

WASEC'S NETWORK OPERATIONS CENTER

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WARNER AMEX SATELLITE ENTERTAINMENT COMPANY

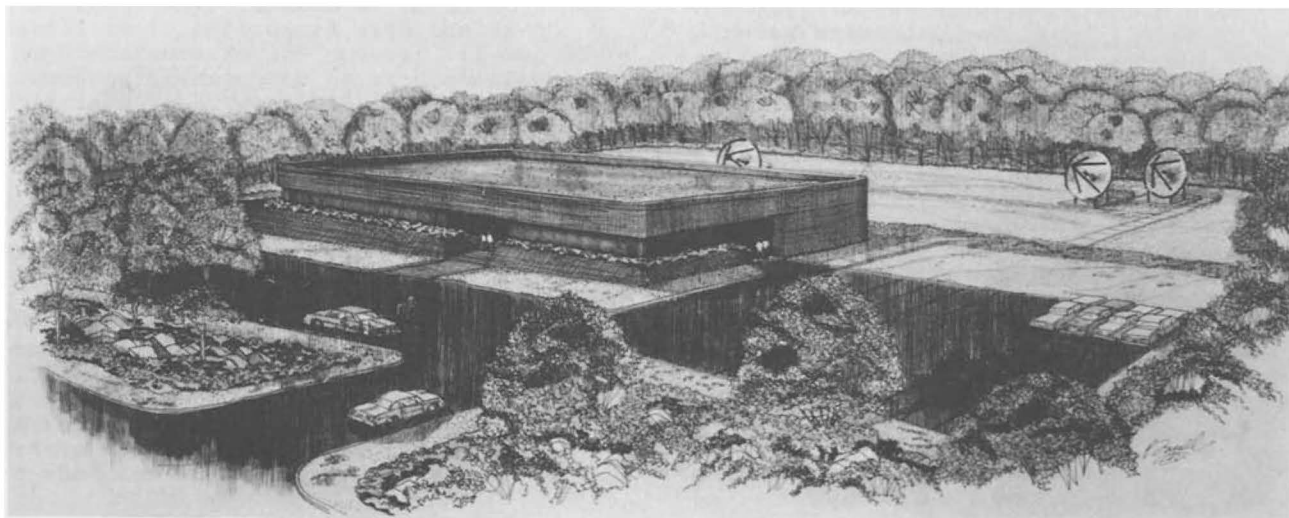
ABSTRACT

A year and a half ago the newly formed Warner Amex Satellite Entertainment Company was given a charter by its parents, Warner Communications, Inc. and American Express to develop and operate several national cable television networks. In order to accomplish this goal plans for distribution both on the earth and in space were formulated. We describe operational requirements and the resulting design concepts which led to plans to construct the WASEC Network Operations Center in Smithtown, N. Y. NOC will begin operations 12:01 a.m. 8/1/81 to deliver MTV, Music Television, The Movie Channel, and Nickelodeon.

the summer of 1980 we undertook a search for a site that would meet our needs realizing that new program service offerings would be delayed until a new expanded facility was available. A list of site selection parameters was developed while the facility itself was being designed. During the course of this project the PERT system was used to insure tasks would be undertaken at a moment most appropriate to complete the project within a minimum amount of time.

SITE SELECTION

To consider a site we used a scoring system with factors of differing weights. In order of importance these were:



NETWORK OPERATIONS CENTER

W Warner Amex
Satellite Entertainment Co.
Proposed Facility Smithtown, N.Y.

BACKGROUND

Currently WASEC leases space in Buffalo, New York for its videotape and communications equipment. Although operations there are now satisfactory opportunities for long term expansion are poor and its remoteness from headquarters is an intangible but sorely felt factor. In

1. frequency coordination
2. community acceptance
3. available work force
4. proximity to headquarters
5. available services

The New York City metropolitan area is a

most congested communications environment. Armed with such tools as natural and man-made shielding evaluations were made both with computer and on site RFI measurements. ATT Long Lines was invited to the site during the prior coordination phase so that upon application to the Commission there would be a minimum of objections. Community acceptance was a crucial hurdle. As site selection narrowed community officials were briefed frankly and to the point regarding potential hazards and benefits of such a facility so that we would gain an early sense of disposition to our plans. It was important to have a resident trained workforce to augment those who accepted the staff-wide invitation to relocate from Buffalo, as we would need fifteen to twenty additional operators and technicians at Smithtown. That intangible, proximity to headquarters was constantly directing our focus nearer to transportation facilities and the city itself. We also considered the density of high technology service and supply companies which would make routine and emergency repairs that much easier.

The difficulty of reconciling the first two criteria with the last three was great. But a location in the township of Smithtown, N. Y. within an industrial park met all our specifications. Using natural and man-made shielding and employing a double diffraction model the orbital arc from 50°W to 150°W was cleared for the entire C band. WASEC now holds an FCC Construction Permit for the site. The industrial park has served as a high frequency communications facility for over forty years and recently within the park two 11 meter X band antennas have been erected for an experimental military satellite program. These installations made explaining the nature and implications of our facility to the county officials that much easier. Zoning variances were approved on the eve of the hearings. With respect to available workforce, a ten mile radius encloses two UHF televisions, several large cable systems, and three universities each with elaborate teleproduction centers. The site is located a little over an hour by car from headquarters via two main highway arteries and is serviced by the Long Island Railroad. Also it is five minutes from an airport which can be reached in ten minutes from a Manhattan heliport. Within a five mile radius are several major suppliers of equipment and services needed by such a facility. In fact, the ground communications equipment design is being supported and will be installed by a firm within the industrial park, Satellite Transmission Systems.

DESIGN

Three overall factors guided our design of NOC, all of equal importance.

Capacity

Quality

Reliability

WASEC now operates two networks, The Movie Channel and Nickelodeon. On August 1st, MTV, Music Television will be launched. Several program service offerings are in various stages of development. Our space segment now consists of four 24 hour assignments on RCA Americom's Cable Net 1 and one 24 hour assignment on Cable Net 2. Soon RCA will allocate an additional thirteen 24 hour assignments for activation in January 1982. Taking these factors into consideration we settled on a building able to house ten sets of facilities to service any particular network. Each facility will include highband videotape equipment, a control room, and ground communications equipment. In addition there will be three communications antennas; two of eleven meters and one of seven meters diameter. While these will serve the near term long term capacity of the site will allow the addition of two eleven meter antennas plus tripling the building size. In all we have purchased four acres of land and are constructing a 15,000 sq. ft. building.

The technical quality of our picture and sound is of major importance. In the homes of your subscribers premium, basic, distant signals, and must carry's will all be judged by the same standard. WASEC intends to be unsurpassed in this arena. Every piece of equipment has been selected as an example of state of the art. Every moment of origination will be from either 1" Type C format or 2" quadraplex cartridge machines. There will be a dedicated control room for screening all incoming programs so that picture and sound may be monitored in a darkened and quiet environment. Digitally generated VTTS and VIRS will be continuously available on all networks for in-use testing. To protect our videotaped programs from premature wear the atmosphere within the plant is cleaned with filters used in hospital operating rooms and kept to close temperature and humidity specifications.

Sound shall not be the "forgotten child" of WASEC's networks. All equipment, including quadraplex VTR's, backup VTR's, routing switchers, and patch fields have been designed for two channels of sound. The first Dolby A noise reduction equipment designed to be integral to the Ampex VPR-2B's will be employed. The sound transmission system for MTV, Music Television will carry to your subscribers hi-fidelity true stereo sound doing justice to the most discriminating audiofile's component audio system.

High reliability is maintained by a balance between personnel and equipment. Not only must the inevitable equipment failures be taken into consideration but the work load and environment must be analyzed to ensure technicians will not be overly burdened with information or tasks, therefore avoiding potentially error prone situations.

Elements of the equipment backup system include:

- 1.a. Prime power diesel electric set for the entire plant with a four day fuel supply.
- b. Five minute Uninterruptible Power Supply for all technical equipment to carry load while the generator starts up.
- c. Dual primary power feed from the electric utility company to avoid outages caused by local power line interruptions.
2. Completely redundant Heating, Ventilating, and Air Conditioning System.
3. Each "VTR" is an ensemble consisting of:

1" Type C w/TBC
3/4" w/TBC

Time Code Synchronizing
equipment
Audio Video switch between
the two VTRS

This ensemble will ensure that programming will not be interrupted due to VTR related difficulties.

4. Isolated backup switching equipment in each control room.
5. Two Hot Standby Exciter/HPA's under computer control.
6. Temporary emergency authorization license for transmit on the seven meter antenna in case of an 11 meter antenna failure.

All of these steps have been taken to ensure that a single point failure will not effect operations on any network.

Elements of the personnel workload limiters are:

1. One control room per service - no operator will be asked to operate or monitor more than one network.

2. Distributed computer control for each network using non-keyboard type panels - during the inevitable control system failures operators will have access to program switchers and VTR machine controls, rather than having to remember and type complex commands on a keyboard.
3. One inch reels will be limited to 1 hour in length so that there will be a uniform one to one relationship to backup 3/4" recordings.
4. Sound isolation will be used between VTR and Control Rooms so not to distract operators from the task at hand.
5. Uniformity of equipment by make and model so as to speed repairs by technicians.

FUTURE

This project will not end with the scheduled launch in August. In addition to providing for rapid expansion of capacity to distribute program services which are currently in development at WASEC, NOC will be used as a tool for technology development in transponder loading in order that we maximize the quantity, quality, and type of services we make available to our affiliates using limited transponder resources of domestic satellites.

ACKNOWLEDGEMENTS

Many people, manufacturers, and service firms provided customized and unique solutions to the challenges of this project. So thanks is in order for many. Above all Dom Satsi, Director of Engineering for WASEC has been instrumental in locating, designing and implementing NOC. Compucon must be congratulated for going back to the computer keyboard repeatedly with new and unconventional models to fully coordinate this site. Finally Abcon Industries as construction manager took on a skeptical zoning board and formidable design task while keeping within a budget and doing so in one half the usual time frame associated with such projects.