A 0.5-MHz antenna carried by an airplane flying over the ocean surface generates a wave that approaches the water surface in the form of a normally incident plane wave with an electric field amplitude of 3 kV/m. Seawater is characterized by $\epsilon_r = 72$, $\mu_r = 1$, and $\sigma = 4$ S/m. The plane is trying to communicate a message to a submarine submerged at a depth d below the water surface. (a) If the submarine's receiver requires a minimum signal amplitude of 0.1 μV/m, what is the maximum depth d to which successful communication is still possible? (b) Find the transmitted electric field. (c) Find the reflected electric field.