

# INSTALLATION AND COMMISSIONING SERVICES

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NAUTEL is able to offer an installation and commissioning service to customers of our line of broadcast transmitters. A very comprehensive equipment handbook is provided with the transmitter and some customers prefer to carry out their own installation and commissioning, others choose to avail themselves of NAUTEL's installation and commissioning service to ensure a smooth installation and to have the chance to familiarize themselves with NAUTEL's equipment before actually taking over its operation.

The time normally allotted for such installations includes up to two travelling and three working days on site which allows NAUTEL's representative to perform a complete commissioning and check out of the equipment to verify that the transmitter is operating correctly and within applicable government regulations. When purchasing this service it is normally the customer's responsibility to ensure that the following stages of installation have been completed prior to NAUTEL's arrival at the site:

- a. AC power wiring for the transmitter should be in place and connected at the breaker panel or service entrance to the building. If local electrical codes permit NAUTEL will connect the transmitter to the AC supply using customer's cable. However if this is not permitted it is the customer's responsibility to ensure that an approved electrician is present for this task.
- b. The customer should ensure the RF coaxial cable connecting the transmitter to the antenna is in place and connected to the antenna with the transmitter end of the cable left unconnected. If a special means of connecting the coax cable to the transmitter is used, such as LC and EIA flange, the customer would normally prepare the cable and install the connector. It should be noted that at existing sites where non broadcast operation is only permitted for a few hours late at night, for setting up, it is advisable to have a suitably rated dummy load for running up the transmitter prior to connecting it to the antenna system, thus expediting commissioning.
- c. Where required all remote control and monitoring cables should be installed and connected to the station equipment; i.e. modulation monitor, frequency monitor, power meter, etc. The cables for connecting these control monitoring functions to the transmitter should be available at the site preferably with some kind of terminating interface within the transmitter building.
- d. The customer should ensure that the site is ready for the equipment and that he has taken suitable precautions to provide adequate protection against lightning and lightning induced transients. Techniques for providing adequate protection are outlined in detail in the section of NAUTEL's handbook entitled "Lightning Protection for Radio Transmitters". This section should be carefully read, it is readily available from NAUTEL, and the suggestions implemented insofar as possible since these protective measures are necessary to ensure reliable installation.
- e. It is the customer's responsibility to unpack the transmitter upon arrival and closely examine for any damage caused by shipping. Should there be any signs of any possible damage the customer should contact NAUTEL's commissioning representative prior to his leaving the plant to carry out the commissioning services so that he may come prepared to rectify any potential problems.
- f. It is usually the customer's responsibility to provide the following test equipment:
  - (1) Two-channel Oscilloscope  
(with probes)
  - (ii) Audio Signal Generator
  - (iii) Distortion Analyzer
  - (iv) Modulation Monitor
  - (v) Frequency Counter
  - (vi) 50 ohm Test Load  
(rated for 150% of carrier power, VSWR 1:1)

## COMMISSIONING (Cont'd)

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Again if for any reason any or all of this equipment is not available please advise NAUTEL's service representative prior to his departure from NAUTEL to carry out your commissioning.

NAUTEL's service representative will take full responsibility for commissioning the transmitter, connecting all external interfaces; i.e. the AC supply, RF output, remote control and monitoring equipment and checking out the equipment prior to switch on. He will then take full responsibility for switching on the transmitter, all adjustments and set up procedures and will carry out a series of proof of performance tests at the site. These tests are designed to ensure the transmitter is operating normally within NAUTEL's specifications which are well within the applicable FCC or DOC regulations. The service representative will also provide a demonstration and a short explanation of the operation of the transmitter and help the customer become familiar with the equipment. Finally, he will request the customer to sign an "Acceptance of Installation Certificate" which helps us to keep a record of each customer's site and provide us with feedback regarding the customer's assessment of this commissioning service.

The charges and fees for this service are quoted on a case by case basis. NAUTEL charges a set rate per day. Expenses such as food and accommodation, local transportation and economy air fare will be billed at cost. Local transportation to and from the site and from the nearest airport may of course be provided by the customer at his option. If the installation is delayed and more time required than normal due to some deficiency in NAUTEL's equipment, there is no additional charge to the customer. However, if a delay is cause by the customer not being prepared, or by a deficiency at the site, NAUTEL will charge the additional time at a daily rate quoted when the commissioning service was offered.

### Canada/International

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