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**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

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| **In the Matter of** | ) | |
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| **Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service** | ) | **MM Docket No. 87-268** |
| | ) | |
| | ) | |
| **Fifth Further Notice of Proposed Rule Making** | ) | |
| | ) | |

**REPLY COMMENTS**

**OF**

**Birney Dayton**

**NVISION, INC.**

**August 12, 1996**

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List ABCDE

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## I. Introduction

NVISION, INC. hereby replies to the comments filed on July 11, 1996 in response to the Commission's Fifth Further Notice of Proposed Rule Making ("NPRM") in its Advanced Television ("ATV") proceeding.

By way of introduction, NVISION, INC is a young and growing company that currently employs 45 people. NVISION was founded in 1989 with the express goal of designing and manufacturing connectivity equipment for the advanced television studio. The current attempts to derail the ATV standards process cause us great concern.

## II. Lack of Standard Will Stifle Business Growth

To date, NVISION has managed to build a growing and profitable business through the long and sometimes tedious process of developing an ATV standard by focusing on the non-video layers of the television production plant. We currently build Digital Audio distribution and conversion equipment as well as Time Code and Control Data distribution equipment. Now that the ACATS process has completed its recommendation, prompt approval by the FCC is essential for our company to enjoy further growth along our chosen path. In the absence of a standard, we will soon be forced to begin development of NTSC video products if we wish to sustain our growth. This would be in direct conflict with our goal, and not in the best interest of U.S. competitiveness in advanced television technology. The ATSC standard is the result of many years of diligent work by many dedicated people in a completely open process, and is a wholly adequate, in fact excellent, proposal. I therefore urge the Commission to approve the standard as proposed in as timely a manner as possible.

## III. Closely Involved in Long Process

I personally have been intimately involved in the HDTV and ATV process for nearly 20 years. As technical Co-Chairman of the SMPTE Working Group on High Definition Electronic Production (WGHDEP), I helped guide the development of the 16:9 aspect ratio, which subsequently became a World standard. During the entire ACATS process, I chaired System Subcommittee, Working Party 1 (SS/WP1), which was tasked with system analysis of all the proposed approaches to advanced television from the early compatible analog systems to the final Grand Alliance system. I do not and never have had any ax to grind, other than helping to develop the best ATV system in the World, so that I could compete in the subsequent vigorous market for new studio equipment. I believe that anyone who was present for the SS/WP1 process will agree that, while as the chairman I was not easy, I was always fair, and gave equal time to large and small players alike. After reading through a number of comments, I feel that certain members of the computer industry and the cinematographers association are either disingenuous or misinformed in their submissions. As such, I feel compelled to comment.

## IV. Voluntary Standards are Expensive for Consumer

After thinking about the many comments regarding the value of voluntary standards in the computer industry, I bothered to examine the capabilities of the display card in the computer that this response is being prepared on. The graphics card is a high-end mainstream unit. It is capable of 115 different combinations of scan rate, resolution, and color depth. Chaos is a closer definition than standard for this situation. The graphics card and its attendant 21" monitor are capable of resolution approximating HDTV, and together cost over $2,000. This is five times the price of a high quality 25" television set, and over ten times the price of and entry level 19" or 21" television set. If the computer industry standards were better thought out, the cost of the required capability could be

halved. It is also important to note that in the computer industry, "voluntary standard" has come to mean the biggest gorilla gets to do what he wants with little or no comment by others. The ATSC standard, by contrast, was developed in a very open and fair process, to which both large and small players contributed. As one of the small players, I can testify that my voice was not ignored anywhere along the way, and I believe the proposal before the FCC is one that will be cost-effective for producers, broadcasters, and consumers alike. It is carefully thought through, and will provide the basis for the World's highest quality television for decades to come.

In contrast, the Computer industry introduces a new standard for some aspect of the system about once every two weeks. The result is that computers are so obsolete in two to three years, that for most, the only recourse is a new computer. This is a very expensive course, and results in computers having an elitist character. If you have enough money to stay in the game, and enough education to keep up with the change, a computer is a wonderful and productive gadget. If you can only afford a new $189 TV once every 12 years, as is the case with a large segment of our population, you are opted out of the computerized elite. In light of this situation, the FCC should approve the ACATS recommendation as a lasting standard with no sunset clause, so that the average American can buy a television set with the confidence that five or ten years from now, it will still be useful.

## V. CRTs Obsolete, and Computer Industry has not Invested

Many of the computer industry comments are directed at trying to define the refresh rate of a television display higher than 60 Hz. It should be noted that the above-mentioned graphics card has available display rates of 56 Hz progressive and 43 Hz interlace, as well as many 60 Hz modes, including 1280 x 1024, which does not have square pixels. It is also worth note that the majority of computers available to consumers (in the computer store) have very poor quality displays, and are only capable of the advertised resolution

in either an interlace or 60 Hz progressive scan mode. Discovering the actual scan rate capabilities of a typical consumer monitor is a challenge. The information is rarely advertised in the store display or noted on the shipping box. Often, the manual provided does not even illuminate the situation. In the end, experimenting with different resolutions until the monitor crashes, is often the only solution.

Part of the cause for this situation is that the U.S. computer industry has spent virtually no money on basic display research or manufacturing capability. IBM is notably the only investor, and that investment was in a flat panel joint venture in Japan. Those companies that do make computer-capable displays in this country are all in support of the ACATS proposal (i.e. Philips, Sony, and Zenith). When Intel or Apple or Compaq invest in a display manufacturing capability, they may be qualified to comment on the relative cost of television displays.

The consensus from the complaining computer companies is that a 60 Hz display rate is not fast enough (even though they don't practice what they preach). The essence of HDTV is a large flat-panel display. Such displays are rapidly coming available. The most likely to succeed are DC Plasma and Plasma Activated Liquid Crystal displays. Neither of these technologies is burdened with the flicker problems associated with Cathode Ray Tubes (CRTs), so the question of adequate refresh rate is replaced with the question of adequate update rate. As a long-time promoter of improved temporal resolution, I have been reminded repeatedly by executives of the movie industry that 24 frames per second is enough to tell a story. In experiments run by Doug Trumbull during the development of the Show-Scan system (a 60 fps, 70 mm movie format used by theme parks), no significant increase in stimulation of viewers was observed when the frame rate was raised above 60 Hz.

In summary of this point, the complaining computer companies are claiming the ATSC standard is not ready for the future, when in fact, they are not demonstrating an awareness of the future themselves.

## VI. Movie Aspect Ratios

The comments from cinematographers are centered around aspect ratio and square pixel considerations. To set the record straight, before the SMPTE WGHDEP chose the 16:9 aspect ratio, it was noted that 80% of the then current film production was for 1.85:1 U.S. release, and that most of those films would be simultaneously or subsequently released in Europe and Japan at 1.66:1, since that is the preferred theater display aspect ratio in those areas. It was also observed that 1.78:1 (16:9) is the geometric mean between 1.85:1 and 1.66:1, and as such, must be protected in production to satisfy the normal theater release process. It was also observed that ultra-wide screen movies (2.35:1 and 2.4:1) use anamorphic lenses to squeeze a wide-screen picture onto a 4:3 aspect ratio piece of film. These formats unequal horizontal and vertical display resolution by a factor of 2.4/1.33. This is the equivalent of highly non-square pixels.

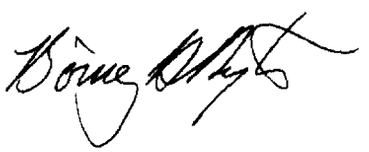
All of the above observations are true, with the exception that a slightly higher percentage of new films are produced in anamorphic formats. However, a clear majority are still produced in the workhorse 1.85/1.66 format. The suggested 2:1 format is not consistent with any existing film format, and no equipment exists to shoot or display such a film format.

In light of the above facts, the position of the cinematographers supporting the CICATS proposal is mystifying, to say the least.

## VII. Conclusions

In conclusion, the ATSC standard was rigorously developed, and is in the best interest of American technology, and the country as a whole. The FCC should adopt it as quickly as possible, so the transition to HDTV can begin.

Sincerely,



Birney Dayton
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