# ENGINEERING EXHIBIT

## Incentive Auction Channel Reassignment

## Application for License to Cover Construction Permit
## Digital Television Station

prepared for

**Hearst Stations Inc.**
WCVB-TV Boston, MA
Facility ID 65684
Ch. 33 922 kW 388 m

*Hearst Stations Inc. ("Hearst")* is the licensee of digital television station WCVB-TV, Facility ID 65684, Boston, MA. Reassignment of WCVB-TV from Channel 20 to Channel 33 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice* (*"CCRPN"*, DA 17-317, released April 13, 2017). A Construction Permit ("CP" file# 0000034567) authorizes WCVB-TV to operate on Channel 33 at 922 kW effective radiated power ("ERP") with a nondirectional antenna at 388 meters height above average terrain ("HAAT"). WCVB-TV successfully transitioned to Channel 33 at phase 4 (required completion date of August 2, 2019) utilizing an auxiliary antenna located at a different site at 922 kW ERP and 350 meters HAAT (file# 0000080041).

The WCVB-TV reassignment main facility has been constructed and *Hearst* herein seeks a license to cover the CP. The WCVB-TV facility has been constructed pursuant to the parameters specified in the CP, except that a substitute elliptically polarized nondirectional antenna make and model was utilized and that the antenna utilizes a lower value of vertically polarized ERP than the value specified in the underlying CP application. The ERP, antenna location, and antenna height as constructed match the values authorized in the CP.

Substitution of a nondirectional antenna make/model is permitted by §73.1690(c)(1) on a license application. The antenna, which is shared with several other television stations, is an elliptically polarized nondirectional RFS model PEP70E-O5-2-T.

A change in vertically polarized ERP is permitted by §73.1690(c)(4) to be specified on a license application. The shared antenna employs 20 percent vertical polarization for WCVB-TV, such that the horizontally polarized ERP is 922 kW and the vertically polarized ERP is 184 kW.[1] The vertically polarized component does not exceed the horizontally polarized component at any azimuth.

**Human Exposure to Radiofrequency Electromagnetic Field**

The WCVB-TV operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10), and considering 10 percent antenna relative field in downward elevations (pattern data shows less than 10 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the WCVB-TV facility is 2.5 $\mu W/cm^2$, which is 0.6 percent of the general population/uncontrolled maximum permitted exposure limit. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

**Chesapeake RF Consultants, LLC**
Joseph M. Davis, P.E. July 15, 2020
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[1]The antenna provides for adjustable vertical polarization. The antenna provides separate inputs for horizontally polarized and vertically polarized radiators, which permits each of the television stations that share the antenna to individually choose how much vertical polarization to utilize.