

This report summarizes progress in design and fabrication to develop a miniature antenna which is 6 to 15 inches in aperture and operates down to 30MHz. Several innovative approaches are presented which demonstrate a successful path to the development of a new antenna class capable of such remarkable performance. Among the newly developed approaches include (a) Tapered (in thickness) dielectric loading; (b) artificial lumped circuit loading for concurrent impedance matching and wave slow down; (c) High impedance cavity surface (incorporating magnetic materials) for low frequency performance, and (d) fabrication techniques such as those based on dry powder deposition—"Sand painting. Several experimental data are provided along with design curves that provide credence for the performance of a final design that will be fabricated in the next performance period of this project.