



5/15/67

Shield Extension to
Protect Astronaut
from G. E. Fuel Cask

This is an unscheduled ATM dealing with the concept of providing a simple rectangular shield extension to protect the astronaut from the thermal hazard presented by the G. E. Fuel Cask. The enclosed pictures were taken on April 28, 1967 at the BxA Mission and Crew Engineering test facility.

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The following photographs were taken in response to a request made by W. Durrant (BxA Structures Group). The intent of the photographic session was to establish whether or not a shield (of the configuration indicated in the following photographs by the white extension to the present cask shield) would provide adequate protection to the astronaut while he is working in front of the SEQ and while he is removing the Fuel Capsule from the Flight Cask. Although the old Cask and Shield are depicted in these photographs, the essential spatial relationships will be reasonably similar for the new Cask and Shield.

*HAPPENING OR
EXISTING IN SPACE*

Figures #1 through #12 depict the removal of ALSEP Subpackage No. 1 from the SEQ Bay in LM and show the relationship of the astronaut to the Flight Cask and Shields. Figures #13 through #18 depict the position of the astronaut relative to the Flight Cask and Shields when the Cask has been tilted to permit removal of the Fuel Capsule. Figure #19 shows the juxtaposition of the Cask to the two Shields, the LM Landing Strut, and the ALSEP removal line. Figure #20 shows the relationship of the Cask (in both the upright and tilted position) to the proposed Shield Extension, when the LM is in three different attitudes with respect to the lunar surface. (All height and tilt measurements show the relationship between the bottom of the SEQ and the lunar surface.)

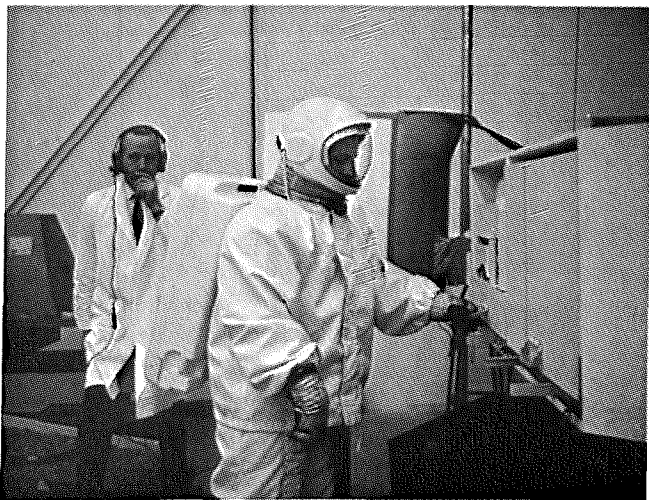
The proposed Shield Extension, which presently measures 20 by 25 inches, should be increased in length about 9 inches (see Figure #20), in order to adequately protect the astronaut at the 60 inch height. The 20 by 34 inch Shield Extension will prevent the astronaut from inadvertently coming into contact with the Flight Cask, while working in front of the SEQ, and the approximate 14.5 inch distance between the Shield Extension and the LM Landing Strut (see Figure #19) will provide sufficient work space for those tasks associated with removing the Fuel Capsule from the Flight Cask.

FIGURE #1



SIDE VIEW
15° FORWARD TILT
18" HEIGHT

FIGURE #2



SIDE VIEW
NO TILT
40" HEIGHT

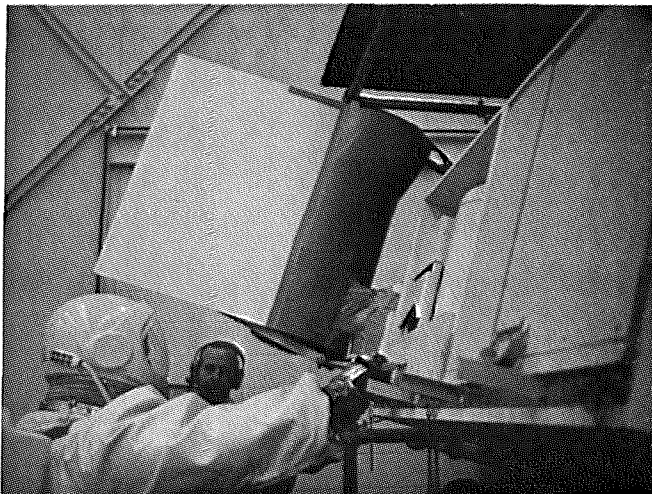
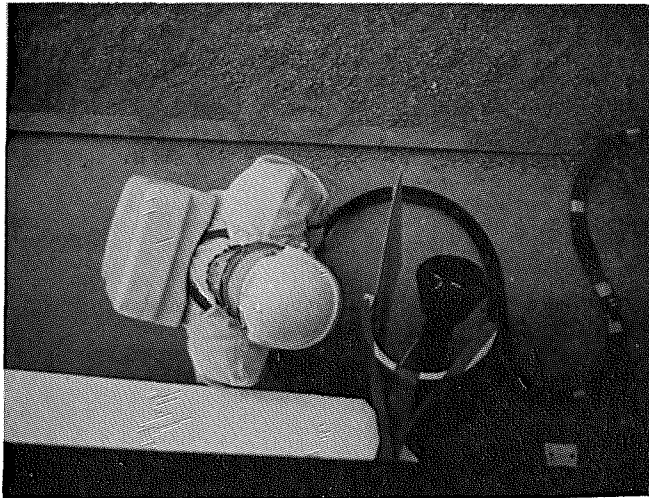


FIGURE #3

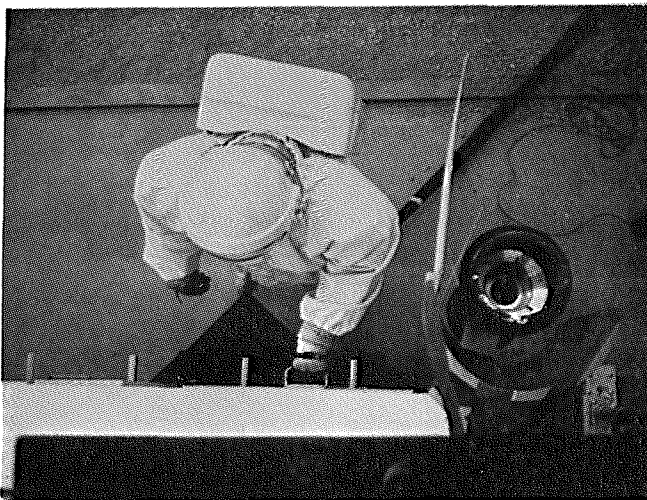
SIDE VIEW
15° REAR TILT
60" HEIGHT

FIGURE #4



TOP VIEW
15° FORWARD TILT
18" HEIGHT

FIGURE #5



TOP VIEW
NO TILT
40" HEIGHT

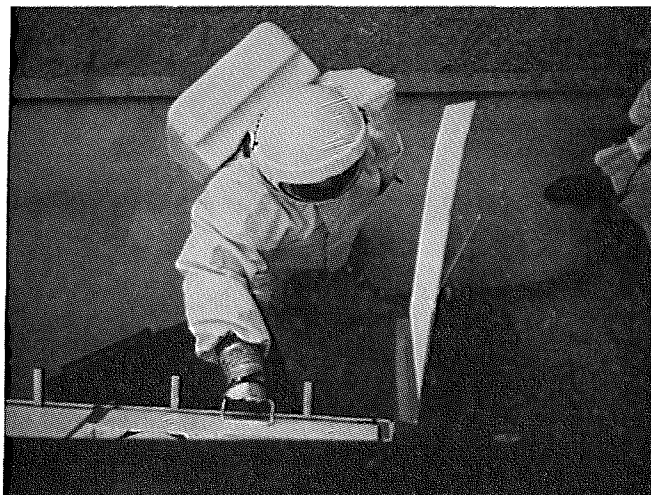
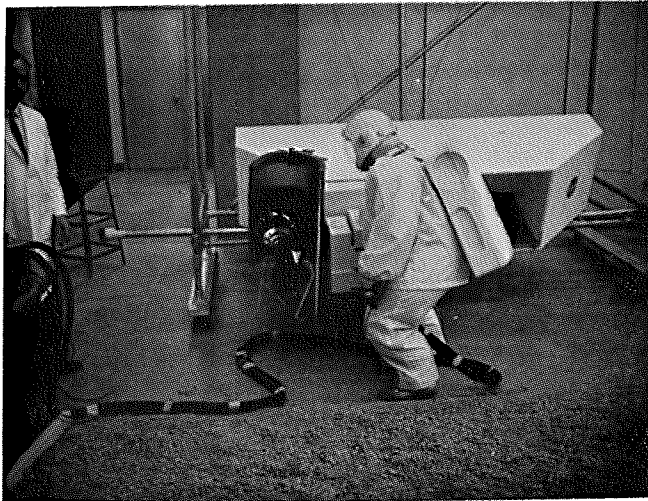


FIGURE #6

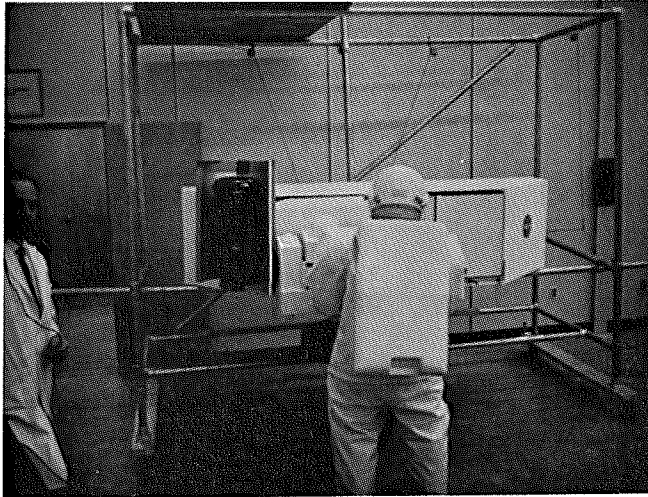
TOP VIEW
15° REAR TILT
60" HEIGHT

FIGURE #7



FRONT VIEW
15° FORWARD TILT
18" HEIGHT

FIGURE #8



FRONT VIEW
NO TILT
40" HEIGHT

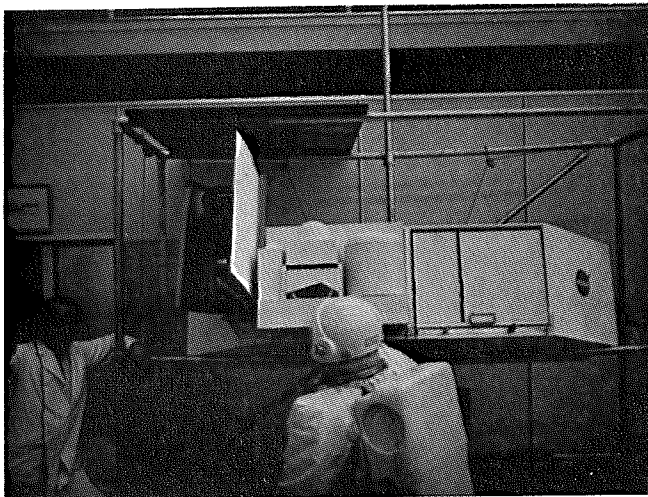


FIGURE #9

FRONT VIEW
15° REAR TILT
60" HEIGHT

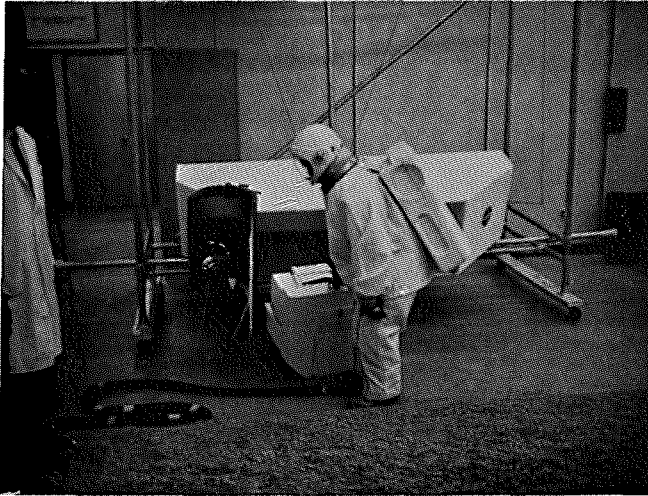


FIGURE #10

FRONT VIEW
15° FORWARD TILT
18" HEIGHT

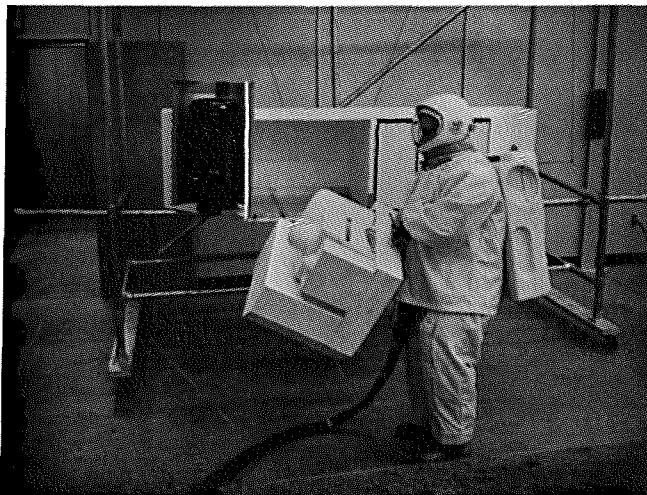


FIGURE #11

FRONT VIEW
NO TILT
40" HEIGHT

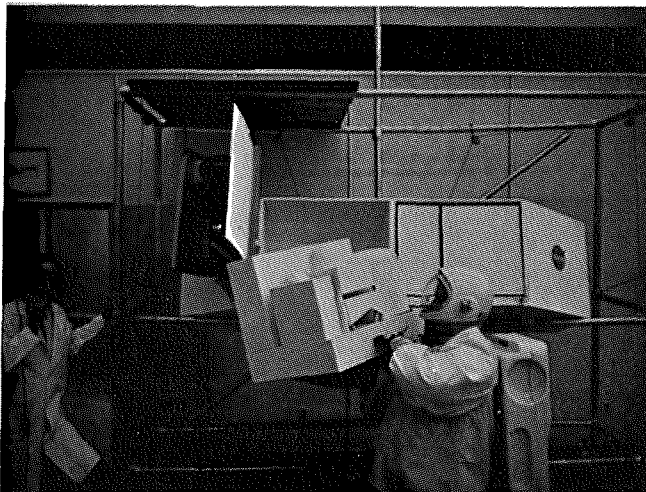


FIGURE #12

FRONT VIEW
15° REAR TILT
60" HEIGHT

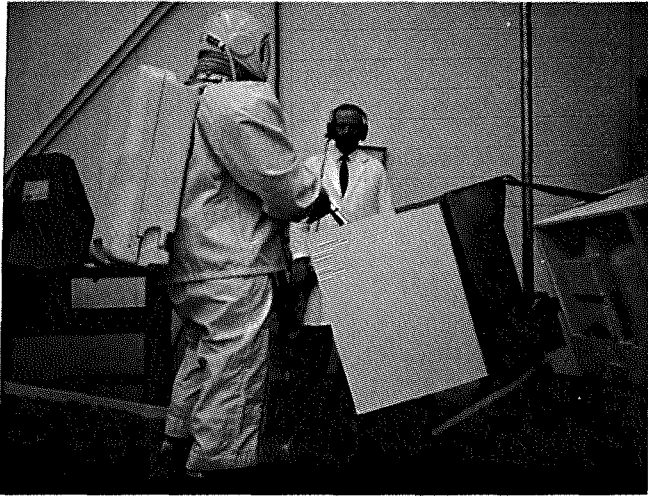


FIGURE #13
SIDE VIEW
15° FORWARD TILT
18" HEIGHT

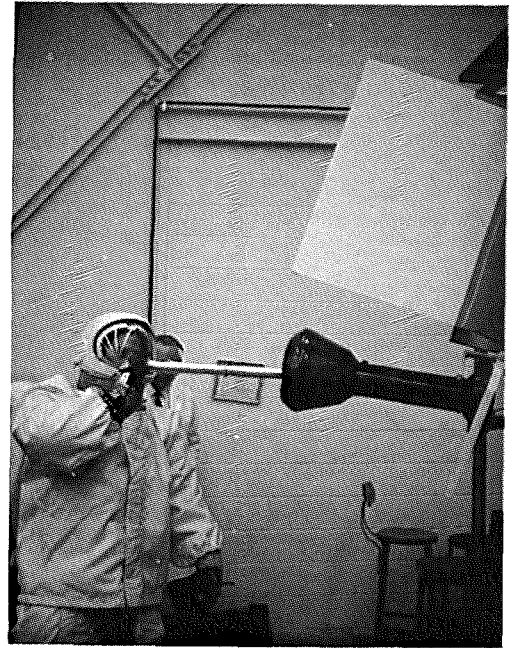


FIGURE #15
SIDE VIEW
15° REAR TILT
60" HEIGHT

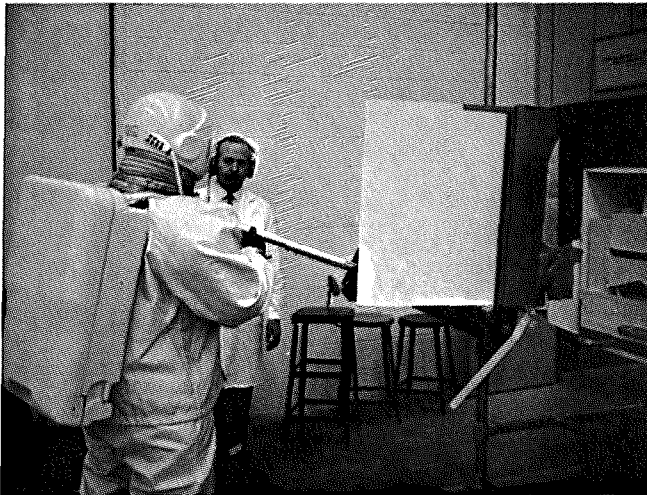


FIGURE #14
SIDE VIEW
NO TILT
40" HEIGHT

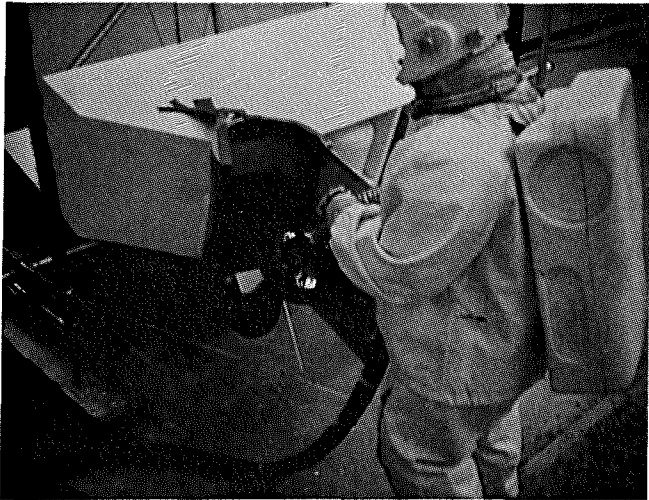


FIGURE #16
FRONT VIEW
15° FORWARD TILT
18" HEIGHT

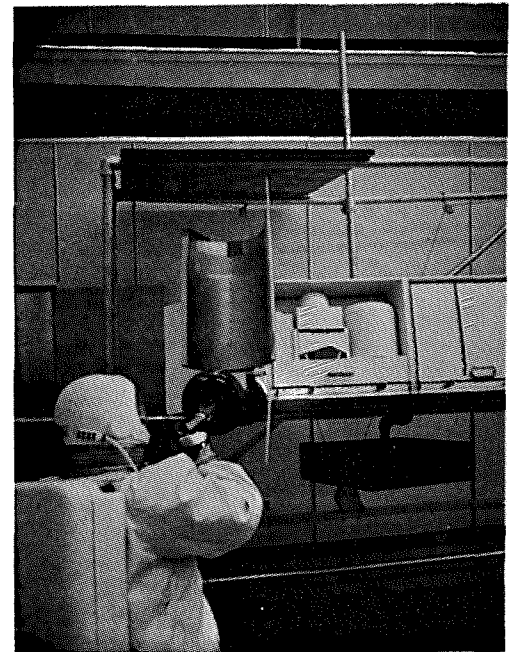


FIGURE #18
FRONT VIEW
15° REAR TILT
60" HEIGHT

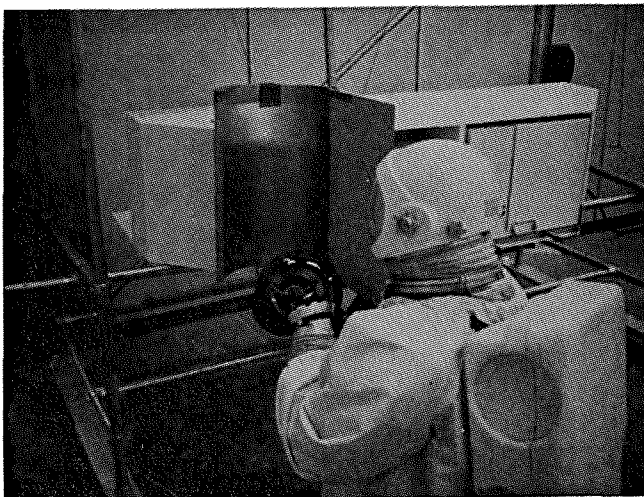


FIGURE #17
FRONT VIEW
NO TILT
40" HEIGHT

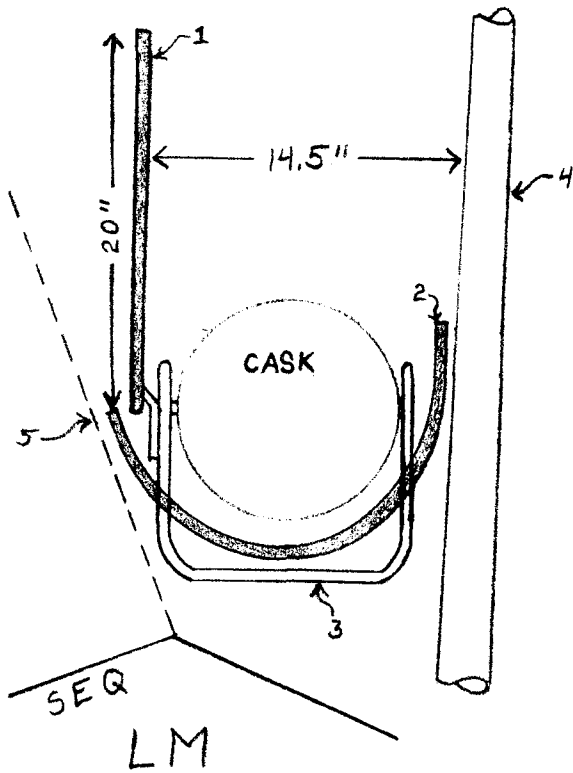


FIGURE # 19

TOP VIEW (1/10 SCALE)

DEPICTING:

FUEL CASK

LM (SEQ)

1. PROPOSED SHIELD EXTENSION

2. PRESENT CASK SHIELD

3. CASK STRUT

4. LM LANDING STRUT

5. ALSEP REMOVAL LINE

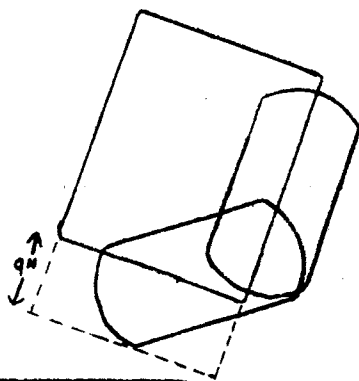
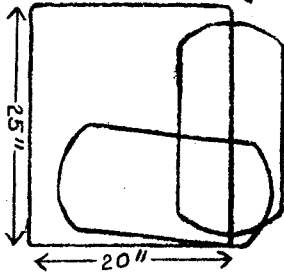


FIGURE #20

SIDE VIEW (1/20 SCALE)

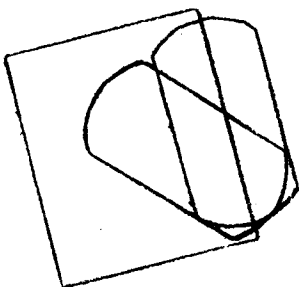
15° REAR TILT

60" HEIGHT



NO TILT

40" HEIGHT



15° FORWARD TILT

18" HEIGHT