

EXHIBIT 1. In support of FCC license application item 12.

- (a) Describe in complete detail the complete program of research and experimentation proposed including description of equipment and theory of operation.

RESPONSE: Raytheon Systems Company through merger with Hughes Aircraft Company has entered the commercial marine surface search radar business within Raytheon's Naval and Marine Systems (NAMS) division headquartered in Portsmouth, Rhode Island. The current engineering effort began under Hughes Aircraft Company in Fullerton, California and is presently being relocated to Portsmouth.

The primary research in the surface search radar (SSR) program is in radar signal processing and display technology including such aspects as target acquisition, collision avoidance, and software digital scan conversion. The radar transmitter, receiver and antenna used to date have been Furuno's off-the-shelf marine radars at X-Band and S-Band. The center frequencies for these radars are as specified by the International Maritime Organization (IMO) and by the Code of Federal Regulations (CFAR). These radar transmitters are of the pulsed magnetron type, with peak power less than 30 kW and duty cycles less than 0.01%.

- (b) Describe in complete detail the specific objectives sought to be accomplished.

RESPONSE: Raytheon seeks to provide the world's best commercial surface search radar suitable for meeting IMO shipping requirements and U.S. Coast Guard and Navy navigational needs. To that end, our display technology must adapt to the best available IMO radar sensors. While the anticipated installation is a standard Furuno radar, we further anticipate extending our interfaces to radars by Raytheon Marine and Litton Marine among others. We would like the flexibility to try experimental sensors such as one utilizing the recent U.S. Patent No, 5,754,140. All such radars would all fall into the general category of IMO X- or S- band surface search and collision avoidance radars.

- (c) Describe in complete detail how the program of experimentation has a reasonable promise of contribution to the development, extension, expansion, or utilization of the radio art, or is along line not already investigated.

RESPONSE: Our SSR program has already made significant improvements in signal processing, sea clutter rejection, and target tracking beyond that available in current art. We are currently pursuing an adaptive STC that should advance the state of the art. We expect further advances with experimentation at the proposed site. We need experimentation with a variety of transmitters, antennas, and receivers to prove to our customers the value of our advances in the particular case of their sensor and to evaluate sensors for incorporation into our system.