

HF-SCM Site Reconnaissance Checklist

Date: _____ **Time (GMT):** _____
Project Name: _____ **Station Latitude:** _____
Station Name: _____ **Station Longitude:** _____
Field Party: _____

A. Permits

_____ 1. Obtain required permits, such as a Coastal Development or NTIA Broadcast Permit. Contact any regulatory or governmental agencies well in advance.

B. Site Requirements

_____ 1. Consult map to identify possible locations prior to field reconnaissance.
_____ 2. Locate the widest possible unobstructed field-of-view of the ocean which minimizes the distance to the water but is safe from waves and splash (Table 1). The transmit and receive antennas should be separated by a minimum distance of one wavelength (λ in m) based on the center frequency (f), such that $\lambda=c/f$ where c is the speed of light.

Table 1. Maximum distance to the water for transmit and receive antennas based on operating frequency.

Frequency (MHz)	Maximum Distance to Water (m)
4-6	250
12-14	150
24-27	150
47-50	100

_____ 3. Determine if selected location has flat or gently sloping terrain that is easily accessible by foot and free from hazards.
_____ 4. Determine if selected location has nearby vehicle access.
_____ 5. Determine if area is free of obstructions, such as electrically conductive or metallic objects, trees or power lines. Metal objects longer than 1m should not be within 100m of either antenna. Metal objects longer than 1m buried within 100m of the antennas should be at least 10m underground. Metal objects less than 1m should be located at least 4m from the antennas and should be buried at least 4m underground within that 4m radius. The minimum distance (R in m) for aboveground obstructions is based on height (H in m), such that $R=5*H$.
_____ 6. Determine installation method (concrete pad, held in place with poles hammered into ground, fastened to pier railing, etc.).
_____ 7. Measure frequency spectrum with spectrum analyzer for at least 24 hours to verify that there is no radio interference at your permitted frequency.

- _____ 8. Note latitude and longitude of location if deemed suitable.
- _____ 9. Contact an experienced HF-SCM technician to determine the likely impact of existing obstructions if they cannot be avoided.

C. Power Requirements

- _____ 1. Locate existing shelter with electricity within 250 ft. of the HF-SCM antennas. Shelter should have ample room to house an air-conditioned enclosure that will contain the laptop, antenna electronics, internet modem, external hard drive and uninterruptible power supply.
- _____ 2. If the location of the shelter is slightly farther away (an additional ~150 ft.), determine if a thicker gauge extension cord or a Buck and Boost transformer can be used to compensate for the voltage line loss.
- _____ 3. If equipment is to be deployed in a remote location, determine if a temporary shelter, such as a trailer, can be used to house the equipment. A level clearing near the antenna location must be found for the trailer.
- _____ 4. If a utility power grid is not available, determine if the site can be powered by generators, windmills or solar panels. Generators should be positioned at a maximum distance of 50 ft. from the shelter.
- _____ 5. Trench electrical cables or place them in PVC conduit to secure them from damage caused by animals and hinder human vandalism.

D. Internet Connectivity

- _____ 1. Determine if a reliable broadband internet connection is available at the site.
- _____ 2. If a broadband connection is not available, determine if a wireless relay system is feasible.
- _____ 3. If a wired connection is not available, determine if satellite internet or cellular broadband can be used. If satellite internet is to be used, determine if there is an unobstructed view of the southern sky for signal acquisition.
- _____ 4. If there is not other option available, provide a telephone modem for communications.

E. Test Deployment

- _____ 1. If equipment is at hand, perform temporary test deployment to test system, monitor coverage area and detect signal interference.

Please consult the following references for further information:

1. *User's Guide for Seasonde Radial Site Antenna Site Selection*
2. *User's Guide for Seasonde Radial Site Antenna Assembly and Installation*
3. *Development and Implementation Plan HF Radar Fast Response Mobile System*
4. *Deployment and Setup of a High-frequency Radar (HFR) for Ocean Surface Current Mapping: Best Practices*
5. *Seasonde Antenna Dimensions*