

OPERATING INSTRUCTION
for the
OREMASTER LONG RANGER SUPER X1000

This instrument has 4 Controls:

(1) Starting at the upper left side of the instrument panel is the Range Control, which has ranges of sensitivity from .001 to 20 MR/HR. The .001 is the most sensitive and the 20 MR/HR is the least sensitive. When using the instrument, one usually starts out on the .001 position.

(2) Below the Range Control is the Power Selector Switch. This controls the power to the instrument and controls the speaker and the external probe circuit whenever a probe is used.

Below this is the external meter jack, where the external meters are plugged in to use for mobile or airborne work.

Below the handle is the speaker for audio indications. The sound will increase through the speaker with an increase in radiation and will decrease with a decrease in radiation.

To the right of this is the Air Probe Socket, for use with an air probe.

(3) Directly above this is the Meter Function Switch, which controls the polarity of the meter and is used for testing the batteries.

(4) Above this is the Meter Zero Control. This controls the zeroing of the meter circuit.

To put the Instrument into operation, proceed as follows:

Turn the Range Control to the .001 position and the Meter Zero Control to #500. Turn the Meter Function Control to the Positive position, (POS). You will now hear a series of fast clicks, which indicates that the instrument is operating. Be sure there is no radioactive material around the instrument, such as luminous dial wrist watches, compasses, clocks, radioactive ore samples, and so forth.

Note the reading on the meter. If the meter pointer is reading up on the scale, slowly, in very short steps, turn the Meter Zero control to the left. That is, turn the control slowly for just a few divisions and then wait for a few seconds, until the meter will have time to respond. Then repeat the procedure until the meter pointer returns to, and lays, just below zero. Turn the control no further to the left than is necessary to just bring the meter pointer back to, and slightly below zero, so that it no longer is moving. This is a very important and sensitive adjustment to make and it is of extreme importance that the control is turned no further to the left, than is necessary to return the meter to a zero reading.

If there is no reading on the meter, before making this adjustment, slowly turn this control to the right, until the meter pointer starts to move slightly to the right. Then very slowly, in short steps, turn the control to the left, until the meter pointer moves to, and rests, just below zero. The pointer should now lay there, with only an occasional movement, not to exceed up to the first two or three divisions on the meter scale.

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The instrument is now ready for use.

If you do not wish to use the speaker, turn the Power Selector Switch, to the extreme right, to the "Speaker Off" position. This will enable the instrument to be used with just a meter reading, without the speaker. Do not turn it and leave it in the Probe Position, as this position is only for use with an Air Probe, which is an accessory. The instrument will not operate in the Probe position, without the Air Probe.

The instrument should be zeroed in, the same as described, for any area that you wish to use the instrument in, for the most accurate readings and to obtain the highest sensitivity from the instrument.

Any steady, high reading, above normal is an indication of additional radiation that you are detecting. In nature this will come from a radioactive vein or ore body, containing radioactive isotopes. Should the meter give a full scale reading to the extreme right, turn the Range Control from the .001 position, to the .002 position. This will reduce the sensitivity of the metering circuit, just slightly, and enough for the meter pointer to move back towards the left, on the meter face.

To determine the direction that the radiation may be coming from, proceed as follows:

Hold the instrument against your stomach, with the back end next to you, and the front end of the instrument, which is just under the meter, pointed directly away from you.

Very slowly turn in a complete circle (pivot), closely watching the meter movement as you turn. If the reading you are receiving is from a nearby ore body, the meter reading will increase when the front end of the instrument is pointed in the direction of the ore body. And as the front end is turned away from the direction of the ore body, the reading will decrease. Locate the direction of the ore body, where the reading is the highest, and proceed to follow this course, until you again receive a full scale reading on the instrument.

Should you receive a full scale reading in the .002 position, turn to the .01 position and continue to follow this course. The closer you move towards the source of this reading, the higher the reading will become. Should you again receive a full scale reading in the .01 position, switch to the .02 position. Occasionally vary the direction of the front of the instrument, slightly to the left and to the right, closely watching the meter to be sure that you are zeroed in on the deposit. As long as you continue to receive the full scale meter readings, you may switch from the .1, through 20, if these ranges are necessary. Unless you have a Uranium or Thorium deposit, that the radiation is emitting from, it is doubtful that you would ever use ranges higher than .2.

When following the direction of the high reading on the .001, .002, .01 and .02 scales, should the reading start decreasing, this means that you have passed the vein or ore body and are leaving it behind. In this case, retrace your steps to the point where you received the highest reading. This will be the location of the vein or ore body.

When you have arrived at the spot where you are receiving the highest reading, on the lowest sensitive range, search for the vein or out-cropping where the reading is coming in the strongest. You can also hear this on the speaker. The reading will be the highest and sound the loudest, when the instrument is passed over the center of the vein or deposit. If there is an outcropping of rock,

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in this formation, pass the front end of the instrument over any crack in the rock, and watch for a slight increase in reading. If the reading increases over these cracks or crevices, there may be a larger radioactive body, at depth, and the rays may be escaping through the cracks and crevices, as the path of resistance is usually less over them, than over the solid formation.

To obtain samples for an analysis or assay, take these samples from the area where the reading is highest on the meter. This will usually be where the highest concentration of ore is present.

When leaving this area and proceeding to continue prospecting, turn the Range Control back to the .001 position. It is a good policy to leave the speaker operating, along with the meter. Should you enter an area where the background count drops, and the clicks become slower, with less frequency, this area should be checked for a possible negative reading ore body.

To do this, back track to where the clicks were normal in the speaker, and turn the Meter Function Switch to the NEG, Negative position and adjust the meter Zero Control until the meter pointer just starts to move. This adjustment will be made just the opposite to the one that was made in the positive position.

To decrease the meter reading, in the negative position, turn the Meter Zero Control to the right. This will move the meter pointer to the left. To increase the meter reading, turn the Meter Zero Control to the left and this will move the meter pointer to the right. Very carefully adjust this meter, until the pointer just returns to zero. Then, go back over the area where the background count had dropped. Search for a spot where the meter reading is the highest in a negative position. This would be over the center of a sub-normal area or deposit, as the higher the reading is in the negative position, the more sub-normal the area is. This is what you would be looking for in a sub-normal area.

Several things can give a high meter reading in the negative position. One of these can be a heavy gravity ore body, that does not contain any radioactive isotopes, and due to the heavy gravity of the ore, it reduces the normal background reading by the blocking, or blanketing effect, against the normal radiation of the earth. This lowers the normal background of this deposit. The higher the meter reading, the lower is the background. The greater the quantity of the ore, the higher is the meter reading.

A deep underground pool of water, or an underground lake or river, may also be detected when there is enough water present to give a drop in the background count.

When through using the instrument in the negative position, turn the instrument back to the positive position (POS), and re-zero the instrument to resume prospecting.

When using the instrument for mobile prospecting, it is adjusted in the vehicle, the same as when used on foot. It may be used with, or without, the external meters. If it is desired to use the meters, they are usually mounted on the steering column of the vehicle and a cable plugged into the external meter socket of the instrument. When the meters are plugged in, this disconnects the meter in the instrument.

The external meters may be adjusted in one of two ways, to suit the operator, as follows:

- (1) The Meter Zero Control may be adjusted so that the Red and Black Meters, alternate their readings back and forth equally on the scales. First

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one meter will read up on the scale and then drop back to zero, then the other meter will read up, then drop back to zero, and so forth. By carefully adjusting the Meter Zero Control, the two meters can be very closely balanced. This is important when checking for anomalies and formation changes. When so adjusted, the instrument is set for it's most sensitive setting to automatically detect slight formation changes. If the instrument appears to be too sensitive to use on the .001 range with external meters, the range control may be turned to the .002 or .01 positions, and the meters adjusted to balance each other. One should always use the highest ranges of sensitivity that he can. Bearing in mind, that the instrument may be too sensitive to use this way, in some areas, on the .001 range.

(2) The other method, is to adjust the Meter Zero Control, until a $1/4$ to $1/2$ scale average meter reading, is present on the red meter. The red meter will vary more on the meter face, but the black meter will not be reading until the background gives a more pronounced drop. Bearing in mind, again, that the instrument may be too sensitive in the .001 and .002 position, if the fluctuation is too great on the red meter face. The greatest accuracy, however, will be when the instrument is so adjusted that the red and black meter pointers, will alternate back and forth, the same distance on each meter face. In this position, the instrument will automatically detect both above and sub-normal areas, should they occur.

When used, the Meter Function Switch, is always left in a positive position. Should you receive full scale readings in mobile prospecting, on the Red meter, and you wish to procede on foot, to locate the possible ore body, the external meters are disconnected from the instrument, by removing the plug. When leaving the protective body of the vehicle, you may notice an unusually high reading on the meter. If so, slightly adjust the Meter Zero control, until you receive a reading approximately the same as when you had in the vehicle. Then, procede to use the instrument on foot, to locate the source of radioactivity.

When re-entering the vehicle, the instrument will again have to be re-zeroed, to resume prospecting by vehicle.

When through using the instrument, be sure to turn the Power Selector Switch to the "OFF" position. All the other controls may be left, as is. When you are ready to use the instrument again, simply turn the Power Switch on, and slightly adjust the Meter Zero control, if necessary and you are ready to use the instrument.

It is a good policy to protect the instrument from excessive temperatures. Do not leave the instrument and batteries where they may freeze. Do not leave the instrument in a vehicle, with the windows closed tightly, on a hot day, and with the sun shining on it. Open the windows slightly and cover the instrument to protect it from excessive heat.

A Silver Mineral sample is included with this instrument that contains radio-active isotopes, as well as a rare earth sample and a uranium sample. To test the silver sample, which is very light in radiation, set the range control on the .001 position and adjust the Meter Zero Control until the meter pointer just return to zero. Place the sample against the front end of the instrument and notice the high reading you receive from this sample. The ore will not be detectable with a metal detector. Next, try the rare earth sample and then the uranium sample. The rare earth and uranium samples are usually higher in radiation and give a faster meter response.