Simulcast solutions utilize a second channel and require additional transmission facilities for that channel. Implementation Subcommittee Working Party 2 is trying to determine how the antennas needed for HDTV simulcast can be provided. Some generalities are already known from a previous survey: individual station capabilities run the gamut from vacant space on an owned tower to no present capability for an additional antenna. It is also understood that some markets may face substantial site or regulatory obstacles to the addition of transmission facilities.

In order to get more specific information on implementation feasibility, IS/WP-2 is asking the broadcasters in a few selected markets to consider how they would meet the challenge of providing antennas and other transmission facilities for simulcast HDTV. In some of these markets, antennas and/or sites are already subjects of mutual interest among broadcasters through site sharing, leased or purchased tower space, etc. Such joint approaches are likely to be even more necessary to accomodate ATV in markets where there are insufficient sites and tower spaces currently available.

Your market has been chosen for study of the problems and impediments which must be overcome in order to implement Advanced Television. The objective is to identify obstacles and ways to overcome them. It is important to enumerate all possible mechanisms which might be used to resolve the issues. Some means could be available on a local level, while some might require national solutions. Examples are combining efforts of all local broadcasters in support of one another's applications to local authorities or federal preemption of local radiation limits in excess of federal standards.

You are asked to bring a "community" view to this inquiry! Think freely and do not assume that any solution is impossible. It is important for the Advisory Committee to understand your problems as well as your proposed solutions. This will allow potential fixes for the issues you will face in implementing ATV to be identified in the recommendations the Advisory Committee provides to the FCC.

Some Guidelines:

1. Provide a general description of the antenna and tower facilities now in use by the full-service stations in your market. Briefly identify key accomplishements achieved or obstacles overcome in attaining this particular configuration.

2. Assume every current broadcaster is assigned a second 6 MHz channel to be used for HDTV simulcast. Whether the channel is VHF or UHF will not be known until channels are alloted to cities and individual assignments are made. If technical implementation is contingent on a VHF or UHF assignment, so note.

3. Antenna and transmission line requirements will depend on the HDTV system to be broadcast. In some of the proposed systems, radiated peak and average power may be significantly reduced from NTSC levels without reduction of the service area. Please seek solutions for both the low power and the full NTSC-equivalent power conditions given below. Consider tradeoffs between antenna gain and size, transmission line size, and transmitter power output. For example with low power systems, it might be possible to use an antenna with a smaller aperture by driving it with a higher power transmitter. The size and weight of the transmission line must be considered in making this tradeoff.

4. Identify alternative solutions which could provide simulcast antenna sites for all current full-service broadcasters in your market. Joint solutions providing for all in one effort, such as a common new tower, are one approach. Adding up all the available, practical sites and making sure there are enough to go around is another possibility. If more than one solution can be devised, all should be spelled out in order to provide options. Some which turn out not to be the first choice in your market may be of use in other markets or at least stimulate the thinking of participants there.

5. Identify obstacles likely to be encountered: geographic, regulatory, competitive, etc. Are there particularly strong environmentalist or no-growth groups in your area? Are there restrictions on the use of the tops of tall buildings? Propose how these obstacles can be overcome. Assume approvals or changes required can be obtained. Suggest one or more courses of action to achieve the needed results.

TAB

# ATTACHMENT H

DRAFT
FOR REVIEW

## TV ALL INDUSTRY COMMITTEE

## DISCUSSION OF ADVANCED TELEVISION TRANSMISSION IMPLICATIONS FOR NEW YORK CITY BROADCASTERS

JANUARY 31, 1991

At the request of the Advisory Committee on Advanced Television (ATV) Service, the TV All Industry Committee of New York held a special meeting to discuss the implications of advanced television services to New York Broadcasters. The TV All Industry Committee is made up of New York City broadcasters who share the World Trade Center as a transmitter site. However, City broadcasters who do not use the World Trade Center were also invited.

The meeting was held at NBC at 30 Rockefeller Plaza at 2 PM on January 31, 1991.

The following stations were represented:

WABC-TV, James Baker
WCBS-TV, Joe Fedele
WNET, Frank Greybill
WNBC-TV, Eric Dausman
WWOR-TV, Robert Barkey
WXTV, Alan Cohen
WNYC, Kevin Batson, Ernie E. Dachel
WNJU-TV, George Kraus
WPIX, Earl Arbuckle

WNYW was not represented at the meeting.

The discussions began at approximately 3:00PM.

Dausman, WNBC--Identifed the goals of the group. In general, the discussions would follow the guideline letter received from Merrill Weiss.

Arbuckle, WPIX--Opened discussion be explaining that he had been asked by his company to look into the problems associated with implementing an ATV simulcast station for WPIX. He made the assumption that the power on UHF would be approximately 10 dB under the current requirements for UHF. Since broadcasters are authorized to transmit from the WTC with a full 5000 KW by current FCC rules, then the assumed ERP of a ATV simulcast transmitter would be approximately 500 KW. (Editors note: Peak or average?) One UHF broadcaster, WXTV, Ch.41, is currently planning to leave the WTC and relocated to Empire. Assuming that antenna space on the tower would be available, his assumption was that you could fit three antennas for three channels in this space. (Editors note: This is approximately 30 feet of space on a

cylindrical support system approximately 10 feet in diameter at this level.) The gain of the existing antenna is approximately 35. If you could build three antennas with a gain of approximately 10 in the same space, then you would need approximately 50KW power out from the transmitters. Essentially, these transmitters would be like what we currently operate. The size, power requirements, cooling requirements would be similar.

????--commented that there would be a higher total HVAC requirement.

Arbuckle, WPIX--Should all 9 remaining broadcasters chose to do this, it would be like trying to put another 9 stations on the air at the WTC. It may be possible by interleaving antennas to accommodate more channels in the space. The next issue would be transmission lines. There is not a lot of space available in the tower for additional transmission lines.

The second scenario would be to use each broadcasters standby antenna aperture. Either interleave the ATV antenna in with the standby or remove the standby antennas and replace with ATV antennas. None of the broadcasters may be willing to remove their standby antennas. (Editors note: The bottom 80 feet of the 365' structure supports standby antennas for the VHF broadcasters except Ch. 2.)

The third alternative would to do something someplace other that at the WTC.

Kraus, WNJU--There is another WTC alternative. Go back about 6 years to a proposal by Ch. 41 to construct a 100 foot tower on the NW corner of the WTC to erect a new antenna. There is still a hard spot (Editors note: hard meaning that sufficient structure exists to support such a tower.) The location still exists, so you could conceivably put up a plus or minus 100 foot tower in this spot and install multiple antennas. Preliminary surveys indicate that this was practical although no complete engineering was done. If you combine the existing Ch.41 space with this possibility, the required space for everyone may be found.

Arbuckle, WPIX--The idea was not popular among the other broadcasters back when the proposal was originally made.

Kraus, WNJU--Of course, WXTV was trying to do this unilaterally. If everyone agreed that it was needed, then it could more easily accomplished.

Fedele, WCBS--One of the major problems in working on any WTC solution will be RFR. The RFR levels will skyrocket. Will the Port Authority even allow us to add additional RFR

is a major question. We are talking about another 5000 KW - in total fairly low on the tower.

Arbuckle, WPIX--We would be trading off approximately the same levels if we were to use the space Ch. 41 is vacating. RFR might not be an issue. However, if we consider a 100 foot sub-mast, that is a different issue.

Kraus, WNJU--The Port Authority has appeared a little less concerned in recent years about RFR. The old management would have never supported such ideas. The new management is easier to deal with. (Editors note: TVAIC and the Port Authority have invested lots of time and money in RFR measurements to define the actual RFR issue.)

Arbuckle, WPIX--Getting back to moving to a new location, there are a couple of options. We could have a tower built on the WTC #2. The same structure exists in WTC tower #2 that could presumably hold another antenna mast. The combined masts would look similar to Handcock or Sears of Chicago except they would be on two separate buildings. The issues are cost of construction.

Kraus, WNJU--It would not seem feasible because the Port Authority views the deck of WTC #2 as a profit center due to the observation deck.

Cohen, WXTV--The biggest problem we will face is that UHF antennas on large diameter masts like at the WTC is that they can't work and that we can prove it. There are newer approaches to UHF antenna design that are used in Europe that may work better.

Dausman, WNBC--We have been told by at least one manufacturer that there has been success with wider bandwidth lower gain antennas. However, the mast diameters involved are not known. This could allow If the gains are not kept up around 10, the transmitter powers could get unmanageable in a hurry. As it is 50 KW transmitter for each of us will have a significant impact on the building systems. The heat dissipation will cause HVAC impact. If we assume an overall transmitter efficiency of 50%, then we will be adding approximately 1 megawatt of power consumption and a half a megawatt of heat dissipation requirement. The base building systems would have to be significantly upgraded to accomplish this.

Fedele, WCBS--Knowing this and the cost of working with the Port Authority at the WTC, we should study a different location such as a high common tower on an island. FAA clearance would be the major obstacle. The costs that we would incur as a whole would be a lot less, we potentially would not have the RFR problems.

Arbuckle, WPIX--If that is an option, then we have to explore where we would put such a structure. The Meadowlands of New Jersey or the Trump site in the West side rail yards are probably areas where we would want to be. Otherwise, there would be blockage to certain coverage areas by the city buildings.

Dausman, WNBC--Also, it would seem that if we start to get to far out of the metro center, that we could begin to have channel allocation impact with other cities. We are tight as it is up here in the Northeast.

Fedele, WCBS--A conservative estimate would be $2 million per station for a combined 2000 foot multi-tenant tower. That would total about $20 million for the project. The effort a the WTC could easily be double that based upon past experiences. Our leases expire in the 2004/2005 time frame. We all have comfortable rates negotiated while the WTC was being constructed in the 70's. Those rates at the WTC could go up substantially. Having an alternative could be the leverage we need to negotiate favorable rates to remain at the WTC.

Dausman, WNBC--There are many multi-tenant 2000 foot towers in the country.

????Kraus, WNJU--I do not know of any towers that have 9 stations on them.

Dausman, WNBC--There are some, Sutro Tower in San Francisco has that many. I don't think we would want to consider a self supporting structure like that, however, if the UHF band could be broken down into three sections, then it would seem possible that a 2000 foot tower could hold three antennas and three waveguides to support 3 stations each with a transmitter power of 50 KW.

Arbuckle, WPIX--One of the questions that will have to be answered is whether the antennas (NTSC and ATV) have to be in the same place.

Fedele, WCBS--Maybe they don't have to be.

Dausman, WNBC--It would be complicating the project immensely to think that they have to be collocated. We would need an answer to this question. Essentially, we have two options for New York. Either modify the WTC in some manner or move the ATV transmitters and possibly the NTSC transmitters to a new site, perhaps on a tall tower.

Fedele, WCBS--Antenna orientation is an issue. If people have a VHF/UHF antenna on their roof, will they necessarily buy another antenna to point in a different direction to the new ATV simulcast stations.

Dausman, WNBC--The average viewer in New York is hooked to some sort of house antenna system either good or bad. They are going to plug there new ATV set into this system, or use the indoor antenna, and then subscribe to cable when all of that fails to be acceptable.

Cohen, WXTV--Hopefully, the new ATV signal will be a lot less susceptible to reflections and multipath being digital.

Arbuckle, WPIX--That will hopefully come out of the actual over the air testing of the various systems.

Fedele, WCBS--Antenna orientation will only be getting worse anyway with WXTV moving to Empire. WCBS has this problem now when they go to there standby site at Empire.

Dausman, WNBC--So everyone agrees that moving off the WTC to a new site is one possibility.

Fedele, WCBS--There is a financial and a RFR safety reason to move off the WTC.

Dausman, WNBC--It would probably take 5 years to get a project of this magnitude through the necessary approvals of FAA and local zoning. The timing is rather poor given the current economy and the declines in audience that a lot of the stations are facing. It will be difficult to recommend to our managers that they should be spending money on feasibility studies for ATV transmission sites. However, the feasibility studies should be done if possible.

Cohen, WXTV--There will also be a major environmental impact statement required to build a new structure anywhere in the New York area.

Baker, WABC--There was a study made in the 70's to put a tall tower for television broadcasting along the Hudson River. The reason was to prove to the Port Authority that there were options to the WTC. The plan helped force the rents to be reasonable at the WTC. It was a self supporting 1000 foot tower supported by pylons in the river. They first tried to get City permission to build it in Central Park.

?????--Cable delivery of our ATV signals may be the least expensive approach. The costs associated with any of the proposals thus far are staggering. The returns will be very low. We should be prepared to feed the cable which will have much higher penetration in the coming years.

Arbuckle, WPIX--We are already feeding Manhattan and Paragon cable with direct feeds now. We certainly could feed them ATV signals. However, there is significant interest in over

the air ATV technology by the broadcast industry and the FCC that the door has not been closed yet.

Fedele, WCBS--Cable is having trouble delivering a good picture with NTSC. It's hard to believe that they will do a better job with ATV.

Dausman, WNBC--If the signals are digital from our studios to the home receiver, it should be a lot more robust. The cable companies should not be able to mess it up.

Cohen, WXTV--If the ATV introduction mirrors color in any fashion, then it will take a while to get ATV sets into the hands of the consumer. Sets will be expensive and there won't be much of an audience. Maybe cable only distribution of the ATV signals makes since until significant viewers are established.

????--Since the number of receivers getting television from cable is steadily increasing, and the number of receivers getting off air reception is decreasing, why spend all the money on an over the air ATV system when nobody's watching. This my not be the best political solution for the broadcasters, but it may be the economical approach.

Cohen, WXTV--There is another possibility for New York. That is to find the best location we can for the lowest cost. This won't be the highest, and transmit from there. Then with microwave and fiber fed translators and boosters, fill in the rest of the coverage problems. A multi-site lower power system may be much cheaper than the full power alternative. On channel boosters may be very appropriate for digital transmission.

Dausman, WNBC--Then one of the questions that needs to be answered is will ATV, by virtue of being digital, lend itself to be better to multi-site transmissions than our existing transmission standard. Perhaps four or five satellite transmitters instead of one central transmitter to cover the same area at a lower cost. WNBC could use 30 Rock as a master site with slave sites North, South, East, and West.

Kraus, WNJU--Perhaps there would be some sort of cellular approach.

Dausman, WNBC--The to recap for the purpose of our discussions the obstacles we face to implement ATV in New York are landlord approvals, existing structural loading, power and cooling, RFR regulations, FAA regulations, zoning approvals, environmental impact, politics, and cost.

Baker, WABC--It will come down to politics and money. The politics may work in our favor and help us get what we need

in New York. Television has always been strongly supported in New York.

Fedele, WCBS--We may want to take a hint from the past and study one or two alternative fully to make the Port Authority understand that they do not have an exclusive franchise on our business.

Kraus, WNJU--If you want to begin applying pressure an look at alternatives, being on the Board of Directors of the Meadowlands Regional Chamber of Commerce, I have the contacts and could have some conversations. (to get the idea launched for a tall tower in the Meadowlands.) That would not stay private very long.

Arbuckle, WPIX--It is probably a little early to take action in this market. We need to keep our management apprised of the complex issues for ATV in New York so that down the road, they can be prepared for the problems.

Discussions concluded at approximately 4:00PM.

TAB

# ATTACHMENT I

IS/WP2-
February 27, 1991

## Federal Communications Commission

## Advisory Committee on Advanced Television Service

## Third Interim Report to the

## Implementation Subcommittee

## from

## Working Party 2 on Transition Scenarios

**S. Merrill Weiss, Acting Chairman**
**J. Peter Bingham, Chairman**

## Executive Summary

This report covers the third period of work by IS/WP-2. Regular meetings have been held during the year since the last report (dated February 5, 1990), with a cumulative total of 25 meetings held through February, 1991. The activities of the Working Party have continued in the same direction and with the same goals as reported in previous Interim Reports.

The fundamental efforts of the Working Party have been aimed toward developing a model for the introduction of Advanced Television into the United States, looking particularly at the implementation issues which will have to be addressed. The vehicle for the model is a series of PERT (Program Evaluation and Review Technique) charts and underlying activities and milestones networks which define the tasks which must be performed by many industry segments in order to start up Advanced Television.

In examining the many aspects of the eventual implementation for the various industry segments, a number of obstacles which will have to be overcome have been identified. This has caused a course correction to study the obstacles, to determine their nature and extent, and to develop plans for their amelioration at the time of implementation. This process involves additional surveys, which have been developed and are now under way, and the establishment of Local Area Groups to study the issues in areas expected to be particularly difficult.

As a result of the need for the additional studies plus some new information which was provided by a couple of organizations from major studies they had undertaken, the schedule for completion of the Working Party's task has been extended. It is now anticipated that the effort will be completed late in 1991 or early in 1992. In the meantime, information is being provided to other parts of the Advisory Committee (e.g. SS/WP-3 on Economic Analysis) through joint meetings and other methods.

## Background

Since its formation in 1988, Implementation Subcommittee Working Party 2 on Transition Scenarios has held 25 meetings, the latest on February 26. It has met approximately monthly since issuing its last Interim Report. Attendance has ranged between 10 and 20, with some 8 to 10 regulars who keep the work of the Working Party moving forward.

Participation in IS/WP-2 has come from a cross-section of the television and related industries. Included are network and local terrestrial broadcasters, representatives of cable, telephone operating companies, consumer electronics manufacturers, broadcast and professional equipment manufacturers, and others, as well as a number of consultants and attorneys plus representatives of the FCC itself.

Early in the development of its work, the Working Party established a number of Specialist Groups to deal with the particulars of specific industry segments. The Specialist Groups include coverage of Terrestrial Broadcast, Production Facilities, Networks, Cable, Consumer Electronics, Common Carriers, and Satellite Distribution. The Specialist Groups provided expertise in their respective areas to develop the models that will be integrated into the overall implementation scheme.

The principal instrument used by the Working Party for modelling the implementation of Advanced Television is the PERT chart and its underlying networks. PERT charts are comprised of a series of tasks and milestones connected together in networks that show the dependencies of later tasks on earlier tasks in any process. They are very powerful concepts used in the management of very large projects. They are supported by microcomputer software which provides analysis capability virtually impossible to achieve manually. Examples of PERT networks were attached to the last interim report and will be included with this report where necessary to the understanding of the discussion.

PERT networks and charts have been developed by each of the specialist groups to model the implementation of Advanced Television in the industry segments which are their areas of concentration. These networks range from simple, single-page charts for satellite distribution and common carrier conversions, to a dozen, multiple-page charts for terrestrial broadcast, network, and production conversions. The PERT networks are based upon implementation scenarios that have been devised by the Specialist Groups for their areas of concern using their experience in those industry segments. Construction of the PERT networks has resulted in the unearthing of several potential limiters to the implementation process which will be further explained later in this report.

The ultimate objective of the PERT charts is to use them as the foundation for timelines that define the course of the implementation scenarios prepared by the Working Party. The timelines, in the form of Gantt charts, will show the expected dates (by quarter and year) that each of the necessary tasks can be accomplished and the various milestones reached. This will serve two purposes: to help the Advisory Committee and the FCC in the selection process by examining the relative implementation times of the several systems proposals and to help the industry in managing the implementation once the selection is made.

**Activities**

The activities of the Working Party since the last interim report have been concentrated in two principal areas: First, completion of the transition scenarios, PERT networks, and timelines. Second, ascertainment of the nature of the various obstacles to implementation which were turned up during the examination of the industry segments that was necessary to the construction of the PERT charts and timelines.

Completion of PERT Networks

Work on the PERT charts, during the year since the last interim report, has concentrated primarily on the terrestrial broadcast, network, and production and post production segments, all of which have been under the purview of one of the Specialist Groups. Consideration of the essentially "broadcast" part of the television industry has led to several additional studies and surveys because of the complications of the transition for the broadcasters.

The PERT charts for the broadcast and related industry segments are the most complex of the networks developed. This derives from the many facets of these segments and the complex operations they represent. As a result, the broadcast segments have been divided into four categories, each with its own set of scenarios and PERT charts. the four categories are:

Transmitter Facilities
Local Stations
Networks
Production/Post Production Facilities

The transmitter facilities and the local stations are really part of the same entities, but it helps the analysis to consider them separately, with different scenarios for each. The local stations, networks, and production/post production operations share the same scenario descriptions, although each has its own implementation of those scenarios.

Three basic scenarios were developed for the transmitter facilities and for the other categories of operations. The transmitter scenarios are:

Modification of an existing transmitter
with possible addition of equipment
Construction of a new transmitter and antenna,
but using the same tower
Construction of a new transmitter and antenna,
with a new tower also required

Of these, modification of an existing transmitter applies to the EDTV systems, in particular ACTV and Faroudja. With Faroudja having withdrawn from consideration, it now applies to ACTV only. The two scenarios requiring new transmitters and antennas apply to any and all HDTV simulcast approaches. This is true for the new digital techniques as well as the analog schemes proposed earlier.

The basic scenarios for the local station, network, and production/post production activities (all essentially "studio" operations) are:

Modification of existing facilities at 4:3 aspect ratio,
retaining 525 lines, using new encoders
Modification of existing facilities at 16:9 aspect ratio,
retaining 525 lines, new encoders or component operation
Rebuild of facility with High Definition equipment

The first of these scenarios was directed toward the Faroudja system, and, so, has been removed from consideration. The second uses an upgrade of existing facilities which is appropriate for both ACTV and the simulcast systems with up-conversion of the line rate. It is likely to be used by many broadcasters as an economical entry for simulcast operation. The third is the most expensive route and the one with the greatest impact on studio operations, requiring a total shutdown and replacement.

The general approach taken in all of the scenarios is to divide the conversion process into stages which can be carried out more or less at will, although sequentially. This is true in the studio cases but was found to be inappropriate for the transmitter conversion. The transmitter has one stage that results in a complete transmission facility for whichever system is under consideration. Anything short of this did not make sense. In the studio cases, the staging was designed to permit quick implementation for a small amount of Advanced Television operation on a daily or weekly basis, followed by an intermediate level of conversion to permit sustaining operations at a moderate level for the long term, leading to complete conversion over a long time as required for the operator's activities.

Recently, the Working Party has received input from CBS and PBS (See Attachments A and B.) on studies conducted by those organizations looking toward their implementation of Advanced Television. Both studies included a different approach to the local station transition from that which had been devised by the Working Party. The Working Party studied the CBS and PBS inputs and then modified the local station scenario (See Attachment C.) to take into account some new thoughts contained in the studies. These were primarily a phasing of the implementation into five or six steps (six for CBS which included Electronic News Gathering while PBS did not), thereby allowing a longer implementation period with more decision points about continuation. In either case, the first stage is the passing through of the network with no local material inserted other than station identification.

## Surveys

One of the important techniques used by the Working Party to develop information concerning an eventual transition to Advanced Television is the conducting of surveys of various parties. Surveys were conducted previously to examine the issue of tower space availability and the time for availability of equipment built to different production standards. These surveys produced useful results in calling attention to the issues, even if they were not always conclusive on the precise questions they addressed.

One of the first surveys conducted by the Working Party was to ascertain from television station chief engineers their expectations regarding the availability of space on their towers for additional antennas and transmission lines. While the results were more qualitatively than quantitatively valuable, they pointed to the need for further examination of the problems which will have to be overcome. A consequence of this was the establishment of Local Area Groups, which are explained in detail below.

Because of the need to determine the likely limitations on personnel resources (discussed below under Issues), a new telephone survey of a smaller group of stations has been devised. It will examine the human resources available to stations both internally and externally. In order to validate the survey, a very small sample has just been completed to make sure that the questionnaire (See Attachment D.) gets the answers that are being sought. The full survey will be conducted shortly by a consultant hired for the purpose. The cost of conducting the survey is being split among four companies whose employees participate in the Working Party.

A concern raised at the Implementation Subcommittee about the information to be obtained from the survey of stations was that it would not create a complete picture of the situation. This is because much of the human resource which might be available to stations to make a conversion to Advanced Television might be provided from the group owners in one way or another. (See Issues below.) To test this matter, a corollary survey has been developed for group owners. (See Attachment E.) This survey, to be conducted by mail, will be sent out very soon.

## Local Area Groups

As mentioned above, the first survey of television stations turned up the fact that some stations will face considerable obstacles to their installation of new antennas and transmission lines for simulcast broadcasting. Two surveys conducted at about the same time yielded differing numerical results about the proportion of stations which will be so affected. But there was no question that some number will have problems getting on the air from their existing towers.

To guage the impact on the conversion to Advanced Television of such limitations in the ability to install simulcast transmission facilities, a decision was made to examine the situation in a few of the larger markets where problems are likely to occur. The larger markets were deemed to be the most important for initial examination since the largest populations would be impacted if there were a lack of Advanced Television service and since the large markets are the ones most likely to have difficulties with fully loaded towers, limitations in the number of sites for towers, locally defined radiation limits, and the like.

The technique formulated for the study was the establishment of Local Area Groups in each of five cities to explore the implementation of simulcast transmission there. The cities selected for the first round of study are:

New York
Los Angeles
Chicago
San Francisco
Boston

The Local Area Groups are comprised of the chief engineers of all of the television stations in the environs of the city. One individual in each market has agreed to be the facilitator of the discussions to be held. The groups will meet to examine their current situations, looking at how much tower space is available in what locations. They will then explore possibilities for the addition of the antennas and transmission lines that will be required to support simulcast broadcasting. The Working Party provided instructions to the Local Area Groups to direct their activities, which are Attachment F.

So far, four of the Local Area Groups have held meetings. A couple of them have achieved good results, while the other two suffered from poor attendance as a result of the Persian Gulf conflict. The level of discussion and study in the groups has been exactly what was sought. (See Attachment G for an example of an early report from one group.) All indications are that the Working Party will gain the knowledge it wanted when it established the process. Results of the Local Area Group meetings will be used to guide the activities of the Working Party over the next year or so in its consideration of transmitter implementation.

## Issues

Resource Limitations

A significant issue that has turned up in the preparation of the PERT charts is the previously undocumented assumption that unlimited resources will be available at the television stations and other participants in Advanced Television to make the necessary conversions of facililties. There are two kinds of resources which have a bearing on how quickly implementation can take place: personnel and capital.

The limitation on personnel availability stems from the fact that stations, in general, and networks and production houses as well, do not have large numbers of design engineers on their staffs. The conversion to High Definition operation will require the complete redesign and reconstruction of major portions of facilities. While the personnel to do the installation work can be hired from outside fairly easily, designers with the skills and experience to fashion new operations are relatively few within the industry. Certainly, most stations are not expected to have people with such skills waiting to be called upon. The surveys of stations and group owners discussed above are designed to explore this hypothesis and to seek ways in which the problem, if it exists, can be overcome.

Examples of the kinds of approaches to be explored with the stations and groups are whether skilled designers can be provided from the group level to the stations, whether such personnel can be reassigned from one station which has such resources to others which do not, whether the implementation of stations should be staggered to accommodate these limitations, and whether outside consultants and vendor support are available to get the job done and to what extent.

A related limitation is the availability of capital to make the transition possible. With the incomes of stations and networks shrinking, in the aggregate, consideration must be given to the pace at which conversions can take place. If the owners of the stations are unwilling or unable to make investments beyond certain levels, the implications for the speed of implementation are considerable. These effects are being explored in the survey of group owners.

Digital systems

Another issue that has only just been identified and not yet explored is the matter of the use of digital systems for simulcast broadcasting. It is unclear what impact, if any at all, this might have on the implementation of Advanced Television. It is an issue which must be taken up with the proponents. The meetings planned with the proponents, as discussed below under Future Work will provide the perfect vehicle for appropriate discussions with the proponents.

**Future Work**

Work is planned in the near future on all of the aspects of the committee's activities that are not yet complete.

The surveys of the stations and of the group owners to explore potential resource limitations are expected to be completed within the next several months.

Analysis of the surveys will take place during the second and third quarters with the results fed back into the timing used in the PERT networks and resulting timelines.

The Local Area Groups are expected to complete their initial round of discussions in the second quarter. Depending upon the problems they identify and the solutions they devise, the Working Party may modify its implementation plans or may make recommendations to the Implementation Subcommittee and through it to the Advisory Committee of specific items which should be included in its report to the FCC. These items would be suggestions for ways the rules should be written, or other such considerations, which would enhance the ability of stations to implement Advanced Television at an early date.

Meetings are planned in the near future with the proponents to gain their inputs and insights into how their specific systems will be implemented. A series of meetings is planned, the first of which will be a joint meeting with all of the proponents in which the PERT charts will be explained in detail. Then, meetings will be held separately with each proponent to learn of its comments on how the PERT networks would apply to its particular system or systems. Preparations for these meetings is currently beginning. They are expected to be completed in the second quarter of 1991.

Following the meetings with proponents, system-specific PERT networks will be developed. These will be used to point out to the Advisory Committee and its constituent sub-groups any differences in implementation schedules or requirements which might exist between the several proposed systems. They will also be used to have available implementation plans tailored to whichever of the systems is eventually selected for Advanced Television broadcasting in the United States. This work is not expected to be complete until the first or second quarter of 1992.

List of Attachments:

Attachment A: CBS Study
Attachment B: PBS Study
Attachment C: Local Station PERT Chart
Attachment D: Questionnaire for Television Stations
Attachment E: Questionnaire for Group Owners
Attachment F: Instructions to Local Area Groups
Attachment G: Report from New York Local Area Group

TAB

# ATTACHMENT J

## Implementation Subcommittee Leadership
## FCC Advisory Committee on Advanced Television Service

| | |
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TAB

# ATTACHMENT K

IS - 0001
10 Mar 88
7 Mar 91

Implementation Subcommittee
of the
FCC Advisory Committee on Advanced Television Service

## Document Index