National Association of
NAB
BROADCASTERS

ORIGINAL

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February 10, 1997

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Notice of Oral and Written Ex Parte Presentation: MM 87-268, Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service

Dear Mr. Caton:

On February 10, 1997, representatives of the National Association of Broadcasters ("NAB") met with Roy Stewart, Renee Licht, Robert Ratcliffe, Keith Larson, Saul Shapiro, Gordon Godfrey, Bruce Romano, Gretchen Rubin, Mania Baghdadi, and Douglas Webbink of the Mass Media Bureau to discuss tower construction issues as they relate to the ability of the broadcast industry to establish digital television service nationwide.

In accordance with Section 1.1206(a) of the Commission's rules, four copies of this notice and its attachment are being submitted for inclusion in the public record of the docket. Please contact me if you have any questions.

Sincerely,

Karen Fullum

Attachment

cc: Roy Stewart, Keith Larson, Gretchen Rubin, Roy Stewart, Saul Shapiro, Douglas Webbink, Renee Licht, Gordon Godfrey, Mania Baghdadi, Bob Ratcliffe, Bruce Romano

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Tower Construction Issues

Overview

Assessment of the tower construction part of DTV deployment requires assessment of the amount of work to be done and the resource available to do the work. The entire industry tower construction period is estimated at eight years.

There are three major types of industry wide resource needed to construct towers. They are the erection crews, the manufacturing facilities, and the raw materials. It appears that the number of tall tower erection crews is the critical resource limit. Other possible constraining industries such as transmitter and antenna manufacturers are felt to be able to respond to increased demand.

Demand

The number and size of new or reinforced towers that will need to be constructed is a critical determinant in the build-out process. ACATS Implementation Subcommittee WP2 on Transition Scenarios surveyed a sample of station engineers in 1989 to assess the ability to install new antennas on existing towers. For a DTV antenna at full, i.e., same as current NTSC, power, 7% felt their existing tower could be upgraded and 65% felt a new tower would be needed. For lower power (20 dB down)situations the estimates were 5% and 45%. Extrapolation of this data to the approximately 6 dB down difference in the peak power DTV-NTSC for equivalent coverage yields an estimate of about 66% of towers which would have been forecast to need new or upgraded towers in 1989.

Since then, the tower companies report that the rate of new tower construction has been about the same or somewhat lower than the few years before 1989. Also in this interim period, the tower design standards have been upgraded, with the result that the engineering calculations now predict more towers must be strengthened to support a new load. Together this means that more new or more reinforced tower work will be needed. Therefore, a reasonable estimate seems to be that about 70% of stations will need new or upgraded towers.

With about 1400 towers, this would translate to a work load of about 1000 towers, plus the normal maintenance and repair activities and emergency replacements, estimated at about 40 jobs per year. This work can be roughly divided into three groups, short (up to 300 feet above ground level), medium (300-1000 feet), and tall (above 1000 feet). An analysis of the distribution of tower heights in 1992 (1307 towers) showed 40% were above 1000 feet and 43% were between 300 feet and 1000 feet.[1] The distribution of new towers built since then was not analyzed, but the share above 1000 feet is believed to have risen. Since it costs more to build tall towers with significant extra capacity, disproportionately more of the reinforcing work load is expected to be required on tall

[1] T. Vaugn and J. Banker, *Antenna and transmission Line for the Simulcast Period,* 1992 NAB HDTV World Conference Proceedings.

towers. NAB estimates about 500 new or upgraded tall tower jobs and 450 medium tower jobs will be needed. In addition, about 300 antenna installations on medium towers (with little or nor reinforcement) will be needed.

Supply

Three major tower companies frequently mentioned are LeBlanc, Stainless, and Kline as these are the companies who can manufacture the large steel sections for tall TV towers. Last fall, informal discussions were held with representatives of each of these three companies about production capacities. Given the current utilization of fabrication facilities, significant capacity expansion is possible and NAB's assessment is that fabrication is not expected to be a limiting factor. One source pointed out that obtaining the steel to manufacture the large towers may be the pacing item since it is imported and there are few sources. Other sources did not share this concern and one recent contact indicated that US steel manufacturers can begin producing steel with about a six month lead time, when there is enough demand. Transmitter and antenna availability are not likely to be constraints.

To determine the tower erection capability in the US the companies which build and modify tall towers were contacted. Nine companies and 21 crews that can erect towers over 1000 feet high were identified. Tower manufacturers Stainless and Kline use subcontractors for erection. LeBlanc (Canada) has its own crews. Several industry representatives set the number of "good" crews at 10 to 12, based on their individual experience. NAB estimates there are, at best, 20 crews qualified to do tall tower work.

ACATS IS/WP2 estimated 3 months for a tower alteration and a month for antenna/feedline installation. Construction of a new tower was estimated at 6 months, with a one month antenna/feedline installation. Site preparation activities make up the bulk of the difference, so three to four months per tower was thought to be a normal interval for on site erection team time. Based on recent information from tower erection companies, three month intervals (4 jobs per year per crew) is a better estimate for modeling the current industry capacity. This time interval covers new towers or major reinforcement jobs and includes antenna installation. Separate installation of antennas was modeled at one-crew-month each.

Growth of this resource can be expected to be slow due to long training periods. Each crew needs a very experienced top man and a crew leader. Training of each is via understudy on the job, and many jobs present different things to learn, stretching the period. Once the understudy for one of these positions is ready, a new crew must be created to realize an increase in industry capacity. Fortunately, training of red iron trade/support workers for other positions is less of a constraint. Some new tall tower crews may come from experienced medium tower crews combined with a capital equipment upgrade. NAB estimates growth at 5% growth in the first year (after the R&O), two years at 10%, followed by 20 % compound growth per year until there is a two year backlog remaining. At the end of this period there would be 40 crews in the field

(vs. 20 now). With these assumptions NAB calculated a forecast of completion of the tall tower work to be eight years after the assignment R&O. Since there are more crews to work on medium tower jobs, and about the same volume, the peak demand in years 3 to 6 can almost be handled, with total completion forecasted at 6 1/2 years.

Some of the other jobs (those under a few hundred feet) are assumed to be handled by less specialized PCS tower or other erection companies who choose to increase their capability. However, TV towers require custom designs, which requires a different skill set and much more design and planning time. Above 2-300 feet, the methods of erection and capital equipment needed change.