

[R009626]

NR: 997-11

[1969 July ca.]

FROM: Bob Killackey  
(602) 947-8578



MOON TO EARTH COMMUNICATIONS ONLY  
REQUIRES POWER OF REFRIGERATOR LIGHTBULB

"Operating the two-way radio used to communicate from the moon to Earth requires less power than used by the lightbulbs in the newest model refrigerators," according to Ralph W. Elsner, Motorola Corporate Vice President and Director of Operations of the company's Government Electronics Division.

Motorola produces the two-way radio used by the astronauts in the Apollo Command Module to communicate from the vicinity of the moon.

New refrigerators use 40-watt lightbulbs, and several models employ as many as 4 or 5 bulbs. The Motorola two-way space radio requires only about 35 watts of power to communicate from the moon.

more...

## MOON TO EARTH COMMUNICATIONS.....2

Elsner reported that the Motorola two-way unit produced especially for the Apollo Command Module has flown successfully on every Apollo mission to date. "When the Apollo spacecraft reaches a point approximately 30,000 miles from Earth, the Motorola unit becomes the only communications link our astronauts have with Earth," he said.

Space electronics engineers at the company's Government Electronics Division in Scottsdale, Arizona explained that the 32-pound radio unit is officially called an S-band transponder. In addition to transmitting and receiving voice communications, the unit handles television signals and scientific data.

In addition to the Motorola S-band Transponder installed on the Command Module with the astronauts, the company produced 11 other major spaceborne electronics tracking and communications units as well as ground-based tracking and checkout equipment for the historic Apollo program.

Also on the Command Module with the astronauts is a Motorola "Up Data Link" to receive signals coming up from Earth, and pass the signals on automatically to other on-board systems. The Up Data Link can automatically handle 67 different functions.

"A unit like the Up Data Link is a tremendous aid to the Apollo crew members," Elsner said, "when you consider that they are kept quite busy monitoring and operating approximately 24 instruments, 566 switches, 40 mechanical event indicators, and 71 lights in the Command Module display."

MOON TO EARTH COMMUNICATIONS.....3

On the Saturn launch vehicle are a number of Motorola electronic units, some of which are poised to receive the signal to initiate an abort of the mission in the event of malfunction or failure during launch.

And when the Apollo astronauts set foot on the moon, the sound of their voices and their TV pictures will be beamed back to Earth through still another Motorola communications unit called an S-band "transceiver" installed in the Lunar Module, the space vehicle that takes the two astronauts down to the lunar surface.

Motorola space electronics engineers also boasted about their specialized ground-based units called FM demodulators installed at the NASA ground receiving stations in Goldstone, California; Madrid, Spain; and Canberra, Australia.

The FM demodulators are essential to the converting of the TV signals coming back from the moon so we can receive an intelligible picture on our home TV sets.

"Because of the communications equipment we send up there and the ground receiving equipment here on Earth," Elsner said, "we will see the astronauts on our home TV sets when they walk out on the surface of the moon."

Motorola has produced vital communications and tracking equipment for every Manned U.S. space mission, Elsner said, and every Motorola unit sent aloft has functioned properly.