, 1991.

At the June 22 meeting, a Detailed Analysis Task Force chaired by Robert Keeler was established to shorten the time frame required for the development of a detailed analysis of each system. Each proponent must have provided all the data necessary for such analysis at least 90 days prior to test. On Nov 5, 1990, the ACTV system from ATRC received final certification from WP-1 by consensus, contingent on completion of the revised final report on ACTV from the Analysis Task Force.

2. Proponent Status

2.1 Advanced Television Research Consortium

The ACTV-I system changed in name to ACTV. Beyond that, the changes in principle since the last report have been only in fine detail. This system received final certification on Nov 5, 1990. The ACTV-II system was dropped, and the Philips HDS-NA system was replaced by an all-digital system for which no data has been submitted. Sufficient definition for pre-certification is required by Feb 28, 1991.

2.2 American Television Alliance

General Instrument introduced their DigiCipher system mid-year and it was granted pre-certification by WP-1 at the June 22 meeting. The MIT channel compatible system was granted pre-certification April 4, 1990. With the announcement of the formation of the American Television Alliance (Jan 29, 1991) and a change of this system to all-digital, sufficient information for pre-certification of the new proposal is due to WP-1 by Feb 28, 1991.

2.3 Nippon Hoso Kyokai

The NHK Narrow MUSE system appears not to have changed significantly since its pre-certification last January. This system is next up for final certification. A complete detailed description must be received by WP-1 no later than March 8, 1991 to facilitate final certification.

2.4 Zenith / AT&T

The Zenith Spectrum Compatible system, SC-HDTV, changed to an all-digital system at year-end. Sufficient data for pre-certification of the new proposal must be submitted to WP-1 by Feb 28, 1991.

3.0 Future Work

A WP-1 schedule has been developed for 1991 based on the current test schedule. The next meeting will be three days long and address the pre-certification of the changed proposals (ATRC digital, ATA/MIT digital, Zenith / AT&T digital) and the final certification of the NHK Narrow MUSE system. The dates for this meeting are March 20, 21, and 22 in Washington, D.C.

Addendum March 5, 1991

The three new digital system descriptions were received on or before the announced deadline of February 28, 1991. A brief description of the salient features of each follows.

American Television Alliance.

The ATVA digital system from MIT uses progressive scanning, using 787.5/59.94/1 source material. The active pixel grid is 720 x 1280 with a 16:9 aspect ratio. The system uses adaptive transform/subband coding and motion compensation, and offers four channels of digital audio, 126Kb/s for auxiliary data, and 126Kb/s for access control. The gross transmission rate is 19.43 Mb/s using a 16 QAM modulation technique.

Advanced Television Research Consortium.

The ATRC Advanced Digital Television system is described as flexible with respect to source material, but initially uses interlace scanning and 1050/59.94/2 source material. The active pixel grid is 1440 x 960 for luminance and 720 x 480 for chrominance. The aspect ratio is 16:9. The system uses a video coding scheme described as MPEG++ and employs priority layers to provide extra protection for the most important data to aid in fringe area reception. The system offers four channels of digital audio and 40Kb/s for auxiliary data. The gross transmission rate is 21.00 Mb/s using a spectrally shaped 16 QAM modulation system to minimize interference to and from NTSC.

Zenith/AT&T

The Zenith/AT&T Digital Spectrum Compatible system uses 787.5/59.94/1 progressive scanned source material with a 720 x 1280 active pixel area and a 16:9 aspect ratio. The system uses frame difference processing and transform coding with vector quantization of coefficient patterns. Considerable emphasis is placed on optimization of the coding scheme to minimize perceptual defects. The system offers four channels of digital audio and 575 Kb/s for ancillary data. The channel code is a four level vestigial sideband signal (4VSB) with suppressed carrier. The 4VSB signal is passed through a dispersive filter to minimize interference to NTSC by the field sync data. The gross data rate is 21.5 Mb/s.

Summary

On a first review, these three new systems have much in common. However, each has many unique features and each employs unique methods to overcome problems such as NTSC interference and loss of signal in fringe areas.

February 14, 1991

Mr. Birney D. Dayton
Chairman, SS/WP-1 (Systems Analysis)
FCC Advisory Committee on Advanced Television Service
c/o NVision
P.O. Box 1658
Nevada City, California 95959

Dear Birney:

Enclosed is a copy of the Final Report from Working Party 1's Analysis Task Force on the ACTV system proposed by the David Samoff Research Center.

Several errata pointed out during the November 5 meeting of the Working Party have been corrected, new information from Samoff has been incorporated, and the appendices have been reorganized.

Samoff provided answers to the questions included in the draft report of November 5. The original questions are again listed in Appendix A, and the response from Samoff is in Appendix B. While most of these answers satisfied the needs of the Task Force, there remain some questions we would like to see clarified, and those have been listed in the report in Appendix C, along with additional recommendations for system-specific tests. (We do not regard these additional questions as impediments to final certification.) Additionally, as requested in the draft report dated November 5, 1990, Samoff has submitted a new document, dated January 7, 1991, that unifies the information describing their proposed system. This new document is included as Appendix D. The appendix on Technical Parameters has been dropped, since the information intended for that appendix is available in the proponent's documentation.

The consensus of the Task Force is that:

- a. No major change has been incorporated in the ACTV system that would require reconsideration by Working Party 1.
- b. There has been no new information presented that would invalidate the conclusions of the Task Force or the deliberations of the Working Party.

It therefore is appropriate to issue this Final Report of the Task Force.

The attention of Working Party 2's Task Force on System-Specific Tests has been directed to the recommendations in this report dealing with system-specific tests, as well as to the sections on potential impairments. We have also conveyed to that task force refinements and additions to our recommendations for system-specific tests.

Very truly yours,



Robert E. Keeler
Chairman, Analysis Task Force

FINAL REPORT

Technical Critique of David Sarnoff Research Center's ACTV System

Submitted February 14, 1991

Submitted to:
Birney D. Dayton, Chairman, SS/WP-1
FCC Advisory Committee on Advanced Television Service

Submitted by:
WP-1 Analysis Task Force

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CONTENTS

I. INTRODUCTION	1
II. SUMMARY DESCRIPTION OF ACTV SYSTEM	1
III. SUMMARY OF POTENTIAL IMPAIRMENTS	3
A. IMPAIRMENTS UNDER IDEAL CONDITIONS	4
B. IMPAIRMENTS UNDER NON-IDEAL CONDITIONS	5
IV. COMPATIBILITY WITH NTSC	6
A. PERFORMANCE OF ACTV WHEN VIEWED ON NTSC RECEIVERS	6
B. INTERFERENCE OF SUBJECT SYSTEM WITH NTSC BROADCASTS	7
C. COMMENTS ON DOWN-CONVERSION TO NTSC FOR RE- BROADCAST	8
V. RECOMMENDATIONS FOR SYSTEM-SPECIFIC TESTS AND OBSERVATIONS	8
VI. CONCLUSIONS	9

Appendix A: Questions to Proponent from Analysis Task Force

Appendix B: Response by Proponent to Task Force Questions

Appendix C: Issues for Clarification and Further Recommendations for System-Specific Tests

Appendix D: System Description Submitted by Proponent