

STANDARD PROCEDURE INSTRUCTION

Title		SPI
Radio Communications		# 30-8
Department	Supersedes SPI Dated	Effective Date
General Engineering	New	Dec. 31/81

1. PURPOSE

- 1.1 To provide guidelines for purchasing radio transceivers.
- 1.2 To provide guidelines for establishing frequency assignments for radio transceivers.
- 1.3 To establish the procedure for licencing radio transceivers.

2. BACKGROUND

- 2.1 Radio communication licences are issued by the D.O.C. to accomplish the following:
 - 2.1.1 To co-ordinate and regulate the use of the air waves which is a renewable resource.
 - 2.1.2 To provide interference free usage of an assigned radio frequency to the licenced user.
 - 2.1.3 To ensure radio equipment in present use meets all radio standard specifications with respect to power output levels, spurious and/or harmonic emissions, bandwidth tolerances, etc..
 - 2.1.4 To ensure the radio equipment user is a responsible operator.

3. SCOPE

- 3.1 To be used by persons authorized to approve requisitions for radio transceivers and equipment, to ensure compatibility of equipment selection with existing regulatory codes and repair facilities.
- 3.2 To be used by the person authorized to apply for a radio station licence, to ensure compliance with the licencing requirements.

4. DEFINITION OF TERMS

- 4.1 Transceiver: A radio telephone used for both transmitting and receiving voice messages over the air waves.
- 4.2 MHz: Megahertz, 10^6 hertz, 10^6 cycles per second.
- 4.3 GHz: Gigahertz, 10^9 hertz, 10^9 cycles per second.
- 4.4 VHF: A transceiver operating between the Very High Frequencies of 30 MHz and 300 MHz.
- 4.5 UHF: A transceiver operating between the Ultra High Frequencies of 300 MHz and 3 GHz.
- 4.6 GRS: A transceiver operating between the General Radio Service frequencies of 26.960 and 27.500 MHz. This type of radio is often referred to as Citizens Band or CB.
- 4.7 D.O.C.: Department of Communications Canada.
- 4.8 Base Station: A transceiver which is permanently installed, usually in a building, and is normally coupled to a high, remote located radio antenna when communication over a long distance is desired. A Base Station is authorized to communicate with mobile stations only.
- 4.9 Mobile: A transceiver installed on a moving vehicle with the antenna attached to the outside of the vehicle.
- 4.10 Portable: A transceiver having a short antenna attached to itself and normally carried by a person.
- 4.11 Fixed Station: A transceiver which is permanently installed and is authorized to communicate with other fixed stations only. A Fixed Station may communicate with both fixed and mobile stations if it is licenced to do so.
- 4.12 Owner: The Department Head or his designate who operates a transceiver with an assigned frequency.
- 4.13 Responsible User: An individual appointed within the Manitoba Division who co-ordinates all activities dealing with Radio Communications.

5. RESPONSIBILITIES

- 5.1 The use of all transceiver equipment must be approved and licenced by the D.O.C.
- 5.2 Radio telephone equipment shall be operated in accordance with the D.O.C. Radio Act Regulations. These are available upon request from Information Canada, 171 Slater Street, Ottawa, or from The Responsible User.
- 5.3 Vale Ltd. has designated the Supervising Engineer Electrical and Instrumentation, to be "The Responsible User" on it's behalf, for the Manitoba Division. His responsibilities are:
- 5.3.1 Set up and maintain appropriate records.

- 5.3.2 Approve all purchase requisitions for all new or replacement radio equipment.
- 5.3.3 Apply for new licences, amendments to existing licences, renewal of existing licences.
- 5.3.4 Make arrangements for frequency sharing after approval has been received from the initial user of the frequency in question.
- 5.3.5 Handle all correspondence between Vale and the D.O.C.
- 5.3.6 Perform R. F. field strength tests on transmitters used in mining operations.
- 5.3.7 Perform annual inspections of all licenced radio equipment.

5.3.8 Accompany the D.O.C. representative on his periodic inspections of the licenced radio equipment.

5.4 The Owner (User) of radio equipment is responsible to ensure the equipment is purchased in accordance with this S.P.I. 30-8 and also S.P.I. 20-7 Capital Expenditures.

6. PROCEDURES FOR NEW AND REPLACEMENT EQUIPMENT

- 6.1 The Owner shall forward all purchase requisitions for new or replacement radio telephone equipment for approval by The Responsible User before a purchase order will be issued by the Purchasing Department. This applies for capital as well as non-capital purchases.
- 6.2 If a new installation is being considered, the Owner shall contact the Instrumentation Section within General Engineering for guidance in equipment selection and frequency allocation.
- 6.3 If a replacement or additional transceiver is being considered using a frequency already in use by Vale Ltd. in Thompson, the Owner shall submit a purchase requisition to The Responsible User stating all applicable information.

7. PROCEDURES FOR FREQUENCY ALLOCATION

- 7.1 The GRS band is normally unreliable within buildings or outside during periods of solar activity. Privacy of conversation is not possible due to the many users within receiving range. This band will not be permitted for Vale use under normal circumstances.
- 7.2 The VHF band is normally used for crisp, clear voice communication with good steel penetration. New frequencies between 151.00 and 174.00 MHz will normally be assigned by the D.O.C. upon proper licencing application.
- 7.3 The UHF band is normally used for the high integrity and quality required in either voice communications or remote control of machinery. It has excellent steel penetration abilities. New frequencies between 450.000 and 470.000 MHz will normally be assigned by the D.O.C. upon proper licencing application.

8. PROCEDURE FOR LICENCING

- 8.1 The Responsible User shall make application to the D.O.C. for a licence, upon being notified of the intent to purchase a new transceiver that is to use an already allocated frequency.
- 8.2 The Responsible User shall obtain specific information from the vendor when a new transceiver using a new frequency is being considered. Information on the purchase requisition should instruct the vendor to supply all pertinent licencing information required to properly complete an application form. When all required information has been received, The Responsible User shall make application to the D.O.C. for a licence.
- 8.3 One copy of the application for licence shall be completed on D.O.C. forms and signed by The Responsible User. One copy shall be sent to the Accounting Department and one copy shall be retained by the Responsible User. The

Accounting Department shall forward one copy with payment of fees to D.O.C. and retain one copy for their files.

8.3.1 The following forms shall apply:

Form 16-16 for base stations and portable stations (see Exhibit A)

Form 16-21 for mobile stations (see Exhibit B)

Form 16-30 for antenna structures used in conjunction with base stations. This form shall be accompanied by a topographical map showing the location and attach particular details of the antenna and structure. (see Exhibit C).

Form 16-885 for GRS equipment (see Exhibit D).

9. LICENCE ISSUED

9.1 Based upon the request outlined in the application, a radio licence or an amendment to an existing licence will be issued, subject to any conditions imposed on the use as recommended by D.O.C. The licence will be retained by The Responsible User. A copy will be sent to the owner of the equipment on request.

10. ALTERATIONS TO EXISTING TRANSCEIVERS

10.1 An application for licence as detailed in Article 8 must be filled out and issued under any of the following conditions:

- Relocation of a base station and antenna from one building to another.
- Modifications to an antenna structure (ie. height change, gain change, etc.).
- Addition, deletion or change of frequency.
- Change in power output.
- Change of status of a station (ie. converting a mobile station to a base station).

11. USE OF TRANSCEIVERS IN MINES

11.1 The Responsible User shall perform R.F. field strength tests of radio transmitters used in the vicinity where electrical blasting caps are used, transported or stored. Refer to SPI 30-9.

APPROVED _____ General Manager – Manitoba Operations

DATE _____