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Federal Communications Commission
Office of the Secretary

Before the
Federal Communications Commission

In the matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service	)))))	MM Docket No. 87-268

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COMMENTS OF S. MERRILL WEISS, CONSULTANT

1. S. Merrill Weiss, Consultant in Electronic Media Technology/Management, an interested party in this proceeding, respectfully submits these comments in response to the invitation contained in the Notice of Proposed Rulemaking released on November 8, 1991.

2. As an individual who has spent a major part of the past four years working in a number of areas within the Advisory Committee on Advanced Television Service, these comments are offered in the hope that they may be of some help to the Commission in assessing the impact of its proposals on broadcasters, in general, and on their eventual implementation of Advanced Television, in particular. My credentials in offering these comments include twenty-five years experience within the broadcast industry designing, building, and managing the technical operations of a number of television and radio stations. Since early 1988, I have served on the Advisory Committee as Vice Chairman and Acting Chairman of Implementation Subcommittee Working Party 2 on Transition Scenarios (IS/WP-2), as a member of Systems Subcommittee Working Party 1 on Systems Analysis (SS/WP-1), as an invited member of the SS/WP-1 Task Force on Systems Analysis, as a member of Systems Subcommittee Working Party 3 on Economic Analysis (SS/WP-3), and as a participant on the Systems and Implementation Subcommittees. I have also been involved for the past fifteen years in the development of standards for television and particularly digital television, through the Society of Motion Picture and Television Engineers (SMPTE), having been chairman of a number

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of the SMPTE technology committees and having been responsible for a number of the tests and demonstrations that led to international standards. I am a Fellow of SMPTE and a Certified Professional Broadcast Engineer of the Society of Broadcast Engineers (SBE). I am a graduate of the Wharton School of Economics and Finance of the University of Pennsylvania. I am currently active as a consultant in the area of electronic media technology and technology management and expect to make a substantial part of my livelihood in the future through assisting broadcasters and others in their transitions to Advanced Television (ATV).

3. In these comments I will address specific areas within the Notice where my participation in the Advisory Committee combined with my industry experience may bring to light information the Commission may not receive from other sources. In addition, I will try to offer suggestions that I hope will be helpful to the Commission in meeting its goals of a speedy transition to Advanced Television while at the same time making that transition easier to accept and easier to accomplish for those who must implement it.

I. BACKGROUND

4. Much effort by many industry experts has gone into the development, within IS/WP-2, of a series of timelines (Gantt charts) that aim to project the time it will take for the many industry segments involved in the transition to Advanced Television to implement their transitions. The timelines are built on an identification of the many tasks required to be accomplished and their dependencies upon one another (PERT networks). These PERT networks, in turn, are based upon a series of detailed assumptions about the tasks, developed from the experience and understanding of the issues of the many industry experts who participated in the work.

5. The results of this work are a preliminary understanding of the time it might take, under varying conditions, for the implementation of ATV by many participants in the process and the uncovering of a number of issues that must be addressed before ATV can be implemented. The comments that follow are, in large measure, based upon this work and reflect some of the conclusions that will be reported shortly to the Commission in the Fifth Interim Report of the Advisory Committee. The Commission, in the Notice, has discussed several items as separate issues. These comments will attempt to show some of the interrelationships in order better to understand the impacts of the issues. The organization of the remainder of these comments follows that of the Notice to help in locating the parts of the Notice to which the comments are directed.

II. ELIGIBILITY AND RELATED ISSUES

C. Application and Construction Periods

6. In the Notice, the Commission, at 11, proposes to give existing broadcasters three years from the time that an ATV allotment table is adopted to apply for a construction permit for an ATV channel. The Commission also proposes, at 14, to apply the existing two year time limit for construction of NTSC stations to construction of the new ATV facilities. These limits, totalling five years from adoption of an allotment table to completion of construction, are proposed in an effort to keep the spectrum from lying fallow or being warehoused.

7. The work of IS/WP-2, as reported in its "Report of IS/WP-2: Study Results and Preliminary Conclusions,"[1] shows that the timetable proposed by the Commission can be met by many stations under certain assumptions. Those assumptions have to do with the time it will take to make assignments to particular channels, the time required for all of the various governmental approvals[2] needed, the time taken by litigation, if

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[1] IS/WP-2-0151, Rev. 4.4, 10/16/91

[2] This includes local zoning, local planning, environmental impact statements, and FAA obstruction clearances, as well as the FCC construction permit.

any, and the availability of equipment built to the new standard. There are some things the Commission can do to minimize the time required for some of these steps. Most are outside the Commission's control, however, and it should be recognized that all of them are outside the control of the broadcasters.

8. In general, the work of IS/WP-2 shows that, from the time that all the requisite approvals are granted, if equipment is available to the new standard adopted by the Commission, actual construction can be completed well within the two years provided by the Commission's proposal. This is predicated, however, on a station that has its own tower with space and capacity available for the addition of a new antenna and transmission line. When the station must build a new tower, the time to build increases. If land must be acquired for the new tower, the time for the approval process lengthens, probably significantly, although generally the construction takes no longer than building on existing property. When the stations in an area must build a new joint facility, the time for both approvals and construction extend even further. These factors should somehow be taken into account in the Commission's rules so that a broadcaster, embarking on what can be a rather tortuous undertaking, will know that at the end of the process it will still have the channel available to it for which it put out all the effort and expense. This is akin to the Commission's justified concern in the Notice, at 8, for the investments of applicants, permittees, and petitioners who have depended on the current NTSC rules.

9. Most of the practical factors which might cause a broadcaster, despite its best efforts, to be unable to meet the Commission's proposed time schedule are outside the broadcaster's control. Some of these have already been mentioned. Especially, if a new tower is required, local planning and zoning, because they are local political functions, can be very time consuming and are subject to interference from local interest groups with a "not in my backyard" approach to the matter. Similarly, locations that will achieve FAA obstruction clearance are becoming much more difficult to find, particularly in major metropolitan areas. If litigation results from any of these processes, the time required to work the matter through the courts can take more than the total of the

application and construction periods proposed.

10. In some of the largest cities, where it is most desirable to get stations on the air the earliest because of the large audiences that can be reached, some of the most difficult problems will be faced by broadcasters. This is pointed out by the Local Area Groups[3] set up by IS/WP-2 to look into the challenges broadcasters must address in the large markets and to begin the process of dealing with them even before the Commission acts on Advanced Television. In four of the five markets where studies were begun, adequate tower space was not immediately available to accommodate the stations in the market. In at least some of these markets, studies have begun that may lead to the construction of new, common transmitting facilities to include not only the ATV stations, but, potentially in some cases, the existing NTSC stations, for reasons of economy of operation.

11. Communications with several of the proponents preliminarily indicates that only a few encoders and exciters for the new transmission scheme are likely to be available for the first couple of years following system selection by the Commission. This results from the fact that, because of the complexity of the systems being proposed and their dependence in large measure on non-deterministic processes, it will take a substantial amount of time to document the design of the system in a manner sufficient for manufacture by others, and then it will take some considerable time for the manufacturers to build their first hardware. In the meantime, the equipment that will be available will be based on the designs used for the current test systems, making it very expensive and very large when compared to purpose-built equipment that will follow somewhat later.

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[3] The Local Area Groups consist of the chief engineers of all the television stations in a given market. So far, groups have been established in Boston, New York, Chicago, San Francisco, and Los Angeles. The New York group is based on the pre-existing Television Broadcasters All-Industry Committee (TVAIC).

12. There are some things the Commission can do to help alleviate broadcasters' concerns as they begin the process of implementing Advanced Television. First, the Commission should spell out the priorities of its interests in the implementation of ATV. For instance, is it most important to have the best coverage for each station, or is it most important to have stations on the air as soon as possible? Once having done this, the Rules can be written to encourage the highest priorities and to make accommodations regarding the lower ones. In the example just mentioned, if it is more important to get stations on the air quickly, stations can be encouraged to put up temporary facilities that have lesser coverage than ultimately desired while they continue to pursue the longer course that will eventually lead to the better facilities preferred. On the other hand, if the best facilities are seen as most important from as early as possible in the transition, provision should be made to more easily extend the construction period for such matters as difficulty in obtaining government agency approvals or difficulty in obtaining equipment. If the approvals required must come before issuance of a construction permit, then the application period should be extended on an appropriate showing of good faith efforts. These considerations will be particularly important in some of the largest metropolitan areas.

13. It seems from some of the comments contained in the Notice that one of the Commission's interests is in having broadcasters apply early for their ATV channels.[4] This creates a dilemma for broadcasters who recognize that they will face some or all of the obstacles outlined previously. If they apply early, they meet the Commission's interest, but they face the possibility of running out of time for construction if conditions preclude their early completion of their facilities. If they apply later, they do not meet the Commission's objectives, but they gain additional time for construction because their construction clock starts later. In recognition of the extra effort that will be required of the pioneers who move first into ATV, the Commission can ameliorate the effects of the dilemma by making provision in the Rules to extend the construction time of those who apply early in the process. This might be done on some sort of sliding scale so that

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[4] See the Notice, at 18 and 19, under Table of Allotments. Comments on that section follow later in this document.

those who apply earliest would get the greatest extension, while those who apply later get shorter construction times. A station applying within the first application window might automatically get three or four years to construct, while those coming later might get only the two years currently proposed.

III. INITIAL ASSIGNMENT OF ATV CHANNELS

A. Assignment of Particular Channels

14. The Notice, at 17, 18, and 19, offers two alternative methods for the assignment of particular channels to existing broadcasters. The first of these has the Commission matching channels to stations on a random basis within a community and announcing the results with the Table of Allotments. The second has broadcasters applying on a first come, first served basis for the channels they want, with their preferences accommodated to the extent possible. Having a greater chance of getting the channels they want is seen to encourage early application and possibly to limit challenges to the assignments made. In addition to the dilemma for broadcasters discussed previously, some other factors should be taken into account in looking at how to carry out the assignment process.

15. The IS/WP-2 studies have shown that much of the design effort for the new facility is channel-dependent. Given that the assignment could be low-band VHF, high-band VHF, or UHF, the size of antenna required and the gain it can achieve are highly dependent on the channel. The size of the transmitter and of the transmission line also depend on the channel. Other secondary factors, such as building space, weight and wind loading follow from these. If the objective is to get stations on the air as soon as feasible, then giving them their channel assignments as early as possible becomes important. The IS/WP-2 timelines show that the time taken for any assignment following the final Report and Order adds directly to the completion date for the implementation of ATV transmission.

16. In considering the second alternative, the dilemma and some of the difficulties that will be faced by broadcasters should be kept in mind with the objective of making sure that the result is a fair one. Clearly, broadcasters that have to build a new tower will be at a time disadvantage from those that do not. Broadcasters that have to work together to build joint facilities will be at a further time disadvantage. It may be that the ultimate coverage they can provide will be greater than those who might, by happenstance, be able to get on the air sooner. The question the Commission must answer in considering this alternative is whether the public interest is better served by advantaging stations that can get on the air soonest with lesser facilities or those that will provide the best facilities in the long term. If this is the alternative chosen, the idea presented earlier of permitting stations to build temporary facilities quickly while they work to develop better but longer term solutions should certainly come into play.

B. Assignment of a Channel

17. The Notice, at 25 and 26, proposes three methods to choose among applicants when there is insufficient spectrum to accommodate all. These include giving weight to the largest coverage proposed or to the speediest implementation through strict implementation of the two-year construction period, or the use of lotteries. As previously discussed, the time-based decision criteria have the effect of disadvantaging those stations that by dint of circumstances will require longer to implement ATV, in particular those having to build new towers. This may not be the best solution in the long run, as the best coverage by the largest number of stations will ultimately provide more services to the viewing public. It would seem that ultimate coverage would be the better criterion. The lotteries proposed at 26, of course, eliminate these concerns.

V. CONVERSION TO ATV

B. Surrendering a Frequency

18. In the discussion at 37 through 41 surrounding the setting of a firm date by which broadcasters will be required to surrender one 6 Mhz channel, there seems to be one important factor left out of the discussion. It is not the intent of these comments to take a position between the various options spelled out in this section but rather to make sure the missing factor is considered in coming to a decision. The missing factor is the fact that most television homes are now multi-set homes. When penetration is measured, as it would have to be measured for at least some of the possible approaches to setting a date, the value determined is the number of homes having a single device of the type under consideration. This is certainly the case in the discussions to date in the PS/WP-5 report cited in the Notice. Yet people today watch television on a number of different television receivers, very likely of quite different sizes, in their homes. Since the projections made, by PS/WP-5 and others, have been largely concerned with large screen televisions, and since the manufacturers of receivers have been talking about large screen receivers as the first on the market and the only ones for some time, the kinds of penetration values proposed will not correctly reflect the amount of dependence the viewing public places on the NTSC service. Instead, some method must be developed to reflect the adoption of ATV receivers in all of the secondary viewing locations, such as kitchens and bedrooms that normally have smaller receivers, before consideration can be given to the appropriate time to turn off the NTSC service. Without such consideration, the viewing public will be loosing a major portion of its program service in a way and at a time probably not intended by the Commission.

19. Another way of looking at the issues just discussed is that the projections to date have been from the top down for the purpose of seeing how fast ATV might be available to what portion of the audience. For the purpose of determining when the old system can be turned off, the projections must be made from the bottom up, to see when the dependency on the old service is small enough that it can be eliminated.

VI. SIMULCASTING

20. Without commenting on the policy issue of the desirability of requiring simulcasting, it seems appropriate to comment on the apparent understanding the Commission has regarding the sources of programming that underlies the comments in the Notice at 45. The Commission seems to believe that the industry will rapidly move to full production in Advanced Television (or HDTV) and that the programming available to NTSC viewers must be protected. All of the evidence to date[5] indicates that the converse will be true for the early part of the transition at least, that is that much of the programming on the ATV channel will come by upconversion from NTSC sources or from other sources of lower quality than true HDTV. This will be for reasons of economics when there is a relatively small ATV audience, when HDTV equipment is very expensive, and when there is little or no additional revenue to be derived from the ATV operation. There will be a certain amount of HDTV programming, for instance from networks during prime time, but local stations can be expected to fill the remainder of the time by upconversion so that the ATV stations can attract viewers on a full time basis.

21. It might seem at first that the upconversion just projected is an undesirable outcome. In fact, it is quite desirable. The ATV channel can be expected to deliver any signals, no matter what their source, with far better quality than can be achieved using NTSC transmissions. So, even if the material originates in NTSC, in Widescreen 525 components,[6] or any other form less than full HDTV, the results of ATV transmission will make it the preferable channel to watch. In deciding whether and how to regulate simulcasting, the Commission would do well to keep these relationships in mind.

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[5] CBS study, PBS study, work of IS/WP-2, work of SS?WP-3, work of SMPTE Working Group on Advanced Television Production, and others.

[6] A technique being developed within the industry and standardized within the SMPTE as a low cost alternative specifically intended for upconversion.

VII. OTHER MATTERS

A. Patent Licensing

22. In considering issues such as patent licensing, there is another item that should be considered at the same time. It is the provision of documentation adequate to permit others to design and manufacture equipment built to the system selected. Without such documentation, the transition to Advanced Television cannot take place with wide participation. Without wide participation, it will go slowly, if at all. To produce the required documentation in a reasonably short time will take a very large effort from the winning proponent and the rest of the industry as well. The work of IS/WP-2[7] has shown that any delay in disseminating the technical details past the time of the issuance of the Notice of Proposed Rulemaking that embodies the Commission's system selection will directly add to the total implementation time.

23. Provision must be made in the approval process for getting the technical information out as soon as possible, and this requires that the Commission give the industry its decision as early as possible. If some means can be found for the Commission to announce its direction, even prior to its formal announcement of rules or issuance of its Notice of Proposed Rulemaking, it will allow the industry to begin on this effort. The Fifth Interim Report of IS/WP-2 will have more to say on this matter, and the Commission is strongly encouraged to give heed to the work reported there.

VIII. CONCLUSION

24. These comments have sought to point out connections between some of the aspects of the proposals contained in the Notice that the Commission may not have realized were present. They were also intended to share the benefit of some of the work accomplished over the last several years in looking at the ATV transition. If they have

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[7] Report of IS/WP-2: Study Results and Preliminary Conclusions

in some way aided in making some of the issues more clear or calling attention to some that were not known before, they will have served their purpose.

25. The writer wishes to thank the Commission for the opportunity to present his views and for its attention to them.

Respectfully submitted,

Dated: December 19, 1991

S. Merrill Weiss
Consultant