

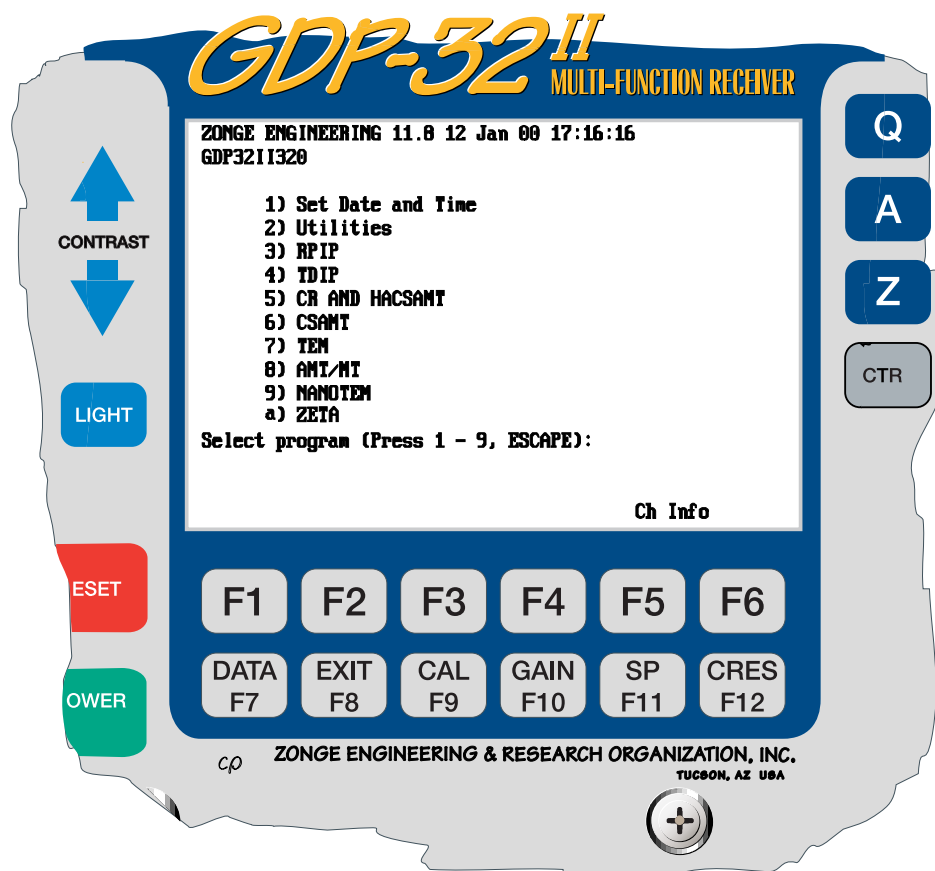
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5.1 THE MAIN PROGRAM MENU

The GDP-32 software is menu driven. This section reviews the procedures for accessing the receiver functions.

The Main Program Menu is the first operating selection the user makes, and is the main branching point for all receiver functions.



To make a selection, enter the corresponding number from the Program Menu. These selections are described in the following sections.

OPTION 1 - SET DATE AND TIME

This option allows you to update the date and time. Accurate information is important because it is

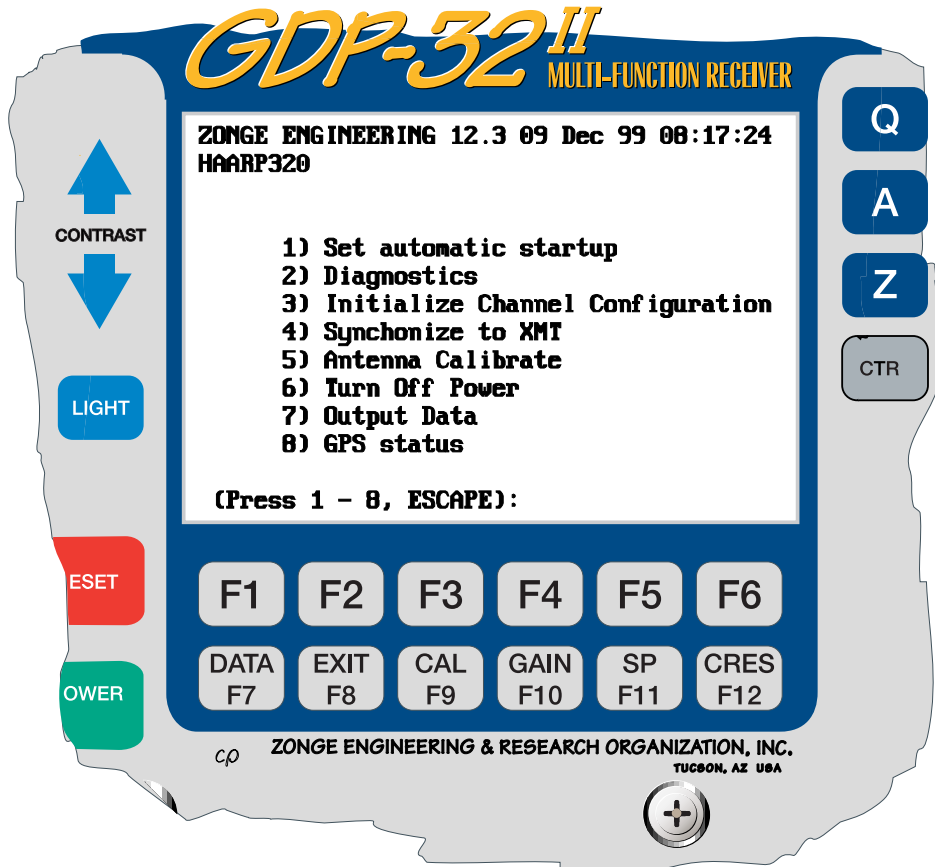
imprinted on the data files in memory. Later, it may help retrace the sequence of events on a complex survey.

Press **1** to set date and time. Use the **PREV FIELD** (Pg Up) and **NEXT FIELD** (Pg Dn) keys to move the cursor, and use the number keys and **SELECT UP** (Home) and **SELECT DN** (End) keys to enter the proper date and time.

NOTE: The date entry is formatted as day/month/year (dd/mm/yy).

OPTION 2 – UTILITIES

The Utilities Menu has eight choices:



Utilities Option 1 - Not yet available

Utilities Option 2 - Diagnostics

The Diagnostics option tests basic receiver functions when an operation problem is suspected. For a complete explanation of Diagnostics see Section 15 - Maintenance.

Utilities Option 3 - Initialize Channel Configuration

The Initialize Channel Configuration routine:

- Lists available Channels

- Displays the PASSED/FAILED parameters of each Channel

Press **F5**, (ch info) in the main menu to access a different set of channel parameters, including powerline notch filters, board serial numbers, and input configurations.

Utilities Option 4 - Synchronize to XMT

This routine guides the user through the synchronization procedure. Refer to Section 6.2 for a description of this routine.

Utilities Option 5 - Antenna Calibrate

Antenna coil calibration is performed in-house. For information on antenna coil calibration contact Zonge Engineering.

Utilities Option 6 - Turn Off Power

This function is the recommended method for turning off the receiver. It shuts down the analog cards in an orderly manner and protects the system from static shock. See Section 4.2 for details on turning off power to the receiver.

Utilities Option 7 – Output Data

Time series data collected with some survey programs (e.g. AMT) must be dumped through the LAN port. For complete information on when to use this feature, refer to the AMT Field Survey section.

Utilities Option 8 – GPS Status

Displays the status of the internal GPS timing, if the GPS system is installed. Gives the number of satellites being tracked and whether or not the receiver is in time sync with the GPS system.

OPTIONS 3 TO 9 - FIELD SURVEY PROGRAMS

Menu options 3 through 9 on the Main Program Menu select specific survey programs. Refer to the appropriate survey program section for specific operating procedures.

Available survey programs are:

- 3- RPIP - Resistivity-Phase Induced Polarization
- 4- TDIP- Time Domain Induced Polarization
- 5- CR - Complex Resistivity and HACSAMT Harmonic CSAMT
- 6- CSAMT - Controlled Source Audio-Frequency Magnetotellurics
- 7- TEM - Transient Electromagnetics
- 8- AMT/MT - Natural Source Audio-Frequency Magnetotellurics and Magnetotellurics
- 9- NanoTEM – Fast (1.2 μ s) sample rate TEM. (Available when a NanoTEM analog card is installed.)

Use the Quick Start Tutorial – Section 4 to turn on a program and become familiar with the GDP-32. Controlled source programs use a common set of user-selectable settings.

5.2 FIELD SURVEY PROGRAM SCREENS

Each Field Survey Program has four primary screens. Survey parameters are entered as described below or the specific Field Survey Program Section.

Press  to move to the next screen or  to return to the previous screen.

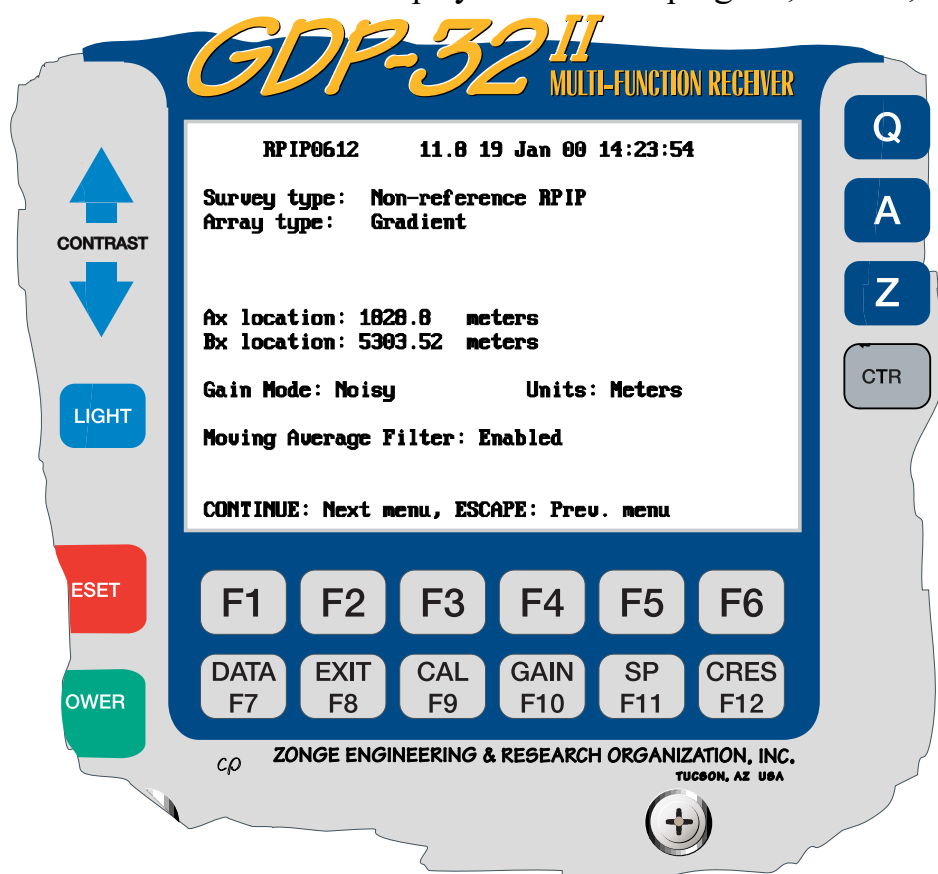
- Screen 1 - Initial Program Screen
Accepts the initial survey information.
- Screen 2 - Operator Information Screen
Accepts semi-permanent survey information.
- Screen 3 - Channel Parameters Screen
Accepts Channel parameters as outlined in each Field Survey Program.
- Screen 4 - Data Acquisition Screen
Displays the primary survey settings and accepts the final survey parameters. Calibrations, System Checks or Set Gains tools are also accessed from the Data Acquisition Screen.

Other parameters that can be changed or input in this screen:

- Transmitter and Receiver designations
- N-Spacing
- Frequency
- Number of cycles to average
- Current input
- SP Buckout - F11
- Contact Resistance - F12

INITIAL PROGRAM SCREEN

The Initial Program Screen accepts the initial survey information. The first line of the screen displays the selected program, version, battery voltage, current date and time.



User Programmable Fields

Not all fields listed are necessary for each Survey Program. Set parameters as needed. Fields specific to only one or two programs are not listed below. For specific field parameter options refer to the Survey Program Section.

■ Survey Type

Most Survey Programs offer different Survey types. Refer to specific Survey Program Section for available options.

■ Array Type

Specific to each Survey Program. Refer to specific Survey Program Section for available options. (RPIP, TDIP, CR, CSAMT, HACSAMT, TEM, NanoTEM, AMT/MT)

■ Gain Mode

For information on setting gains refer to Section 6.4 –Gains. Three options are available:

- **Noisy** (default) – Limits the gains to obtain a maximum of 1.0 Volts, leaving headroom for SP drift and random noise spikes.

- **Standard** – Adjusts the gains for a maximum voltage of 2.25 Volts.
- **Very Noisy** – Adjusts the gains for a maximum voltage of 0.5 Volts. (Default for AMT/MT Survey programs only)

▪ **Units**

Units used for distances measured for the survey. Available settings are:

- **Meters** (default)
- **Feet**

▪ **Moving Average Filter**




Tracks the data taken during a cycle to remove telluric drift. Available settings are:

- **Enabled** (default)
- **Disabled**

(RPIP, TDIP, CR, CSAMT, HACSAMT for 1.0hz and below.)

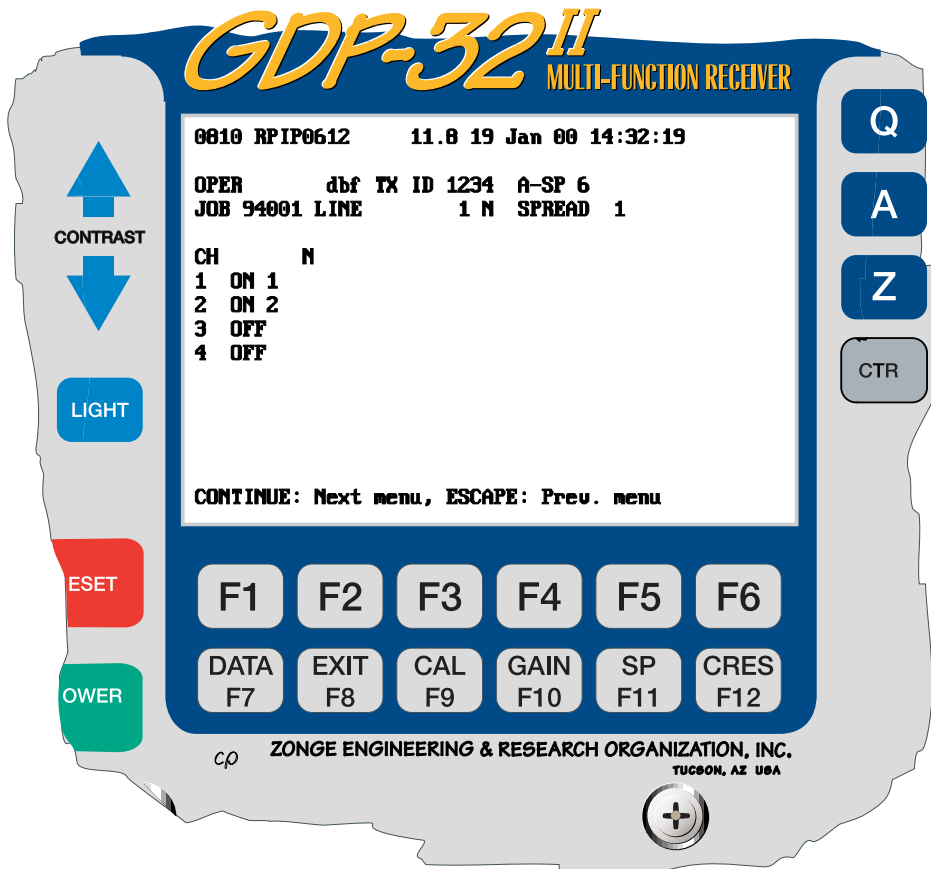
*NOTE: Some values are not registered in computer memory until you exit the parameter field. An exception to this rule is the Hz (frequency) field.. Whenever you change the frequency it is automatically changed through the timing card. However, the anti-alias filter is not changed until just prior to data acquisition. Upon pressing **CONTINUE** the receiver automatically sets the anti-alias filter as defined by internal look-up tables.*

Additional Options:

- Press  to temporarily exit the data taking routine and look at data in the **Field Data Cache**. See Section 7 - Handling Data for information about Data Mode.
- Press  to proceed to the next menu.
- Press  to return to the previous menu.

OPERATOR INFORMATION SCREEN

Semi-permanent survey information is entered into the Operator Information Screen. This information will be changed infrequently and makes up header text preceding data in the *Field Data Cache*. (The RPIP Survey Program is used as the example for this discussion.)



User Programmable Fields

- **OPER** (Operator)

Nine character user defined identification number (alphanumeric)

- **TX ID** (Transmitter ID)

Four Character Serial Number of the transmitter or any user defined identification number (alphanumeric)

- **A-SP** (A spacing)

The Dipole size (in meters or feet), up to six digits.

- **JOB** (Job ID)

User defined identification number (alphanumeric), up to 5 digets.▪

- **LINE**




User defined identification number. Two fields are available:

1. Eight character alphanumeric designator (e.g. xxxxx.x) which defines the line.
2. N, E, S, W, NE, SE, SW, NW designators

- **SPREAD**

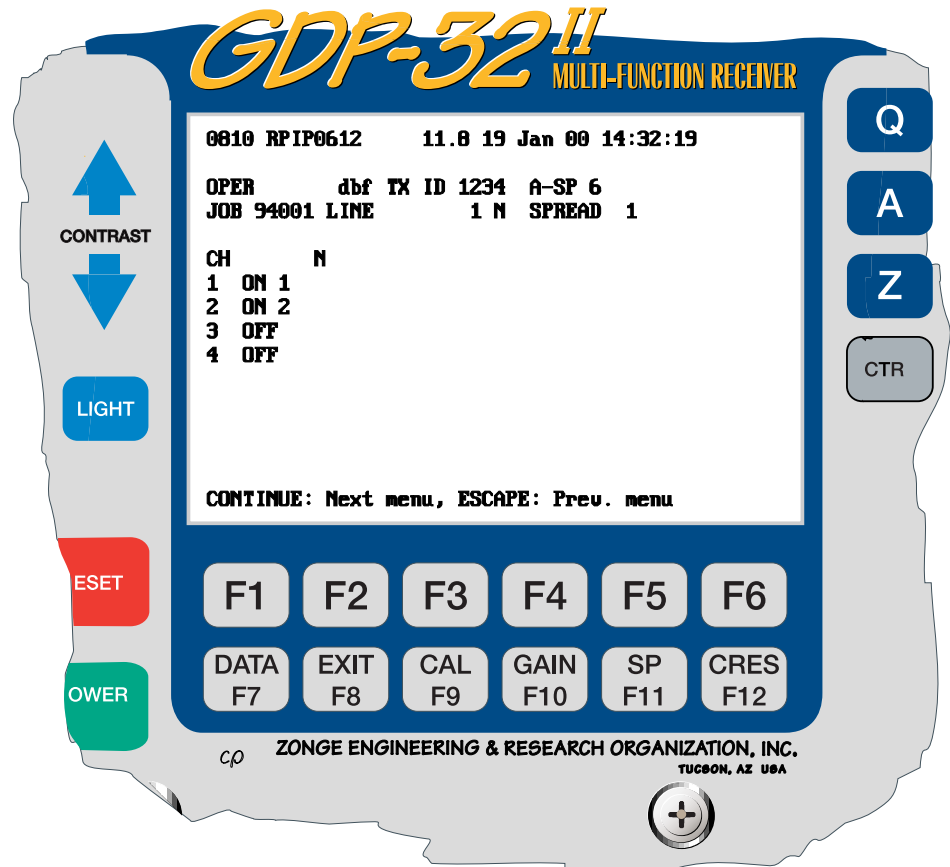
Two character user defined identification number, subdivision of the LINE designator above. (alphanumeric)

Additional Options

- Press  to temporarily exit data taking and look at data in the Field Data Cache. See Section 7- Handling Data, for information about Data Mode.
- Press  to proceed to the next menu.
- Press  to return to the previous menu.

CHANNEL PARAMETERS SCREEN

Enter channel parameters as outlined in each Field Survey Program Section into the Channel Parameters Screen.



User Programmable Fields

■ CH



Available channels are displayed on the screen. For each channel (for the RPIP Survey Program) set the channel parameter to one of the following:

- ON
- Ref – This designator is used for single frequency Complex Resistivity (CR) measurements with a current reference (the channel designated as Ref).
- OFF

▪ **N**

Defines the N-spacing for a particular channel. Fractional N's are permitted. Up to four digits are permitted (e.g. 6.25). The decimal point does not appear for whole N-spacings. This parameter is accessible in both the Channel Parameters Screen and the Data Acquisition Screen for ease in changing values during a survey.



Additional Options

- Press  to temporarily exit the data taking routine and look at data in the Field Data Cache. See Section 7 - Handling Data for information about Data Mode.
- Press  to access **Ch Info** data on the analog cards which are turned on. For example:

1 DiffAmp Notch+60,3-5,9 S/N 67 Passed
2 DiffAmp Notch+60,3-5,9 S/N 127 Passed
3 DiffAmp Notch+60,3-5,9 S/N 256 Passed

- DiffAmp indicates the input plug-in card is a differential amplifier
- The powerline notch filter is a 60/180/300/540 Hz filter, (the “+” indicates a modification level)
- The three board serial numbers are 67, 127, and 256

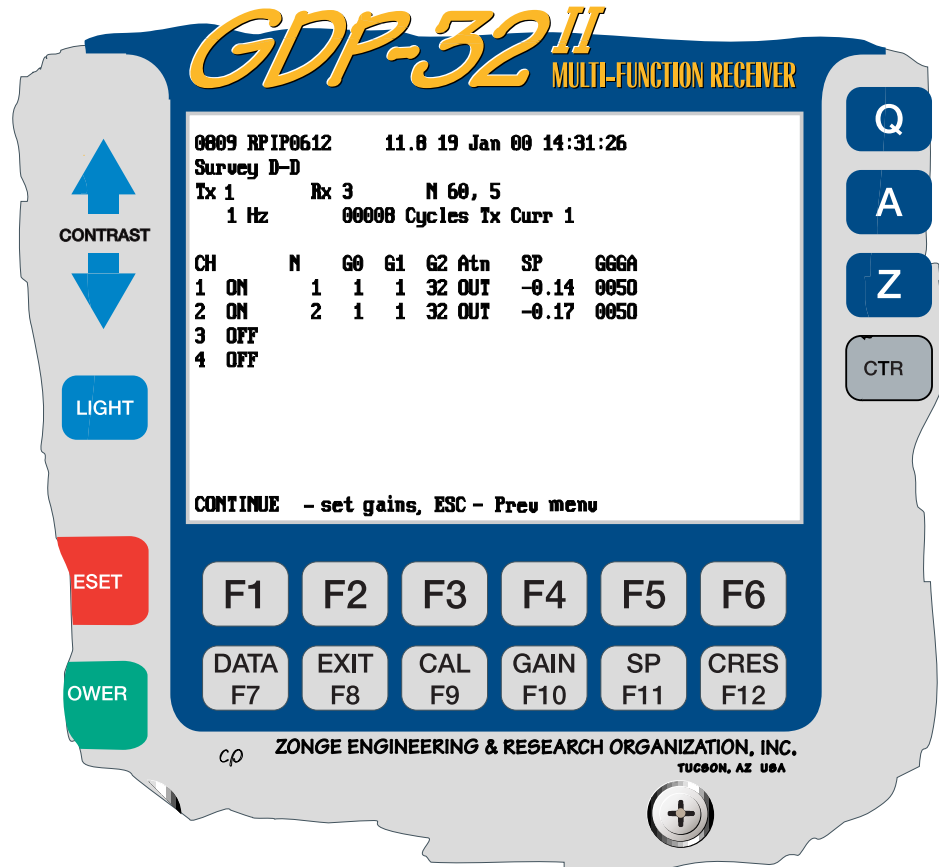
Note: A number (0810) is visible before the program designator (RPIP 0528). This number is the label of the last data block written to the data cache. The next time a block of data is written to the cache, it will be numbered 0811.

- Press  to proceed to the next menu.
- Press  to return to the previous menu.

DATA ACQUISITION SCREEN

This screen displays the primary survey settings and accepts the final survey parameters. Select frequency, number of cycles to average, notch filter in or out, etc.

Calibrations, System Checks or Set Gains tools are accessed from the Data Acquisition Screen by pressing the corresponding *Fixed Function Key*.



User Programmable Fields

- **TX**

Transmitter location. Zonge Engineering recommends using the lowest numbered electrode of the dipole (or the electrode for a transmitting pole). This example will transmit on a dipole, using electrodes numbered 1 and 2. So, Tx is set to 1. The field for Tx designation is $\pm NNNNN.N$ or $\pm NNNNNNNN$.

NOTE: for the Gradient array selection, “Tx” appears as “Ry”, and is used to input the receiver coordinates.

■ **RX**

Receiver location. Zonge Engineering recommends using the lowest numbered electrode for the dipole closest to the transmitting dipole (or pole). In this example, Channel 1 receives data using electrodes 3 and 4 and Channel 2 using electrodes 4 and 5. Thus, Rx is set to 3. The field for Rx designation is \pm NNNNN.N or \pm NNNNNNNN.

■ **N 60,5**

The notch filter, set according to the following list:

OUT	All notch filters bypassed
60	60 and 180 Hz notch filters enabled
60,5	60, 180, 300 and 540 Hz notch filters enabled

Other standard selections are:


50	50 and 150 Hz notch filters enabled
50,5	50, 150, 250 and 450 Hz notch filters enabled
50/60	50, 150, 60 and 180 Hz notch filters enabled

■ **N**

Defines the N-spacing (includes fractionals) for a particular channel. The decimal point does not appear for whole N-spacings.

■ **Hz**

Frequency selection.

*NOTE: Most parameters are not registered in the computer memory until the field is exited. An exception to this rule is the **Hz** (frequency) field. Whenever the frequency is changed it the new frequency is automatically changed through the timing card. However, the anti-alias filter is not changed until just prior to data acquisition. When  is pressed to set gains or to continue to gather data, the computer automatically sets the anti-alias filter as defined by internal look-up tables.*











- **Cycles**

The number of cycles to average. Increments are in binary steps from 1 to 16,384. As the system acquires data, the cycles count is updated in real-time to the left of the number input by the operator.

- **Tx Curr**

Transmitter current, up to 99.99 amps.

Additional Options:

- Press  to temporarily exit the data taking routine and look at data in the Field Data Cache. See Section 7 - Handling Data for information about Data Mode.
- Press  to proceed to acquire data.
- Press  to return to the previous menu, or to stop acquiring data when in the data acquisition mode.
- Press  to exit the data acquisition menu and return to the main menu. When exiting the program at this point, the main menu displays **Back** above  to return to the Survey Program in the event  was pressed by mistake.
- Press  to enter the Calibration and System Checking program. See Section 6.1 - Calibration for more details.
- Press  to enter the Automatic or Manual Gain Setting, SP buckout, and Repeat Stacks routines. See Section 6.4 - Gains for more details.
- Press  to buck out any self-potential (SP) or amplifier offset.
- Press  to enter the Contact Resistance Measuring Routine. See Section 6.3 - Measuring Contact Resistance for more details.

5.3 SCALING

The following convention is used for all measured and calculated parameters:

- Voltage (magnitudes) – displayed in volts
- Current – displayed in amperes
- Phase – displayed in milliradians
- Apparent resistivity – displayed in ohm-meters
- Dipole spacings – displayed in meters or feet
- SP – displayed in millivolts
- SEM – displayed in milliradians for RPIP, CR, CSAMT and
HACSAMT, milliseconds for TDIP and volt/amp for TEM, NanoTEM

If scaling is necessary on these values, the following labels are appended to the end of the number string:

- M – Mega units
- K – Kilo units
- m – milli units
- u – micro units