

I. GENERAL INFORMATION ON TOWER AND TRAILER

A. SCOPE

1. These instructions are for use of personnel to whom this material is issued. They Contain information on the operation and maintenance of the trailer and tower, as well as a description of the sectional units and their function in relation to other Components used in the equipment.

B. DESCRIPTION

Technical Mobile Deployment System of the CT-100

1. Tower : Designated as Model WRS- 698 Serial # 70798
2. Trailer : Designated as Model TRA- 9 ND Serial # 70797
Louisiana State Serial # TST566690SPLAF
3. Combined Total Weight : Approximately 6,500 lbs.

II. A. Trailer : TRA- 9 ND

1. Two axle type is 26 foot long, 6.5 foot wide, 7.75 foot high, and is equipped with four crank stands for stabilizing and leveling the complete system.
2. Front support system is designed for stabilizing the tower while in the upright position, and during storage of trailer.
3. Rear support system is designed for leveling the trailer in order to set up for erection.



4. There are two storage boxes on the front of the trailer. These are for storage of tools, chains, power and control cords.

5. There is a rack on the left side for storage of guy cables, and antennas.



6. There are three cabinets on the right side. The two large ones are for radio Equipment. The small one is for the electric motor controls.



7. Two outrigger arms with foot pad and support cable are to provide support and to stabilize the trailer when tower is in vertical position.



8. Tower tilting winch assembly consists of a reduction worm gear winch coupled

to a cable take-up drum. Cable from drum goes around two sheaves on the underside of trailer and out to a sheave located at the bottom of the tower and back to the trailer where it is anchored. This assembly, when coupled with drive motor or hand crank, tilts tower from horizontal to vertical and back to horizontal.



9. A 2500-watt generator is on the back. This is for raising and lowering the tower and running radio equipment when there is no commercial power.



10. There are two heavy-duty 12 volt batteries mounted in center of the trailer. These are for back up power to the radio equipment. Battery charging is done by means of a battery charger on commercial or generator power. There is a solar panel mounted on top of the radio cabinet for charging during times of non use.
11. This trailer has 6,000 lb. axles with electric brakes on the front axle. Tire size is P235/70R16 inflation is 35 lbs.
12. It is equipped with clearance, turn signal, hazard, and brake lights.
13. There are two heavy-duty safety chains to be used during transport.



B. Tower : **WRS- 698** (100' from ground to apex)

1. The tower consists of six; twenty-foot galvanized steel sections. The section numbers and face widths are from bottom (largest) to top (smallest). # 9 (31.5"), # 8 (27"), # 7 (22.375"), # 6 (17.825"), # 5 (13.750"), and # 4 (9.5").
2. Roller guides are located at the top of # 9 section, and the bottom of the # 4 section. Roller guides are also located at the top and bottom of the other sections to keep each section uniformly spaced and to insure minimum friction between sections while being raised and lowered.
3. All cable sheave pulleys are made of aluminum with aircraft type bearings and are fixed in there carriages.
4. All steel cables are 1/4" in. diameter, (7 x 19 galvanized aircraft cable, 7,000 lbs. M.B.S.).
5. Winch assemblies consist of a dual cable take-up drum coupled with a reduction worm gear that is driven with a 3/4 H.P. electric motor that is totally enclosed and thermally protected.
6. There are three 3/4 H.P. electric motors labeled A,B, and C. One for tilting tower up and down (A). One for raising the bottom four sections (9,8,7,6) (B). And one for the top two sections (5,4) (C).
7. The top section (4) has a flange bearing with an opening of 2.125 inches. This will accept a mast pole of 2 in. O.D. and has a locking bolt.
8. There is an emergency bolt on handle for cranking tower during motor failure.

III. Maintenance (refer to maintenance chart page ?)

A. Trailer:

1. Trailer axles spindles should be repacked with wheel bearing grease every two years. Check brake linings during this time.
2. Tire pressure should be checked before each move. 35 lbs. maximum pressure. Pressure gauge is in the small toolbox.

B. Tower:

1. Each gearbox is filled to proper level with lubricant at the factory. During operation, some oil might expand through a check valve at the top of the gear box due to heat expansion. This is normal and should not be regarded as a leak. Check gearbox level annually. SAE 80-90W API service GL-5
2. On the motorized winch system. Add two drops of light oil in motor bearing port. And check belt tension annually. Belt deflection should not be more than 3/4".
3. Roller guides are factory packed with a graphite base grease. A light-weight

lubrication oil can be added minimum of three month intervals, or as required to keep rollers moving freely.

4. Cable sheaves can be lubricated every three months with SAE 30.
5. Lifting and tilting cables are to be kept lubricated annually with “Whitemore” spray lube. Check for frayed cables and loose clamps.

GENERAL DATA FOR TOWING TRAILER

- I. When the tower/trailer unit is in the towing position the following items must be checked before moving.
 1. Each outrigger unit must be raised to the upper limit, and pads stored in there proper places.
 2. Tower must be set in it's nested position with straps or ties holding it in place.
 3. All guy cables must be secured on the guy rack.
 4. Antennas must be tied and secure in there racks.
 5. Check cabinet doors for closer and locks.
 6. Inspect trailer for any loose items.
 7. Connect trailer to truck, hook safety chains, and plug in light connector. See figure 1.
 8. Check brake, turn signal, and running lights for proper operation.



GENERAL DATA FOR ERECTING TOWER AT A NEW SITE

1. Procedures for Leveling Trailer

Leveling the trailer requires the use of the two orbital levels mounted on each side, at the back corners. And a four bow levels mounted on the front and sides.

- A. First, raise the front of the trailer about eight turns of the jack. Then check the two levels in front over the tool box. When the front is level you can level the back by using the rear screw jacks. Check the side levels and the small bubble levels that are mounted on each side of the back of the trailer.



A. SAFETY LIST FOR RAISING TOWER.

1. Check for power lines or overhead objects, which could endanger lives if tower is raised into them.
2. Check site soil for firmness and make sure it is level as possible.
3. Inspect all tower winch cables for frayed cable or ends.
4. Check all bolts and fasteners on pulleys and winches.
5. Check all cables, coax, and any other items that will raise with the tower.
6. Make sure all personnel involved are trained.
7. There should be a team leader that is qualified to supervise to entire operation.
8. Keep all bystanders clear of the tower while setting up or taking down.

B. Procedures for Raising Tower

1. Lower all four outriggers and adjust until trailer is level. Use orbital levels on each side of the rear of trailer until bubble is in center of circle.
(See leveling procedures at top of this page).
2. Swing out the two rear tower stabilizers about 125 degrees to the rear of trailer, connect chains and tighten turnbuckles until they get tight. Then loosen both rear level jacks by three turns. Check levels and tighten stabilizer turnbuckles if needed.



3. Unhook tower nested safety harness at front of trailer.
4. Untie lower section latch release cable and unfold.
5. Plug in motor (C) control cable. All control cables are located in the storage boxes.



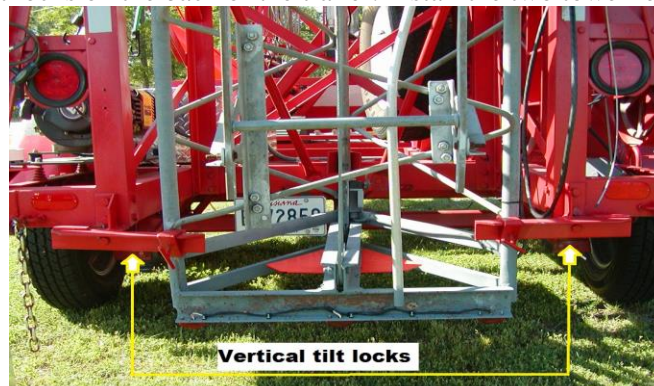
6. Unroll and hook guy cables to proper places (each position is color-coded)
Red is lower set. Blue is middle set. Green is top set (optional).



7. Install all antennas, coax, cords, and extra equipment. (run all coax and cords through rings on tower sections).



8. Energize power and select tilt motor (A) on motor control panel.
9. Press the raise button and watch as tower raises for obstructions of cables.
10. Once tower has raised from horizontal to vertical position, lock the vertical Tilt locks on the back of the trailer. Install the two tower leg support jacks.



11. Take the two foot level and check if tower is plumb .
12. Pull out bottom set of guy cables (red set), then install guy anchors at the proper places, hook up guy cables and tighten.
13. Anchors are an earth screw type # EA-6. See drawing SC-1 (refer to Installing Screw Anchors)
14. Check all cables and coax in preparation for raising the tower.
15. Select motor B, then press the raise button. While tower is rising keep watch on all cables and coax until bottom sections are in place.
16. Take second set of guy cables (blue), hook to guy anchors and tighten.
17. Select motor C, and then press the raise button. While tower is rising keep watch on all cables and coax until the top two sections are in place.
18. Tower is now in place. Take optional set of guy cables (green) hook to guy anchors and tighten.

C. Procedures for Lowering tower.

1. Select motor C, and then press the lower button. While tower is lowering check cables and coax for tangles.
2. When the two top sections are nested. Select motor B. Then pull the latch cable and press the lower button. Hold latch cable until the tower sections clear the latches then let go. Watch cables and coax to keep from tangling.
3. When the bottom four sections are nested. Unhook guy cables from guy anchors.
4. Unlock vertical locks and select motor A, then press the lower button. Watch all cables and coax for tangles.
5. Once tower is nested in the horizontal position. Install strap at front.
6. Turn power off . Then unhook and roll up all cables and coax. Put all items in there proper places.



General Data of Radio Systems



- A. There are two amateur radio repeaters, plus a remote base linking system.
1. The 2 meter repeater on 145.170 mhz. with a minus offset. It has a 40 watt transmitter and a DB-224 antenna. It is controlled by a CAT-200 repeater controller. This repeater can be connected to the 70cm repeater or one of the remote base transmitters for linking to other repeaters if necessary during emergencies.
 2. The 70cm repeater is on 444.100 mhz. with a plus offset. It has a 40 watt transmitter and a DB-420 antenna. It is controlled by a CAT-250 repeater controller. This repeater can be connected to the 2 meter repeater or one of the remote base transmitters for linking to other repeaters if necessary during emergencies.
 3. The remote base system has an input on 70cm. and an output on 2 meters. It can use a beam or Omni antenna depending on the configuration needed. The remote base can be connected to either repeater, or run stand alone.

Antenna Connections

2 meter Repeater / *UHF*

70cm Repeater / *BNC*

2 meter Link / *UHF*

70cm Link / *BNC*

Aux. / *BNC*

