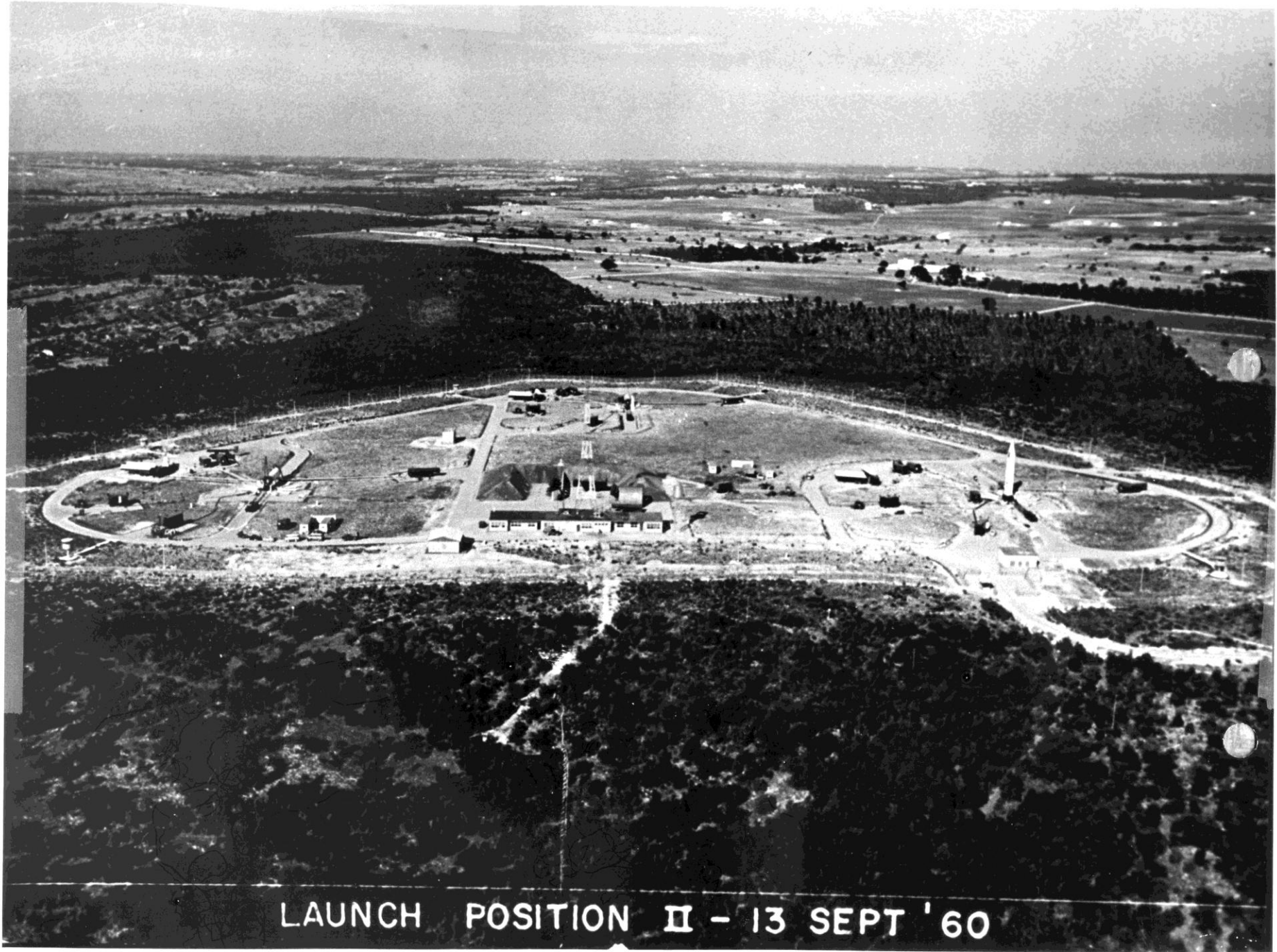


**IEEE Power Chapter:  
Study of Lightning Effects - Kennedy Space Center**

Presented by  
**Frank Fisher**

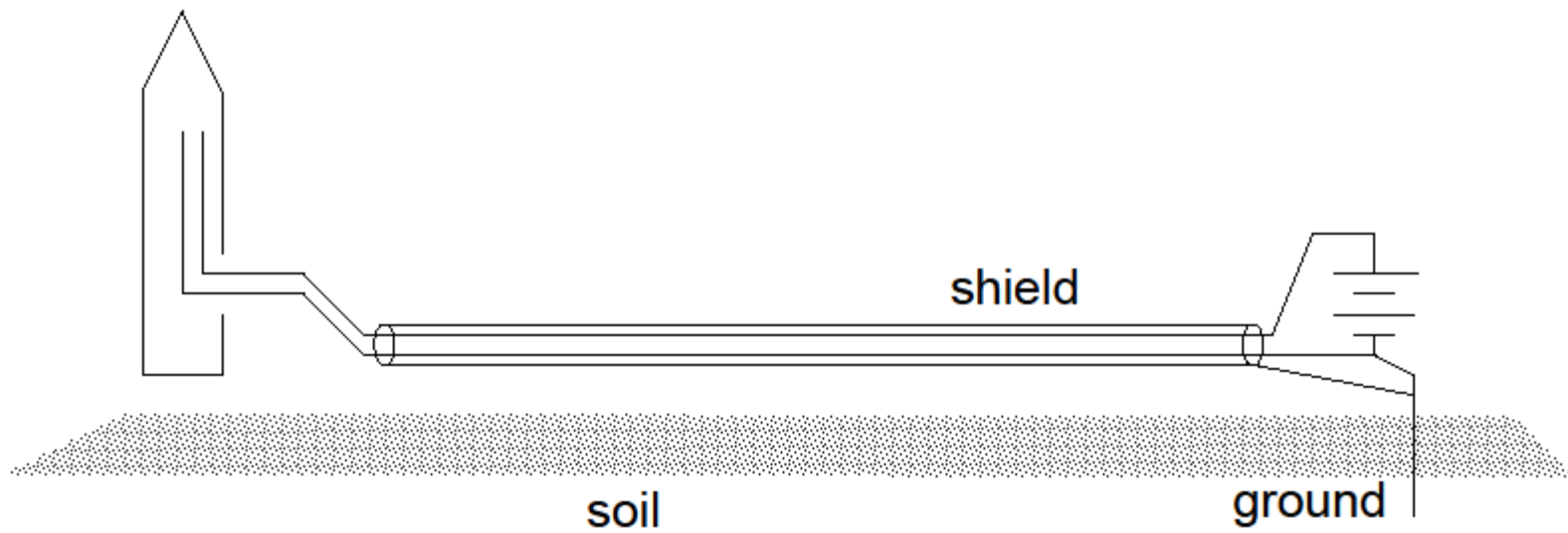
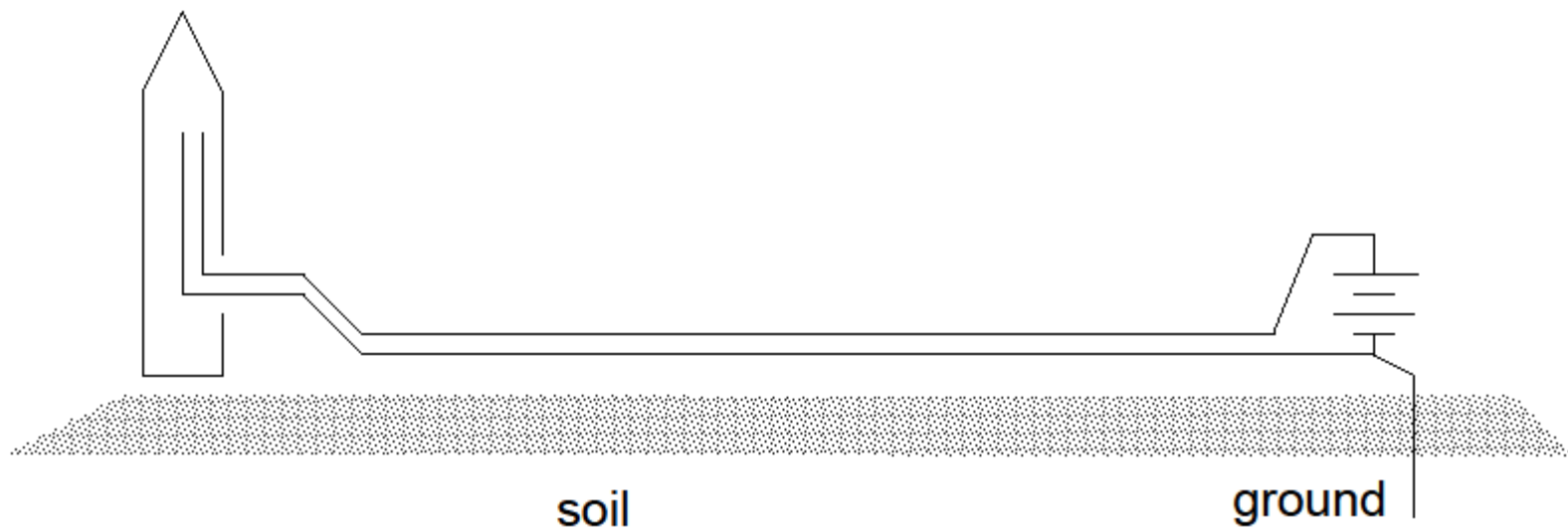
**July 16, 2015**

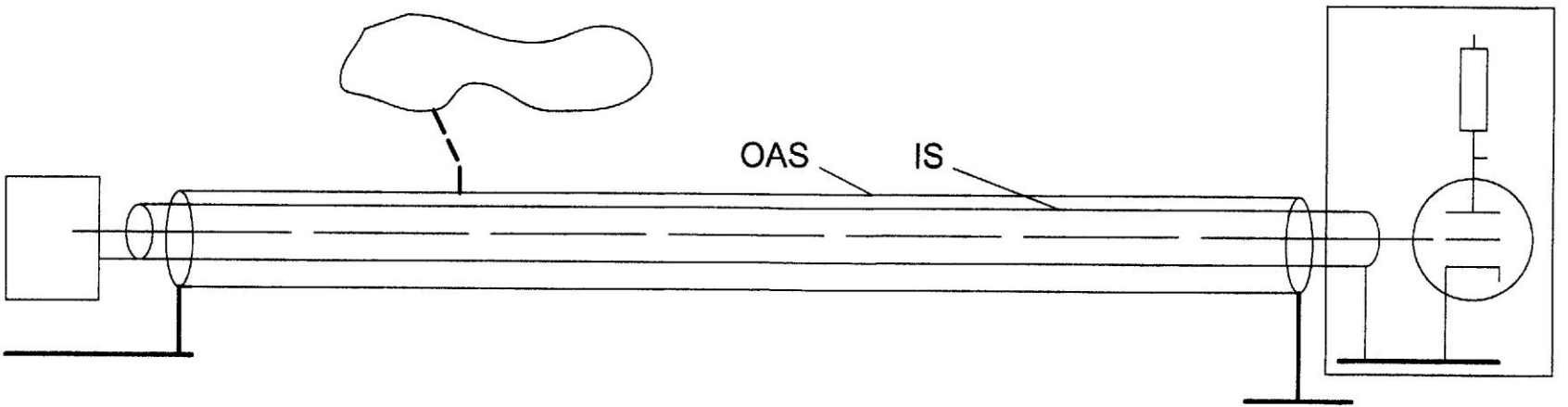
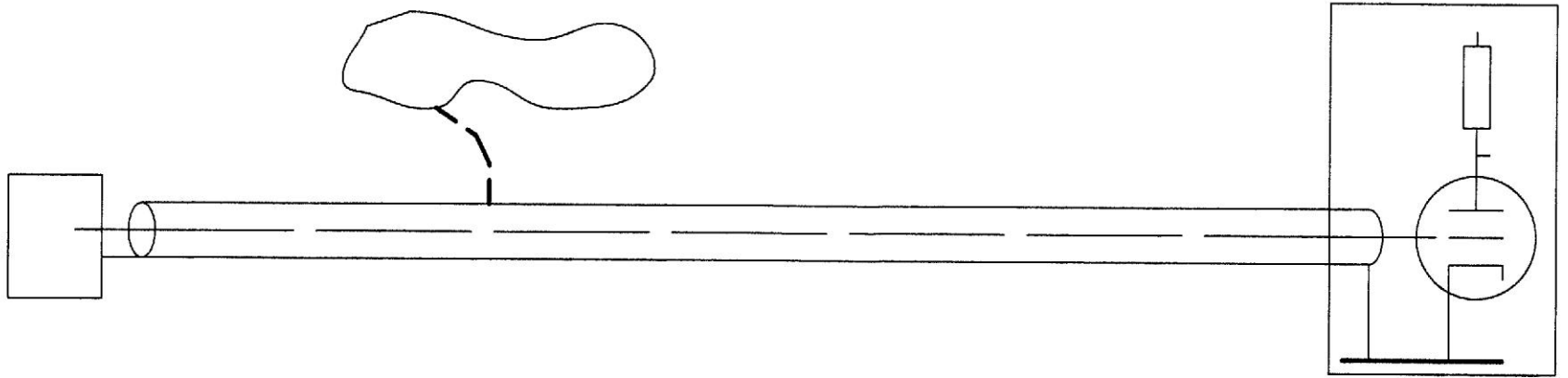




LAUNCH POSITION II - 13 SEPT '60





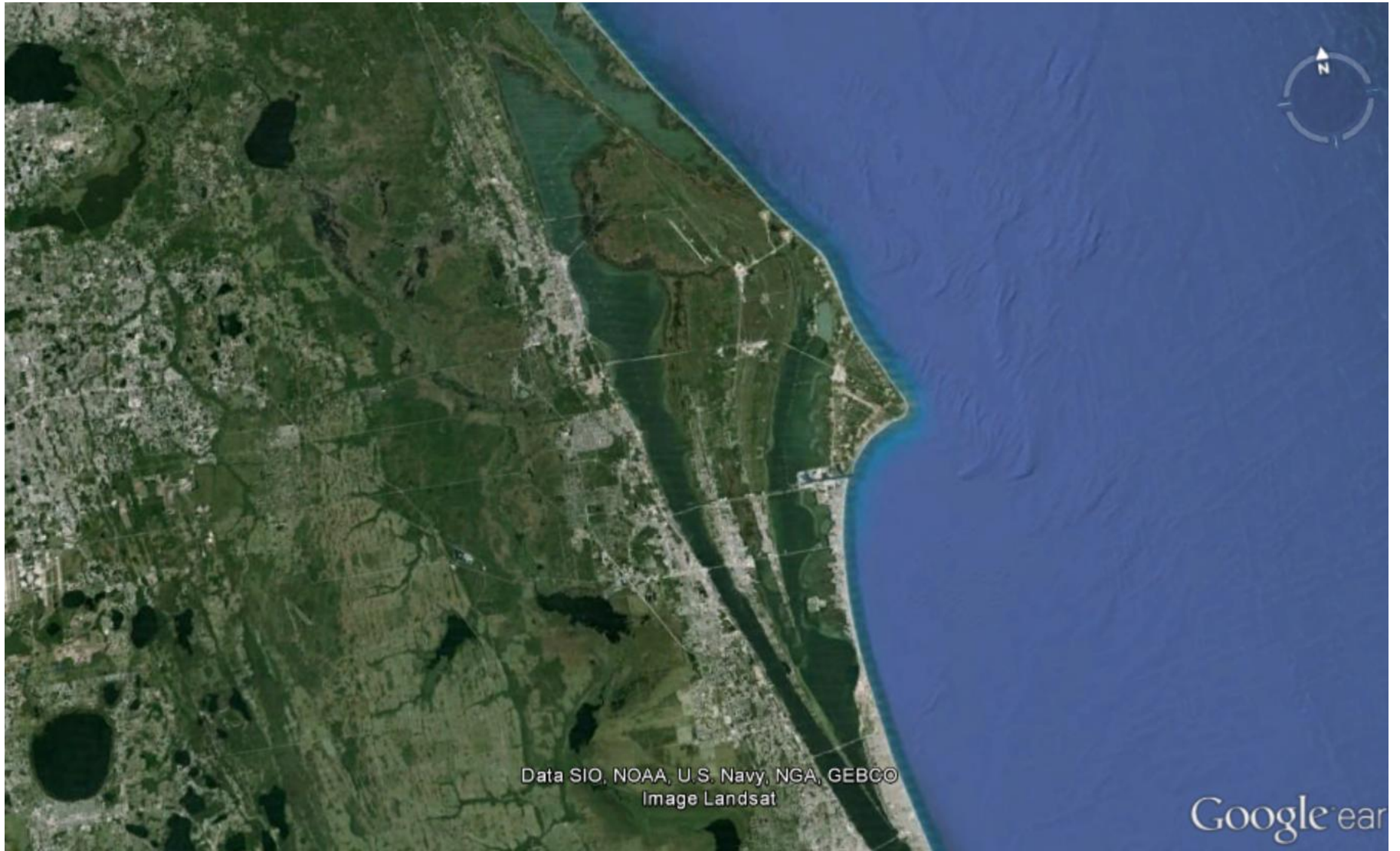


# Lightning and the Space Program

Rect



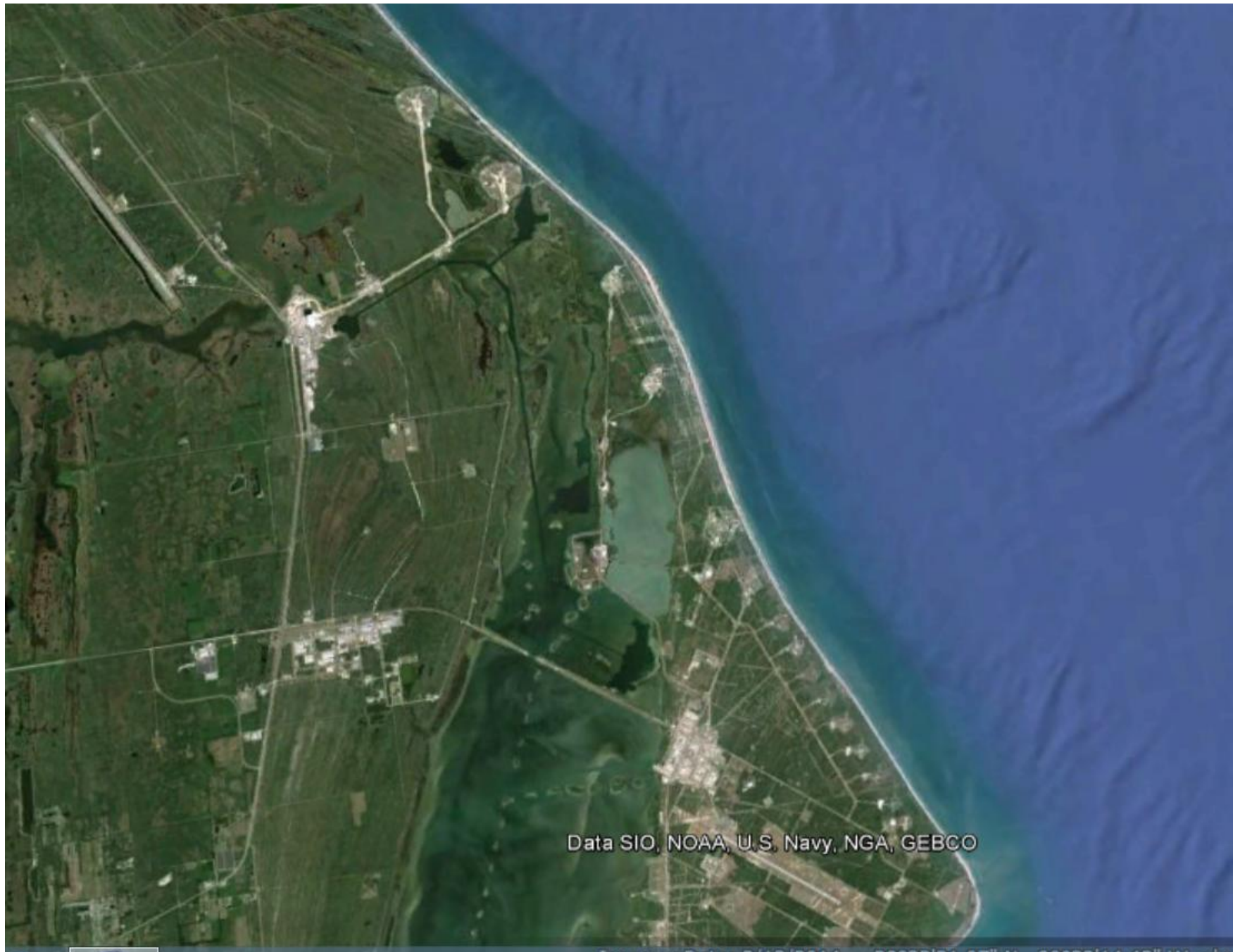




Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
Image Landsat

Google ear





Data SIO, NOAA, U.S. Navy, NGA, GEBCO

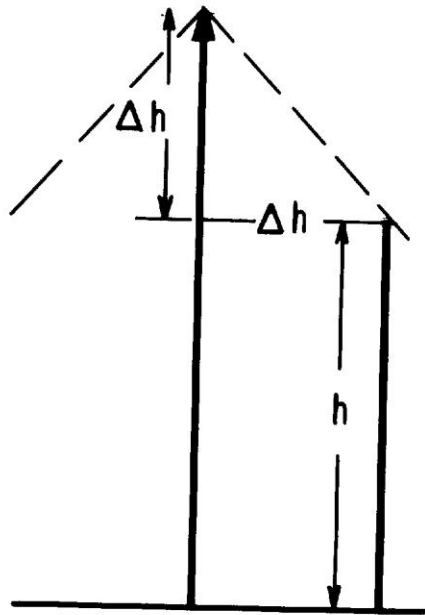






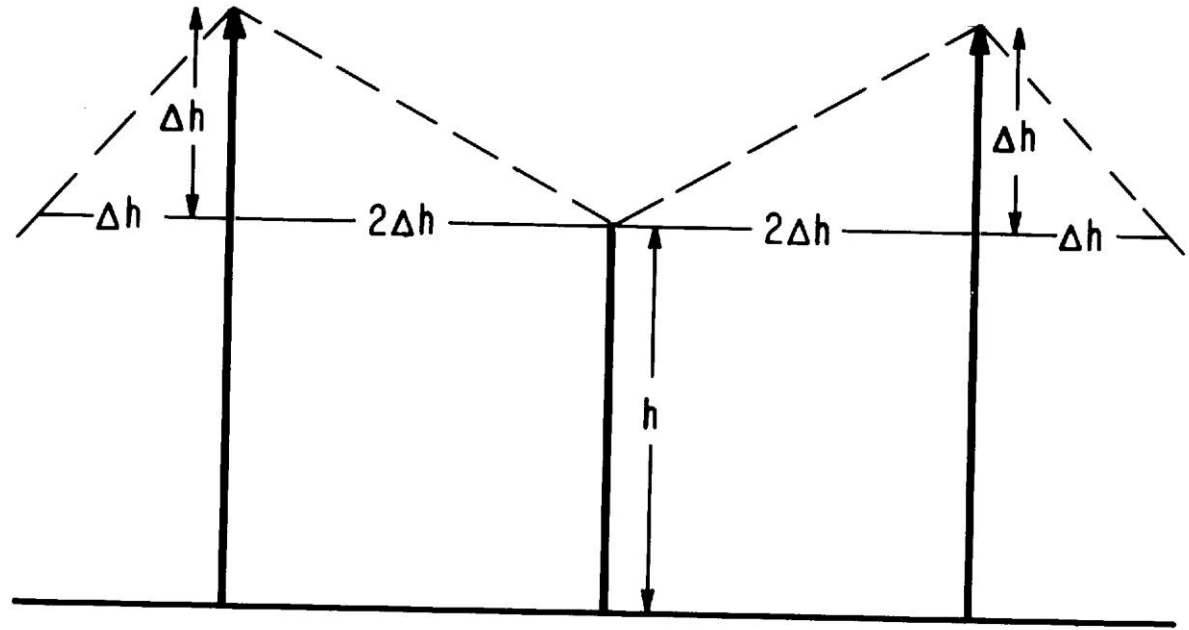






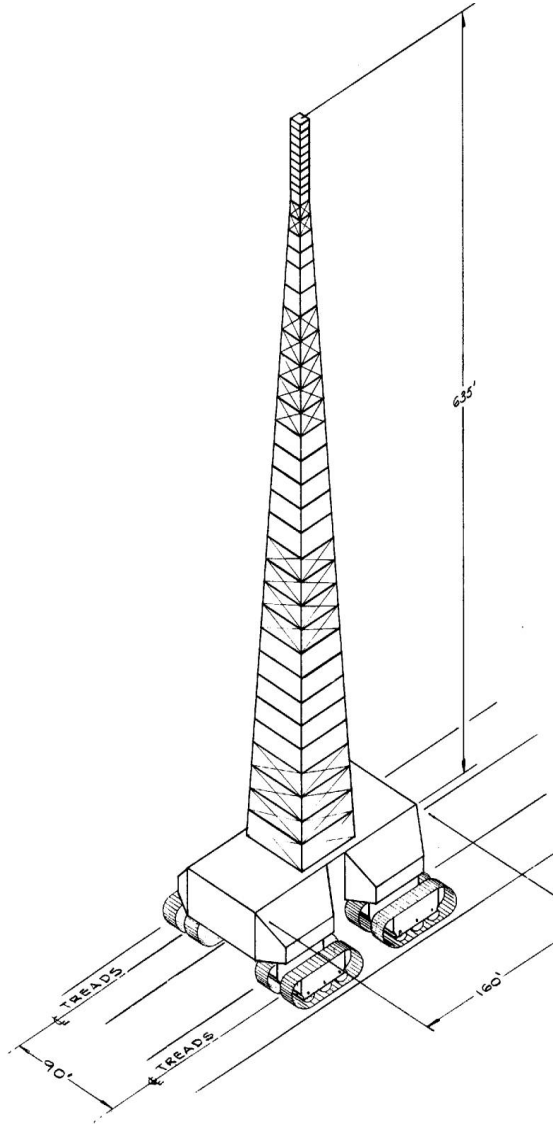
1:1 CONE (ONE TOWER)

a.

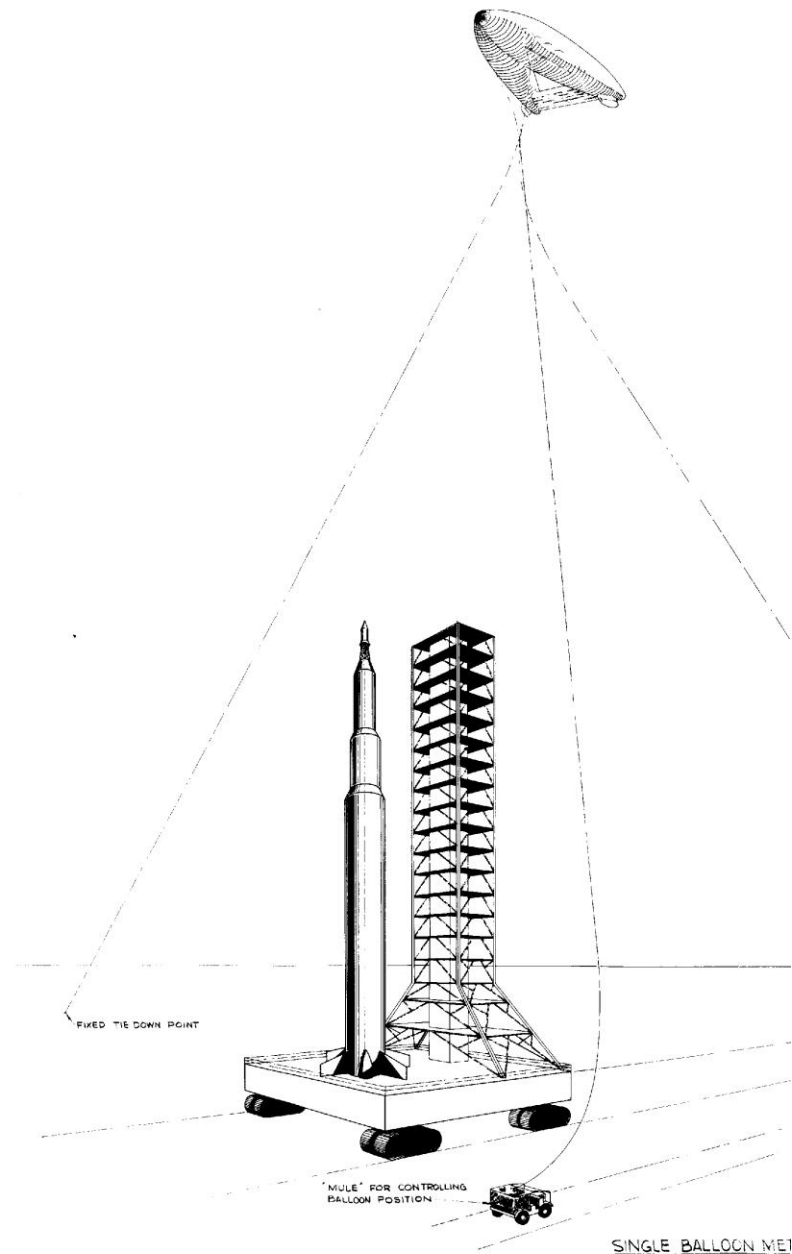


2:1 CONE (TWO OR MORE TOWERS)

b.

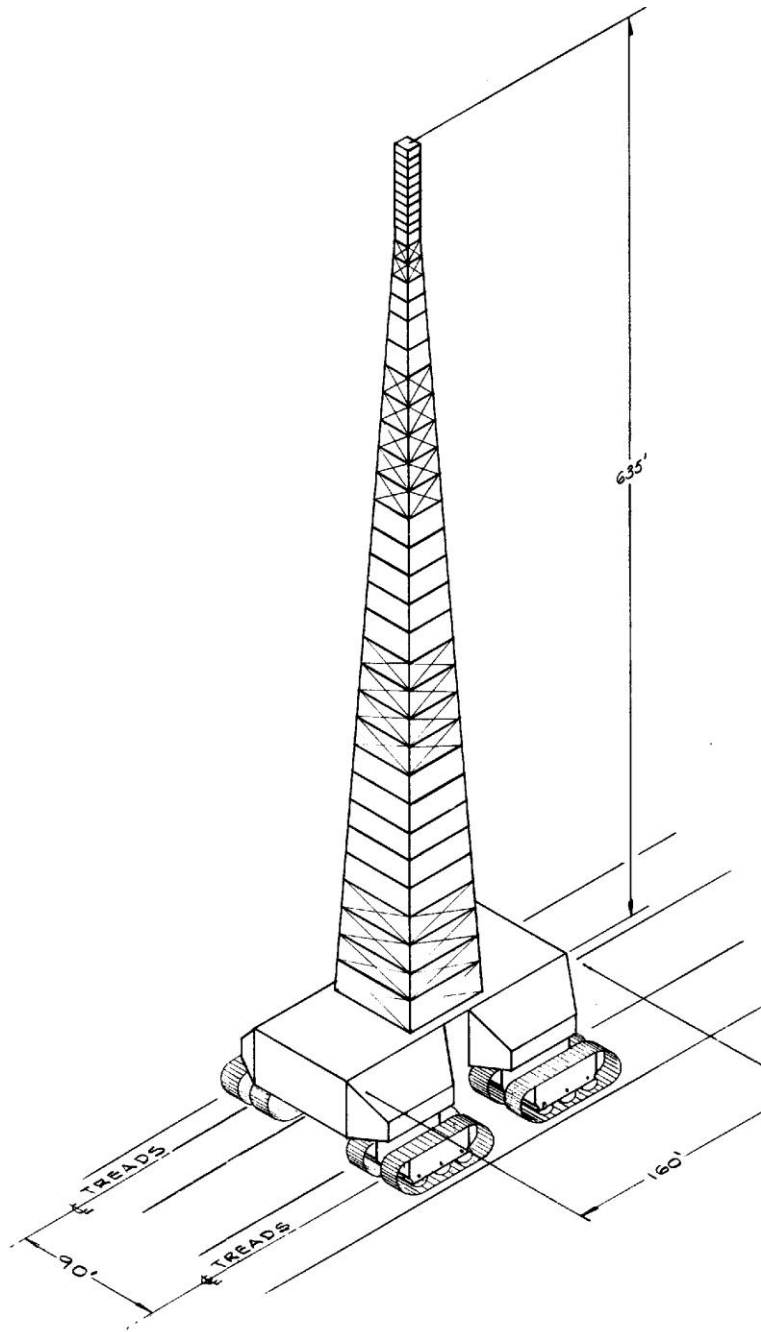


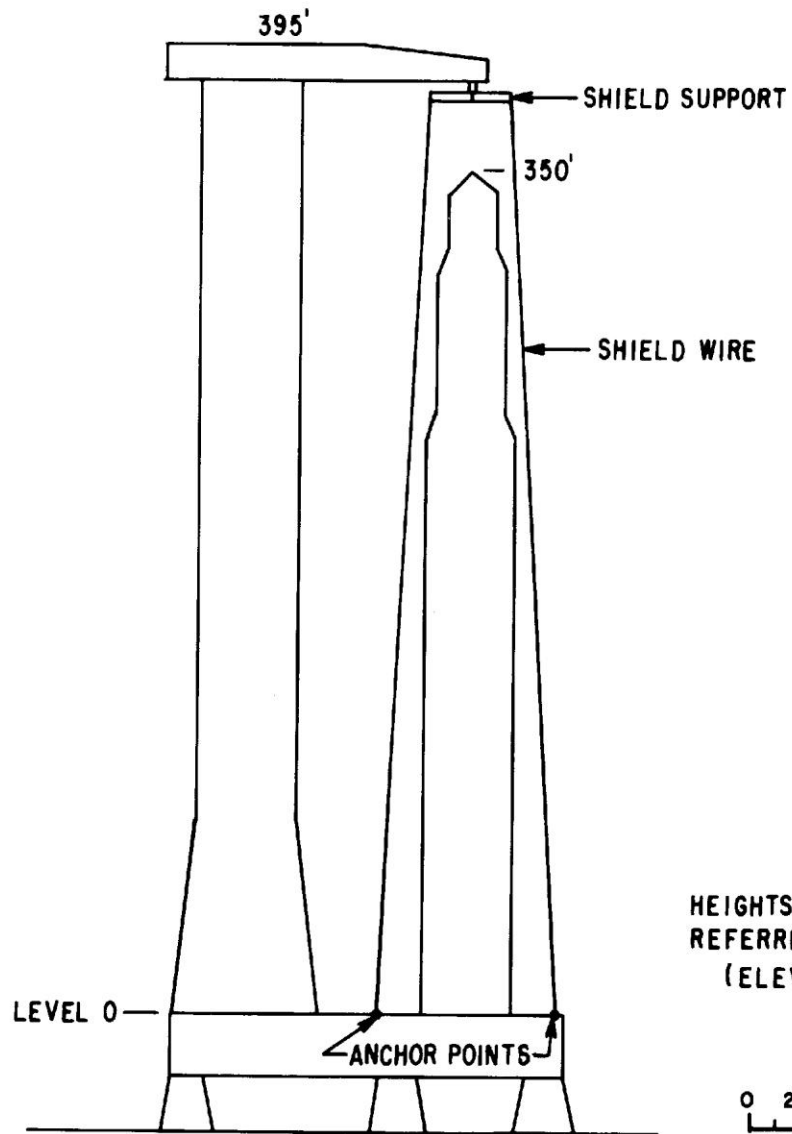




Protection Study

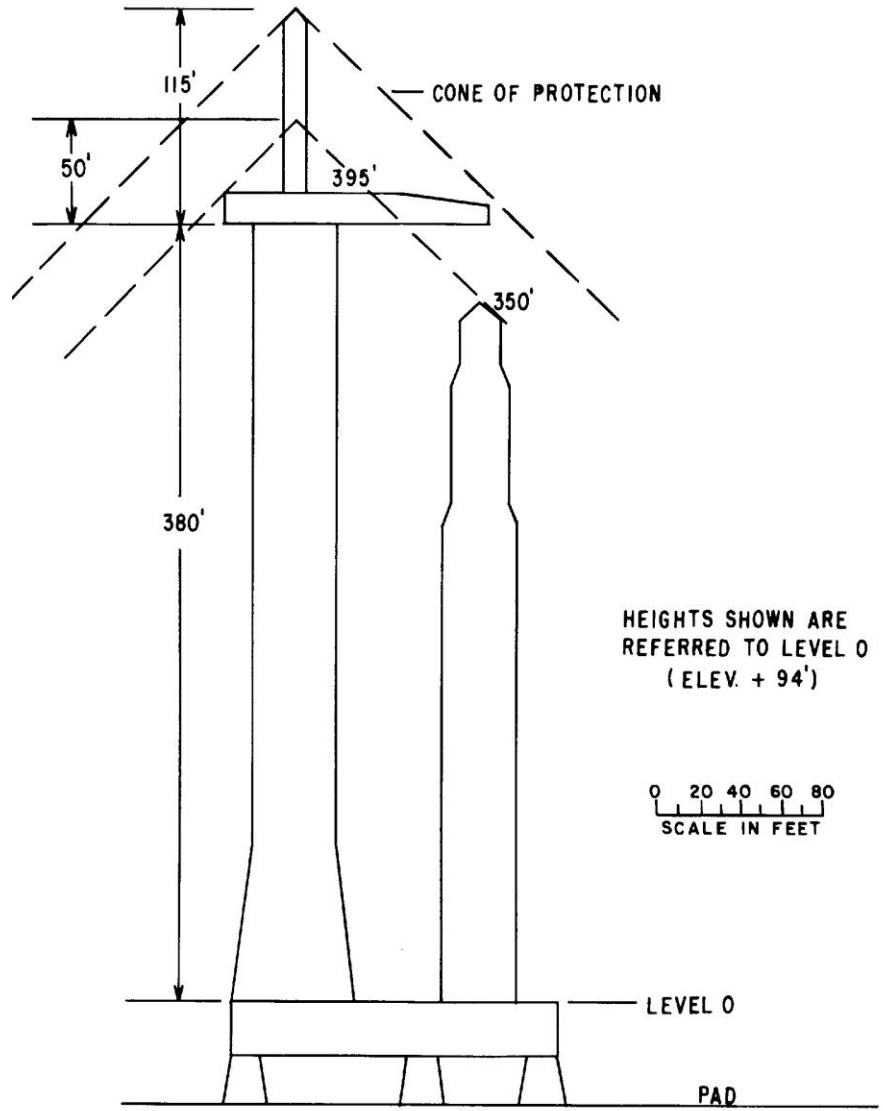
SINGLE BALLOON MET





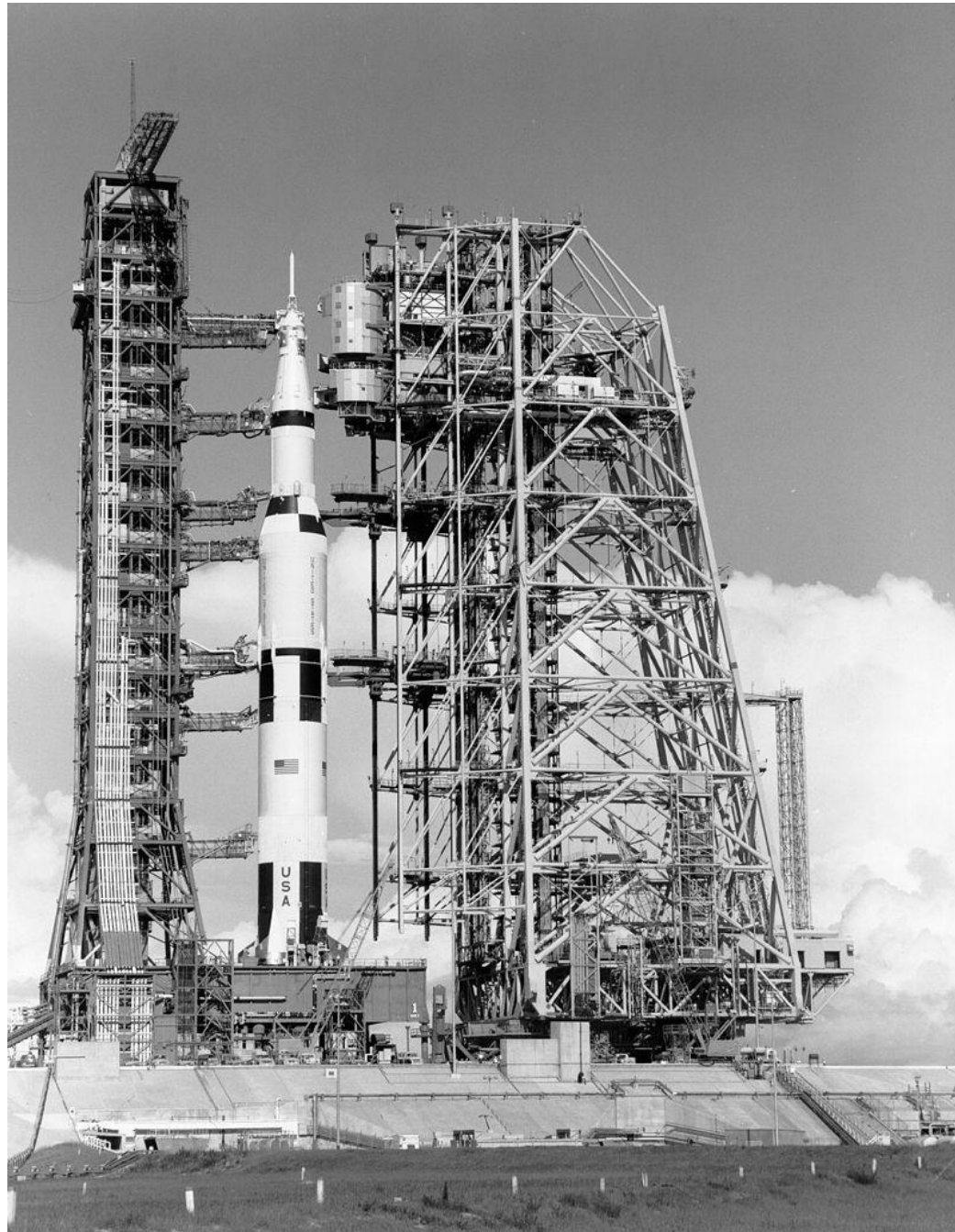
HEIGHTS SHOWN ARE  
REFERRED TO LEVEL 0  
(ELEV. + 94')

0 20 40 60 80  
SCALE IN FEET



# Mobile Service Structure

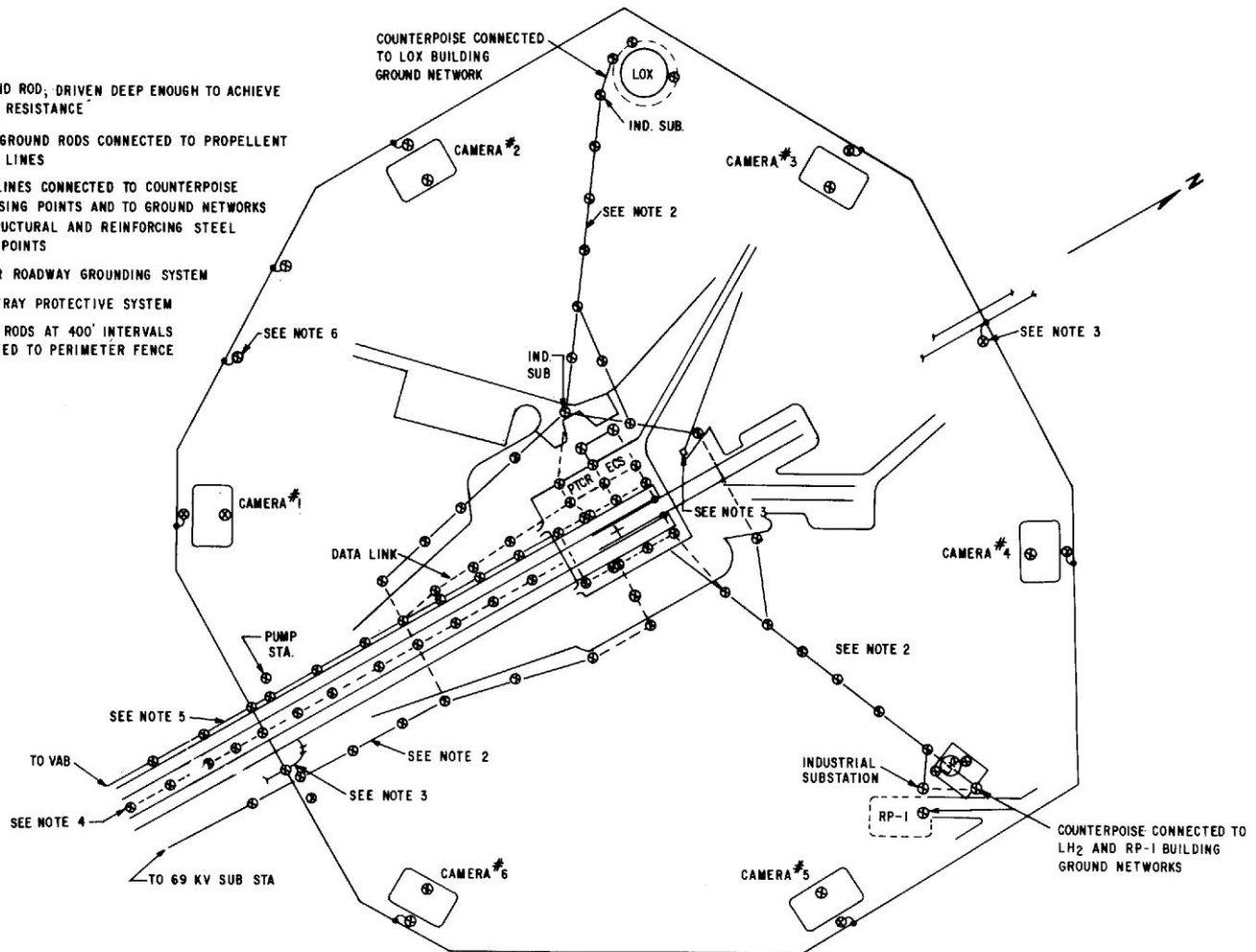






NOTES:

1. A GROUND ROD, DRIVEN DEEP ENOUGH TO ACHIEVE A 1 OHM RESISTANCE
2. DRIVEN GROUND RODS CONNECTED TO PROPELLENT HP GAS LINES
3. WATER LINES CONNECTED TO COUNTERPOISE AT CROSSING POINTS AND TO GROUND NETWORKS AND STRUCTURAL AND REINFORCING STEEL AT END POINTS
4. CRAWLER ROADWAY GROUNDING SYSTEM
5. CABLE TRAY PROTECTIVE SYSTEM
6. GROUND RODS AT 400' INTERVALS CONNECTED TO PERIMETER FENCE



LUT PLATFORM

STEEL LOAD BEARING CAPS  
TIE BAR

REINFORCING STEEL

PEDESTAL

FOOTING

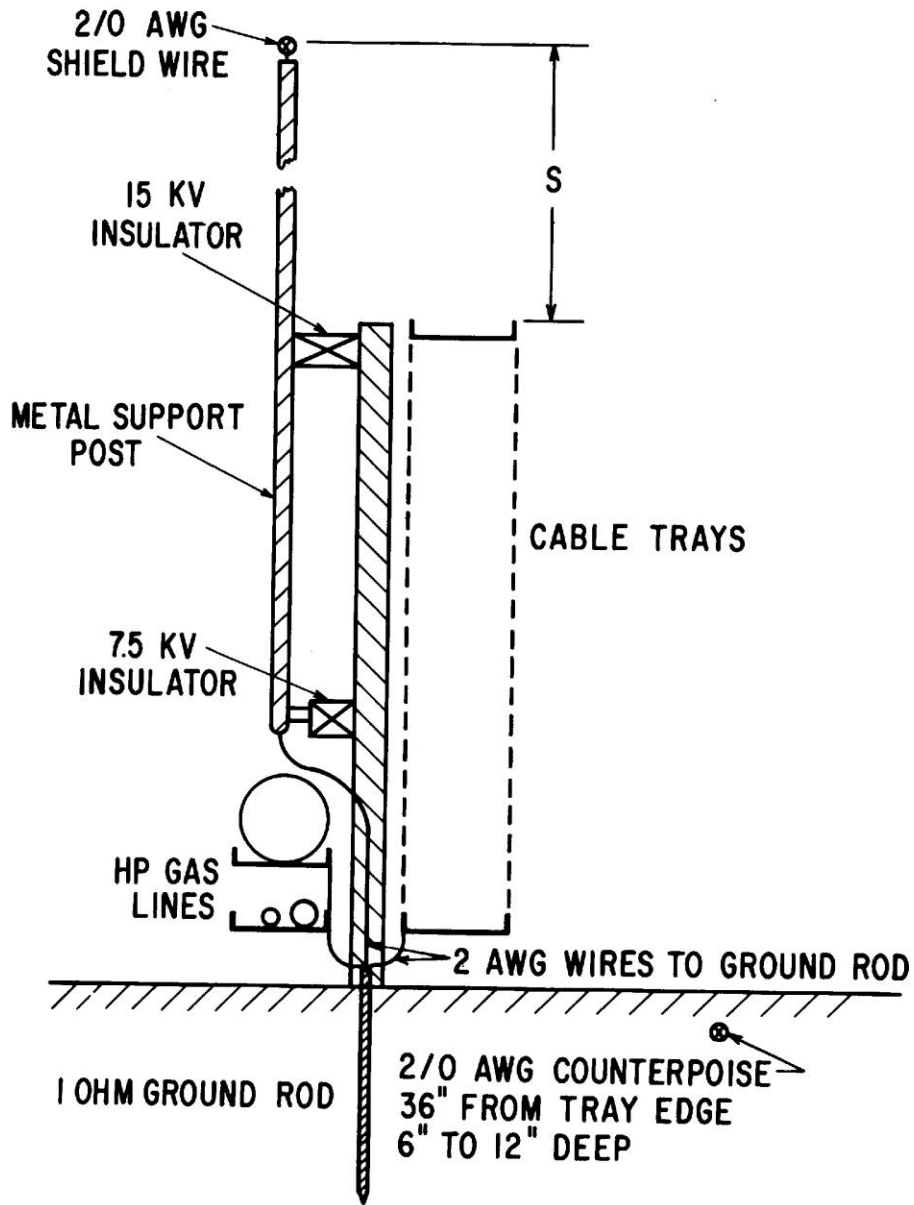
GROUND ROD

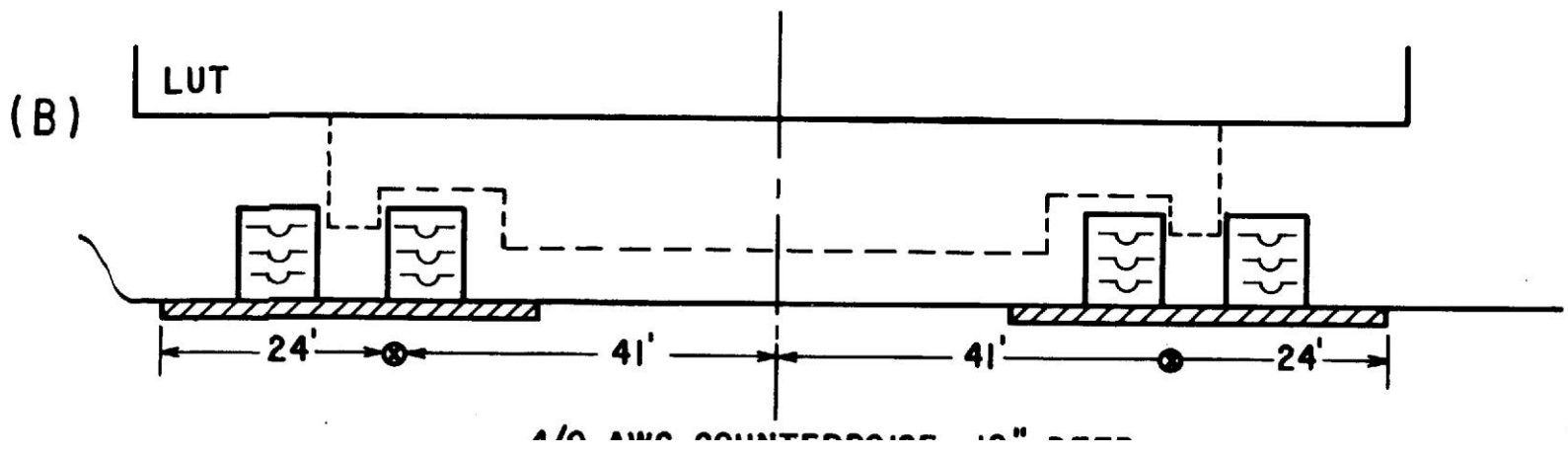
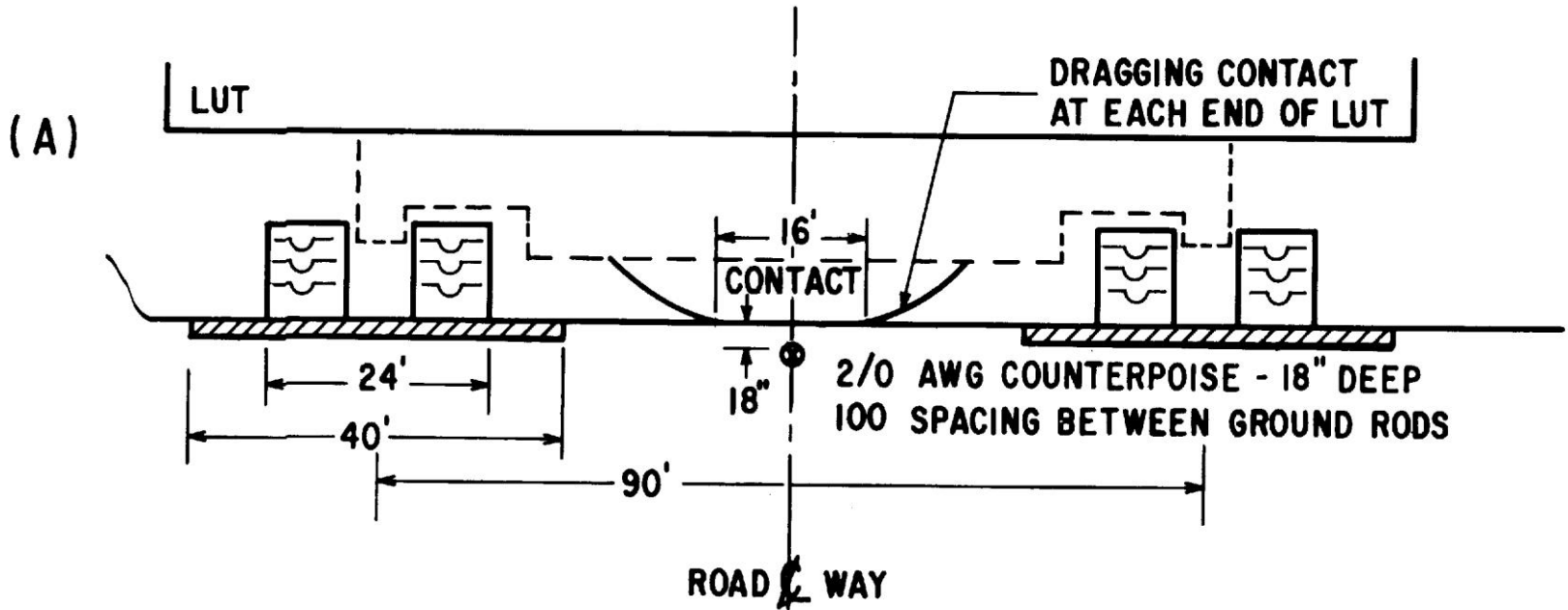
WATER TABLE

GROUND ROD

NOTES :

1. (A) RECOMMENDED
2. (B) ALTERNATE
3. WELDED CONNECTIONS ARE SHOWN AS ⊙
4. STEEL LOAD BEARING CAPS SHOULD MAKE ELECTRICAL CONNECTION WITH LUT





2/0 AWG COUNTERPOISE - 18" DEEP

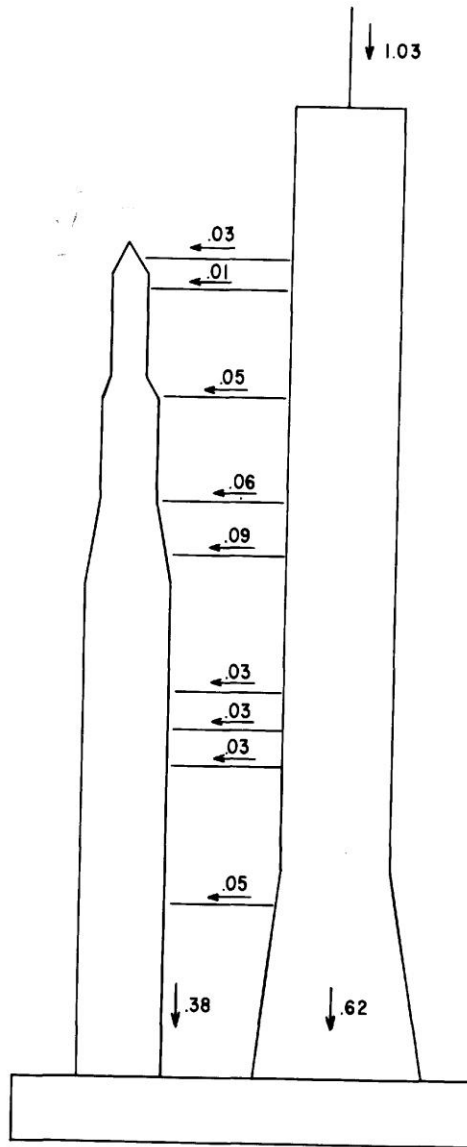


Figure 4-16. Distribution of Lightning Current in LUT and Vehicle

