Lunar Roving Vehicle

In the LM the astronauts will take with them to the surface of the Moon a four-wheeled vehicle that can be used to travel over the lunar surface and to carry equipment and rocks. It is termed the Lunar Roving Vehicle (LRV) or Rover (figure 15). It is powered by two silver-zinc, 36-volt batteries and has an individual electric motor for each of the four wheels. A photograph of the Apollo 15 Rover, taken on the Moon's surface, is shown in figure 16. A photograph of the folded Rover, taken just before it was placed in the LM, is shown in figure 17, the instrument panel in figure 18, and the Rover deployment scheme is shown in figure 19.

There is a navigation system that contains a directional gyroscope and provides information as to total distance traversed as well as heading. The instrument panel is shown in figure 18. Knowing the location of the Rover at all times is extremely important. Not only must the astronauts know where they are, but the scientists back on Earth must know where rocks are collected, observations are made, and data are taken for the traverse experiments. So the navigational information is to be recorded on the same tape recorder used for the Surface Electrical Properties (SEP) experiment. Soon after the astronauts return to Earth,

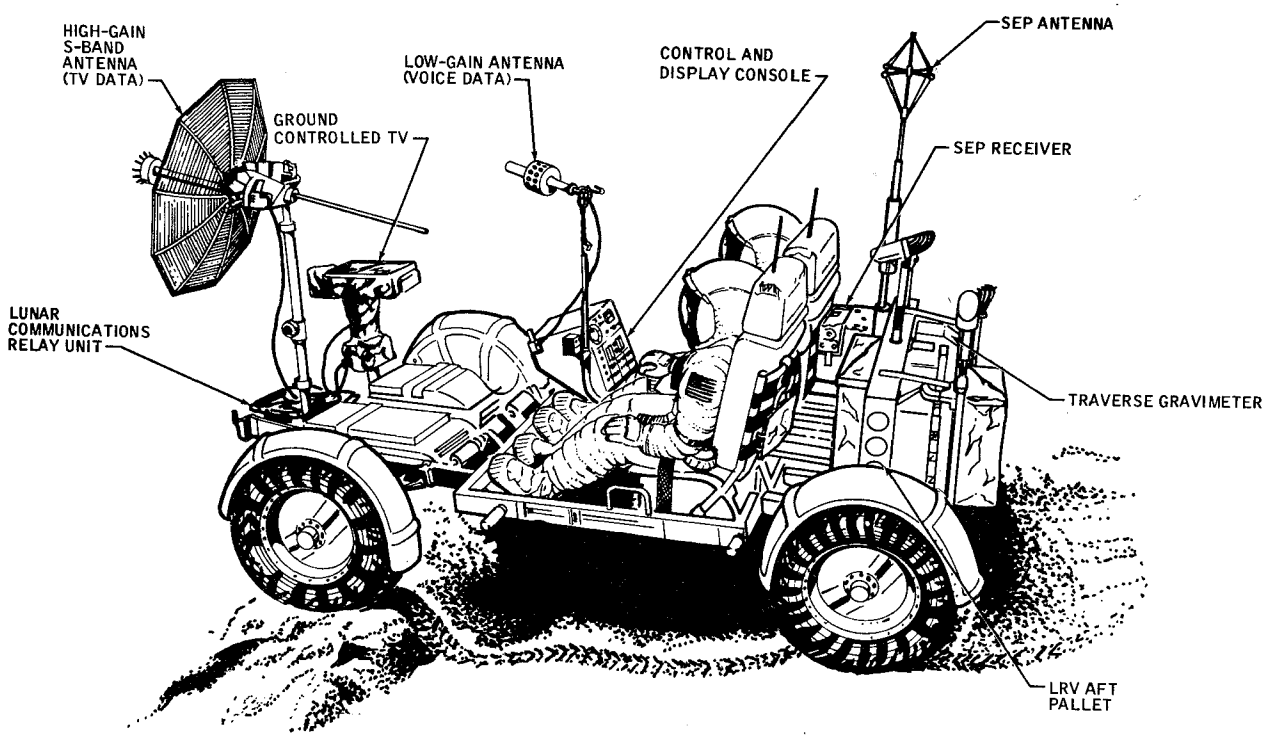

FIGURE 15.—The Lunar Rover. Both astronauts sit in seats with safety belts. About 7 minutes are required to fully deploy Rover. Although Rover weights only 500 pounds, its capacity is about 1,140 pounds. The vehicle travels about 10 miles per hour on level ground. The steps necessary to remove it from the LM and to ready it for use are shown in figure 18.

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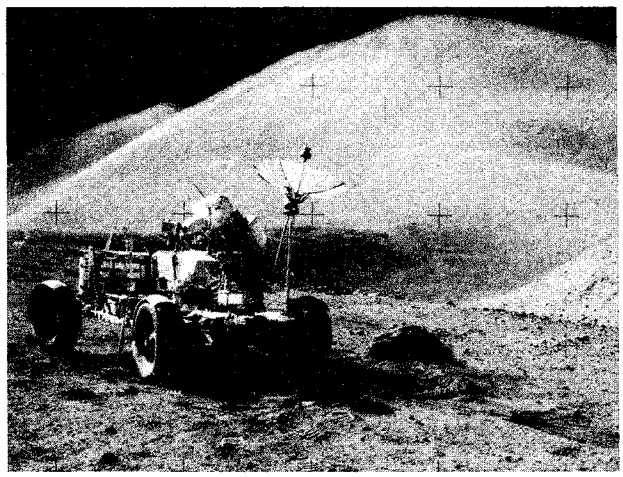

FIGURE 16.—The Apollo 15 Rover. Shown in the background is Mount Hadley delta, a 12,000-foot mountain. The valley on the right side of the photo is about 1,200 feet deep. On the Rover, note the high gain antenna and the TV camera in the front and the tool carrier in the rear. The scale of the photo varies greatly from the foreground to the horizon; it may be obtained from the footprints, the Rover, and the mountains in the distance. The crosses (+) in the photo are termed Risseau marks and are used to correct small distortions in the photo. NASA PHOTO AS 51–82–11121.

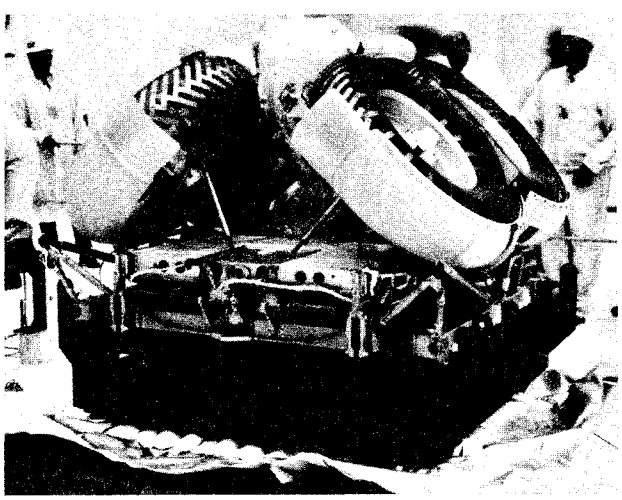

FIGURE 17.—Folded Rover. So that Rover would fit into the small space available in the LM, it was folded in the fashion shown here. This photo was taken at Cape Kennedy shortly before Rover was placed in the LM. NASA the photo. NASA PHOTO AS51–82–11121.

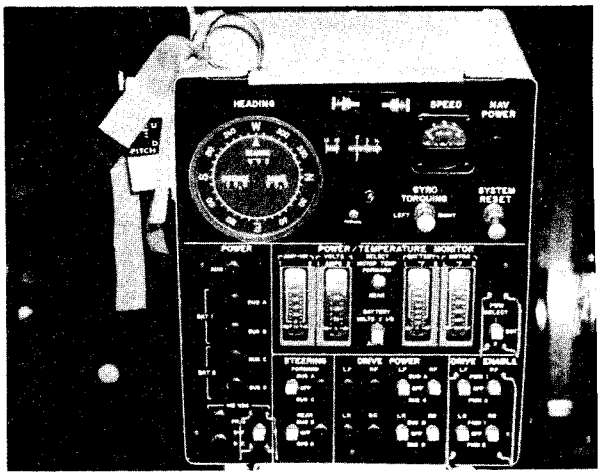

FIGURE 18.—Rover Instrument Panel. This panel contains all of the power switches for the Rover, an indication of the direction in which the Rover is heading, the speed at which it is traveling and the information (direction and distance) necessary to return safely to the LM. Also shown are the power and temperature of various motors. NASA PHOTO S–72–16181.

we will know the precise location of the Rover along each traverse.

In addition to the equipment carried on the Rover in earlier missions, mounted on the Apollo 17 Rover will be two science experiments that will obtain data along the route of the traverses. One experiment, the Lunar Traverse Gravimeter, or LTG, will measure the value of gravity at each stop with an extremely sensitive instrument. It can measure gravity with a precision of about one millionth the Earth's gravitational field! The other experiment, termed the Surface Electrical Properties Experiment, or SEP, will measure the electrical characteristics of the landing site. Both of these experiments are discussed in greater detail in the section on experiments.

As the astronauts ride over the surface of the Moon, they will describe the features that they see. Then at science stops, in addition to their oral descriptions, television pictures are sent back to Mission Control in Houston from the Rover. Some of these pictures may be shown over the regular TV networks.

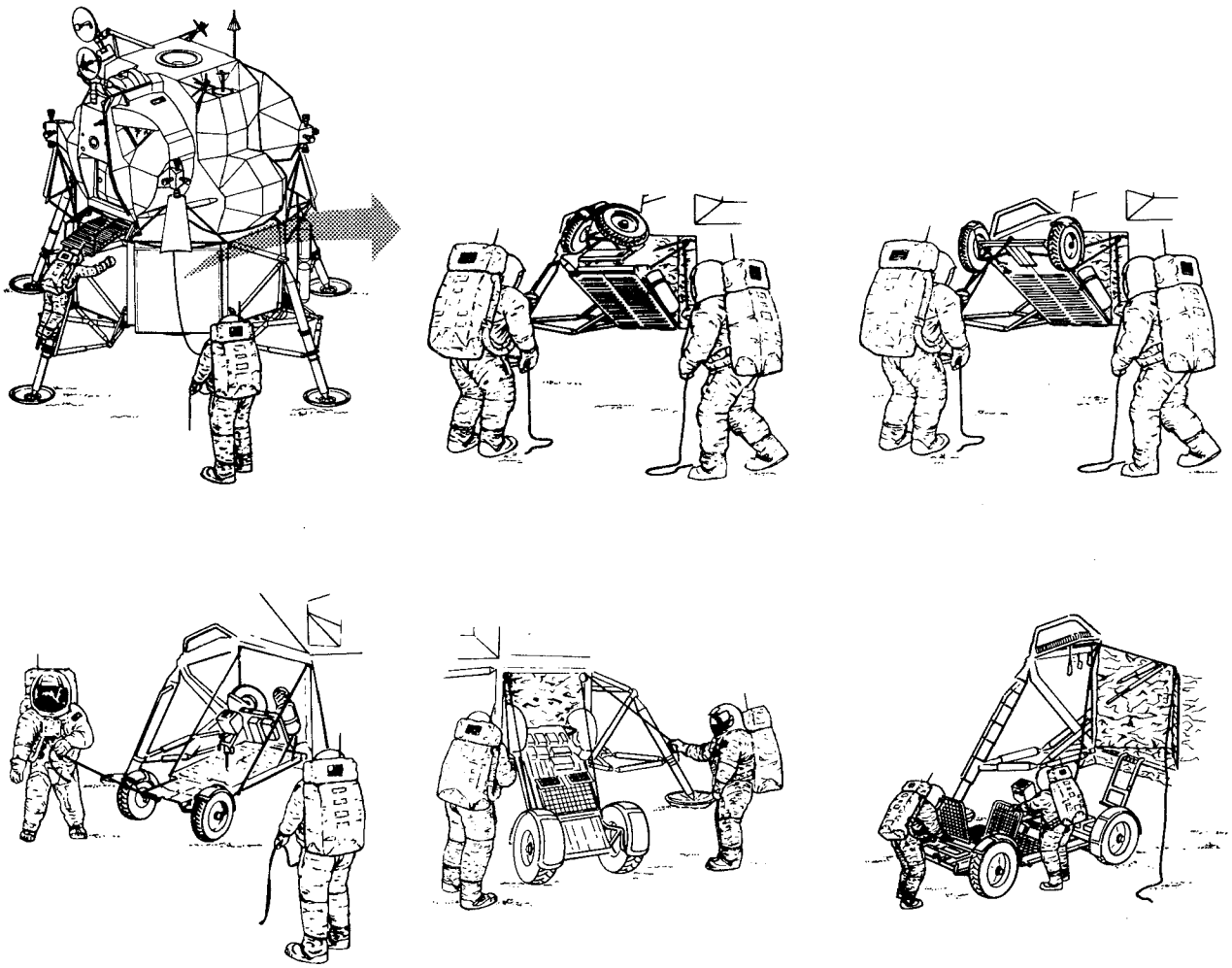

FIGURE 19.—Deployment sequence for the Lunar Roving Vehicle.