## *Abstract*

*Air Surveillance Radar (ASR) is a surveillance radar that serves to detect and track large-sized aircraft. At present, ASR works a lot on high frequency bands such as S-band and X-band. This makes the radar capasity detection range very short. In addition, ASR radar has limited ability to detect aircraft with very small characteristics of the radar cross section (RCS). Therefore, many stealth planes use this, to hide and avoid radar range. Basically, the source of this weakness lies in the performance of an antenna. The optimal solution for detecting stealth aircraft is to design an antenna that is capable of operating on a low frequency band and increasing the Gain parameter as a long range.*

*This Final Project, designed the yagi antenna design for air surveillance radars that are capable of working at Very High Frequency (VHF) frequencies with a center frequency of 150 MHz. This design design includes single design and antenna arrays. To get the maximum Gain, the radar antenna is designed by stacking 8 × 2 yagi antennas.*

*The measurement results of single antenna simulation for VSWR, Return Loss and Gain are 1.457, -11,954 dB, and 13.19 dB, respectively. Whereas the simulation results of Yagi 8 × 2 for VSWR, Return Loss and Gain are 1.357, -18.5 dB, and 22.58 respectively. The simulation results are compared with the results of successive measurements for VSWR and Return Loss of 1.3609 and -16.34 dB. From the simulation results the antenna that is made has unidirectional radiation pattern properties and is able to detect F117A Nighthwk aircraft in the range of 19.8 Km.*



***Keywords:*** *Air Surveillance Radar, VHF, Yagi Stack Antenna and Stealth Aircraft*