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PREDICTED INTERFERENCE AREA
FOR NCE-FM TO TV CHANNEL 6 STATIONS
Per Procedure §73.525 (Docket 20735)

On June 20, 1985, the Commission adopted new rules to protect the reception of TV Channel 6 stations from harmful interference caused by noncommercial educational FM (NCE-FM) stations operating on Channels 201-220 (88-92 MHz). The new standards adopted in Section 73.525 included a specific methodology for establishing the boundaries of an area predicted to receive interference and for determining the number of people living within that area. The rules also indicate the adjustments to be made to the predicted interference area depending upon individual circumstances. Thus, the procedure requires adjusting the facilities permitted NCE-FM stations so that the amount of predicted interference to TV Channel 6 stations is limited based on specific situations.

Attached is a hypothetical calculation of the predicted interference area which augments Section 73.525 (e)(1) of the Rules. The illustration assumes a TV Channel 6 station operating with facilities of 100 kW ERP and 300 meters HAAT and the proposed NCE-FM station operating with facilities of 2 kW ERP and 150 meters HAAT. The example shows omnidirectional patterns only. In actual calculations, however, the predicted coverage pattern of the TV Channel 6 station and the interference zone of the proposed NCE-FM station would be adjusted for the individual situation considering each radial of the HAAT, beam tilt, directional antennas, etc. See Sections 73.313 and 73.684 of the Rules.

Table 1 lists the distances (km) to certain TV and FM field strengths (dBu) assuming omnidirectional patterns. The results indicate the methodology to be used when determining the distances to the interfering contour based on protection ratios that vary according to the field strength of the TV Channel 6 signal and the channel of the NCE-FM station. Also shown are the 6 dB adjustments permitted in the interference calculation for television receive antenna directivity.

Exhibit 1 indicates the resulting interference zone for a NCE-FM station under the rules for new stations. The facilities permitted for the new NCE-FM station are such that the predicted interference area can contain no more than 3,000 persons (or 4,000 persons if filters on TV receivers are installed).

Adjustments for vertical polarization can also be made to permit NCE-FM power levels greater than the suggested 2 kW of horizontal power. For example, if the predicted interference area lies entirely outside the limits of a city of 50,000 persons or more, this hypothetical NCE-FM station could choose to operate with up to 80 kW ERP vertical-only polarization, or with a mixed polarity of 60 kW vertical and 0.5 kW horizontal.

Exhibit 2 indicates the "old" and "new" interference zones for a modified location of an existing NCE-FM station. This hypothetical change in transmitter site for an existing NCE-FM station would be allowed if the "new" interference area contained half the population of the "old" interference area.

Power adjustments for vertical polarization are also permitted for existing NCE-FM stations. However, if the TV Channel 6 station elects to purchase the NCE-FM station's antenna, the vertical polarized component of power adjustment is half that usually permitted. Thus, this example's authorization for mixed polarity, assuming that the affected TV Channel 6 station purchased the NCE-FM antenna, would be 30 kW vertical and 0.5 kW horizontal.

Although the details are not shown here, the new rules also provide specific guidelines for computing population contained within the interference area (see §73.525 (e)(2)). Provisions for considering alternate programming from TV translators, satellite stations, duplicate network service, or the existence of interference from other TV stations operating on Channels 5 and 6 are also provided (see §73.525 (e)(3)).

Finally, the hypothetical NCE-FM applicant of this example may be able to avoid computing the predicted interference area by the NCE-FM station locating its transmitter within 400 meters of the TV Channel 6 transmitter and coordinating its antenna pattern. In such a situation, the NCE-FM station operating on Channel 203 could operate with a maximum of 3.1 kW ERP.

For further information contact Kathryn Hosford or Michael Lewis at (202) 632-9660.

TABLE 1

Hypothetical Calculation
According to Section 73.525
(Docket 20735)

TV Signal		Ch. 203 U/D Ratio dB	FM Signal			
F(50,50) dBu	Distance km		F(50,10) dB	Dist. km	F(50,10) +6 dB	Dist. km
74	42	-2.0	72.0	13	78.0	10
72	46	-1.8	70.2	15	76.2	11
70	50	-1.5	68.5	17	74.5	12
68	54	-1.1	66.9	19	72.9	13
66	59	-0.6	65.4	21	71.4	14
64	63	-0.2	63.8	23	69.8	15
62	68	0.5	62.5	25	68.5	17
60	72	1.2	61.2	27	67.2	19
58	77	2.0	60.0	28	66.0	20
56	82	2.7	58.7	31	64.7	22
54	86	3.5	57.5	33	63.5	23
52	91	4.4	56.4	35	62.4	25
50	96	5.2	55.2	37	61.4	27
48	101	6.0	54.0	40	60.0	28
47	103	6.5	53.5	41	59.5	29

Assumed:

TV Channel 6, 100 kW ERP, 300 meters HAAT
FM Channel 203, 2 kW ERP, 150 meters HATT

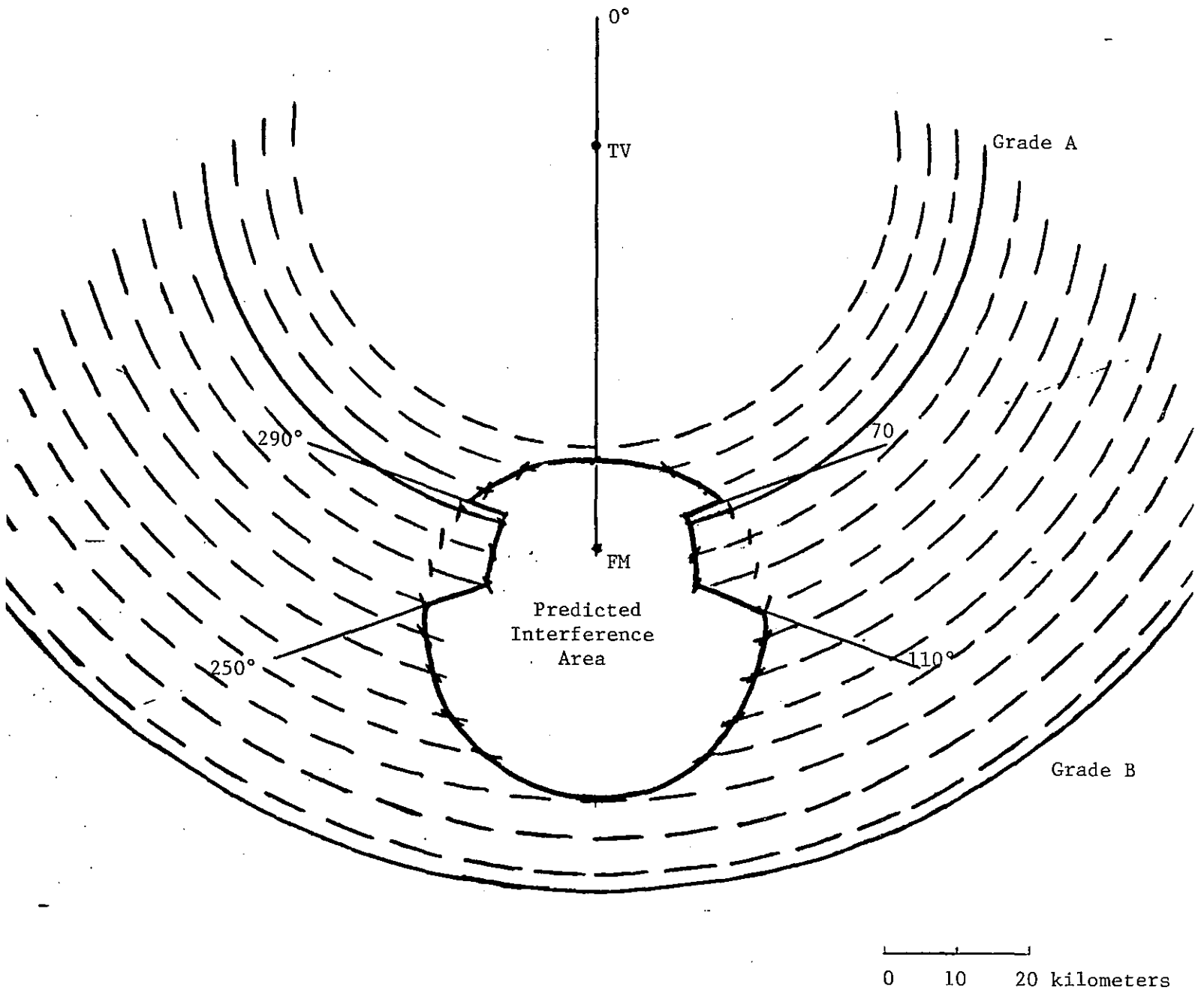


Exhibit 1
Hypothetical Calculation.
For a New NCE-FM Station
According to §73.525(e)(1)
(Docket 20735)

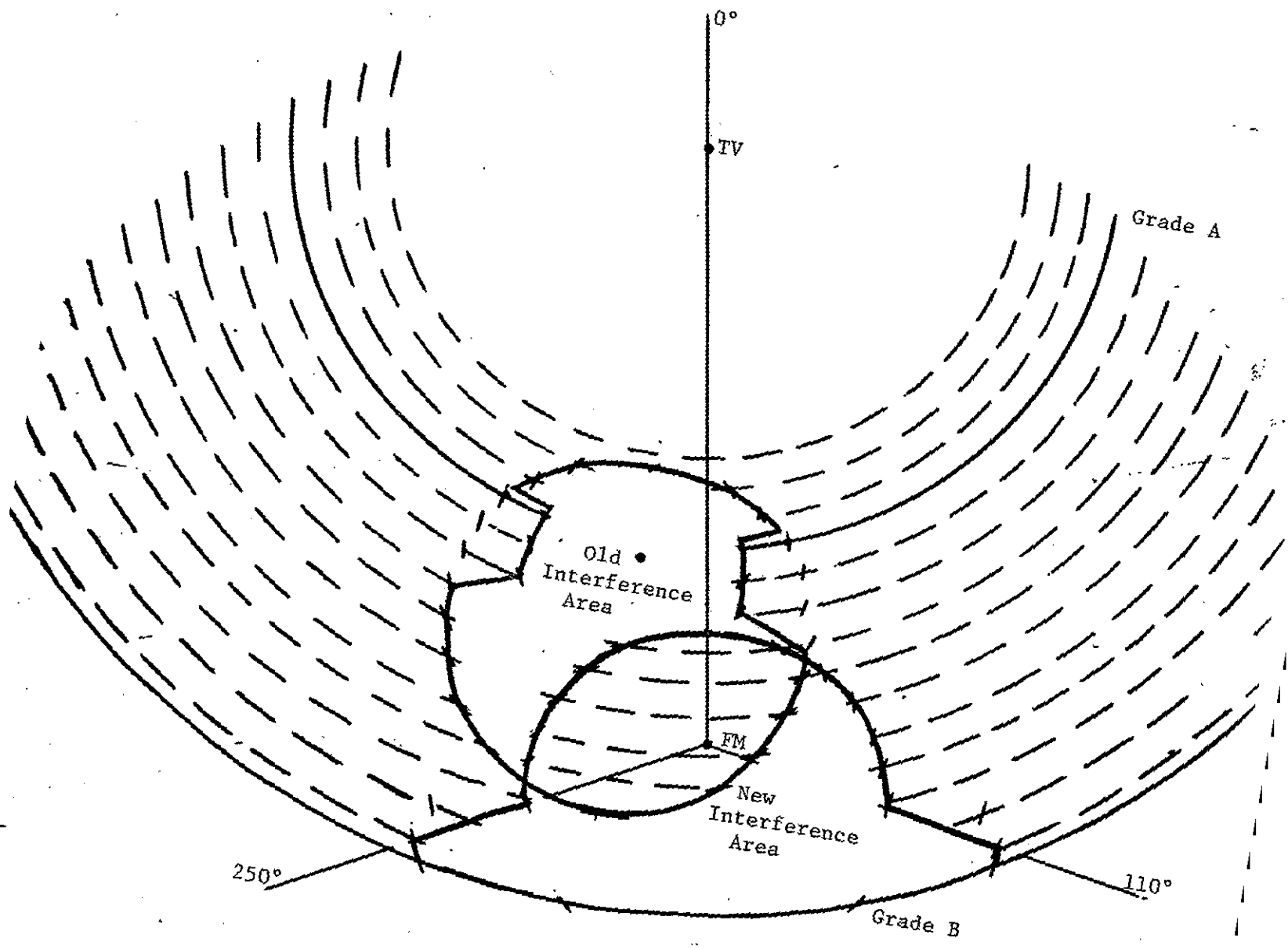


Exhibit 2
Hypothetical Calculation
For a Modification to
An Existing NCE-FM Station
According to §73.525(b)(2)
(Docket 20735)

