



Lunar Reconnaissance Orbiter

The Lunar Reconnaissance Orbiter (LRO) is NASA's first step in returning humans to the Moon.

LRO focuses on the selection of safe landing sites, identification of lunar resources and the study of how the lunar radiation environment will affect humans. LRO will collect the data to allow scientists to create the comprehensive atlas of the Moon's features and resources necessary to design and build the lunar outpost.

Diviner Lunar Radiometric Experiment (DLRE)

DLRE will chart the temperature of the entire lunar surface to identify cold-traps and potential ice deposits. DLRE measurements may also be used to characterize lunar environments for habitability, determine rock abundances by mapping nighttime surface temperatures in multiple spectral channels, and map variations in silicate mineralogy.

Lunar Exploration Neutron Detector (LEND)

LEND will provide the observational data necessary for global mapping of the hydrogen content in the lunar sub-surface. These measurements will also allow for the characterization of the neutron component of the lunar radiation environment. Based on these measurements, LEND can be used to search for evidence of water ice in the sub-surface, and will provide space radiation environment measurements that may be useful for future human exploration.



Mini-RF Technology Demonstration

Mini-RF's primary goal is to search for subsurface water ice deposits. In addition, Mini-RF will take high-resolution imagery of permanently shadowed regions.



Cosmic Ray Telescope for the Effects of Radiation (CRaTER)

CRaTER will investigate the effects of galactic cosmic rays and solar energetic particles on tissue-equivalent plastics as a constraint on models of biological response to background space radiation.



Lyman Alpha Mapping Project (LAMP)

LAMP will map the entire lunar surface in the far ultraviolet and search for surface ice and frost in the polar regions illuminated only by starlight. LAMP will also serve as the first space exploration demonstration of military night vision technology.

Lunar Orbiter Laser Altimeter (LOLA)

LOLA will determine the global topography of the lunar surface at high resolution, measure landing site slopes, surface roughness, and search for possible polar surface ice in shadowed regions.



Lunar Reconnaissance Orbiter Camera (LROC)

LROC will acquire targeted narrow angle images of the lunar surface capable of resolving meter-scale features to support landing site selection, as well as wide-angle images to characterize polar illumination conditions and identify potential resources.

LRO Model Instructions

PRINT ON CARDSTOCK (AT LEAST 90 POUND BOND)

Materials Needed: scissors (or X-acto™ Knife), white glue, push pin, black marker or paint, Popsicle stick (optional)

~ About 2 hours to complete

A- Instrument Module

1. Instrument Module (A)

- Cut out Instrument Module A, (including extra line marked "cut").
- Cut white line slits on the black circles.
- Cut out hole labeled AD.
- Fold white flaps A-1, A-1a, A-1b, A-1c under. Do the same for all connecting rectangles

2. LROC NAC (AA)

- Cut out both AA-1-AA-2 pieces and do the following for both pieces.
- Color the backside of the strips black.
- Glue AA-1 under AA-2 to form rings.
- Insert the tabs into the slits (from step 1b) on instrument module around black circles.
- Glue down the tabs on back.
- Cut around both pieces AA3-AA5.
- Fold 2 sides inward around the center square (color side up).
- Fold and Glue white tabs AA-3, AA-4, to underside of AA-5.
- On the instrument module, connect flaps A-1a, A-1b, A-1c to A-1, with A-1 on the outside and glue.
- Pinch edge A-2 upward so it forms a right angle.
- Glue tab A-3 under to Instrument Module.
- Attach LROC NAC radiators AA3-5 to Instrument Module labels AA facing up.

3. Star Trackers (AB & AC)

- Cut out the 4 pieces.
- Poke holes on the black dots on both AB-2's.
- Fold the outer squares in for both AB-2 and outer tabs for AB-1.
- Glue the AB-2 squares over the AB-1 tabs.
- Glue tab AC-1 under AC-2.
- Glue the points of AC to the holes in AB.
- Glue both Star Trackers to Instrument Module where labeled AB.

4. LOLA (AD)

- Cut out LOLA.
- Glue AD-1 under AD-2.
- Glue small end into the hole you cut out on Instrument Module labeled AD.

5. LAMP (AE)

- Cut out LAMP.
- Fold and glue AE-1a, AE-1b, AE-1c under AE-1.
- Attach to Instrument Module A labeled LAMP.

- CRAaTER: Fold B back and glue to A.
- Fold at the dark lines forming a square then attach and glue F-2 to the back of F-1.
- Fold the white flaps down and glue them inside.
- Attach the Instrument Module where labeled on the Spacecraft Bus (Star Trackers facing up).
- Glue the open-ended side of the Spacecraft Bus down over the white tabs on the B (base), with instrument module opposite of the Solar Array System.

B - Solar Array System and Base

- Cut out both pieces, B-1 and B-2.
- Glue a Popsicle stick to one of the backsides connecting the Solar Panel and base across the connector (Optional for stability).
- Glue the backs of both sides B-1 and B-2 together.
- Fold up white tabs (side B-2 faces up).

C - Propulsion Module

- Cut out Propulsion Module.
- Cut all black lines to the circle line.
- Fold the outer white tabs under.
- Fold all inner tabs back at a slight angle.
- Glue all outer tabs C-1 to the base labeled Propulsion so that they are hidden.

D - High Gain Antenna System

- Cut out antenna and dish.
- Glue tab D-1 under D-2.
- Connect and glue D-3 to D-4 by rolling it into a long tube.
- Set and glue dish into D-6 tabs.
- Glue the D-5 tab onto the base.

E - Mini-RF

- Cut out Mini-RF.
- Bend the white tab E-2 up slightly.

F - Spacecraft Bus

- Cut out Spacecraft Bus including the indicated line E-1 for the Mini-RF.
- Insert Mini-RF into E-1 and glue E-2 to the backside of the Spacecraft Bus (it should bend outward slightly).
- Fold and glue F-4 to F-3.

G - LEND

- Cut out LEND.
- Glue tab G-1 under G-2.
- Fold white tabs on G-3 and G-4 down and glue inside the tube.
- Glue the white side to Spacecraft Bus F on the tab labeled LEND.

H - DLRE

- Cut out both pieces of DLRE.
- Glue H-2 over H-1.
- Fold H-3 and H-4 tabs down and glue them to the inside of the tube.
- Fold H-5 down and then glue over H-7 then fold H-6 down and then glue over H-8.
- Glue the white tab labeled F to the Spacecraft Bus F where labeled DLRE.

ENJOY!!





LEND

F-4

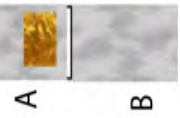
F-3

F-1

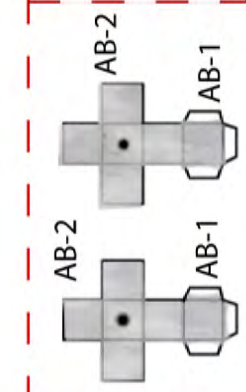
F

DLRE

CRATER

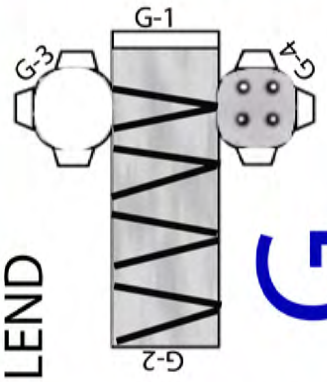


E-1 (Mini-RF)



Star Trackers (AB&AC)

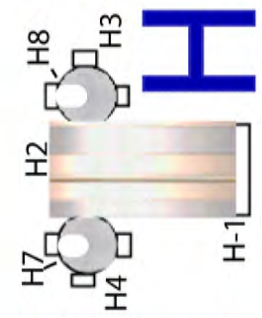
LEND



G



F-5

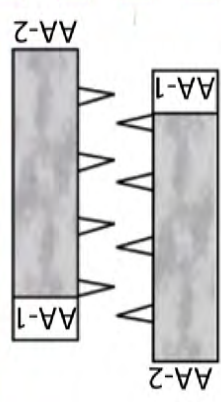


DLRE

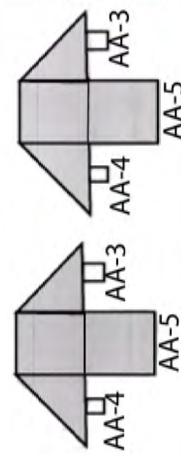
E



Mini-RF



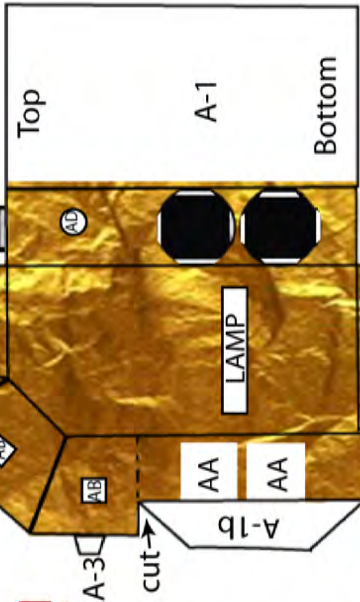
LROC NAC (AA)



LOLA (AD)



LROC WAC

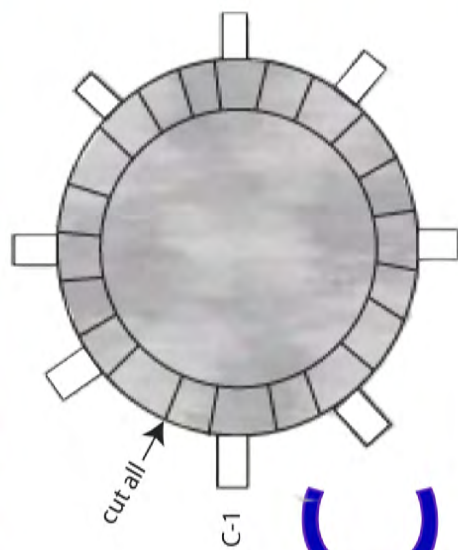
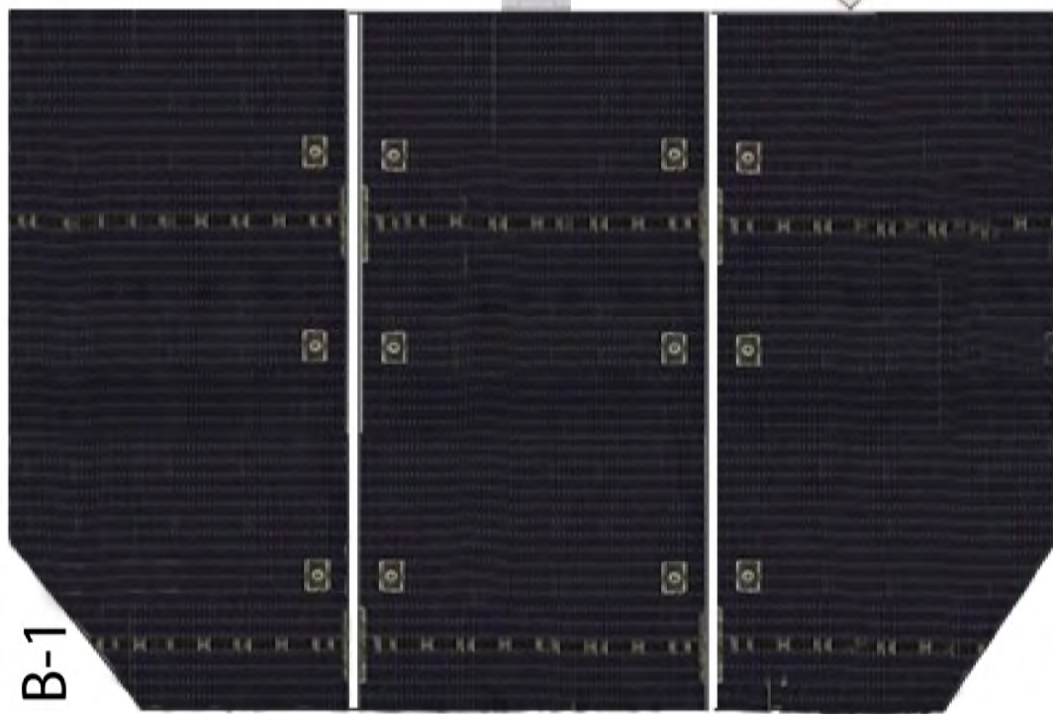


A

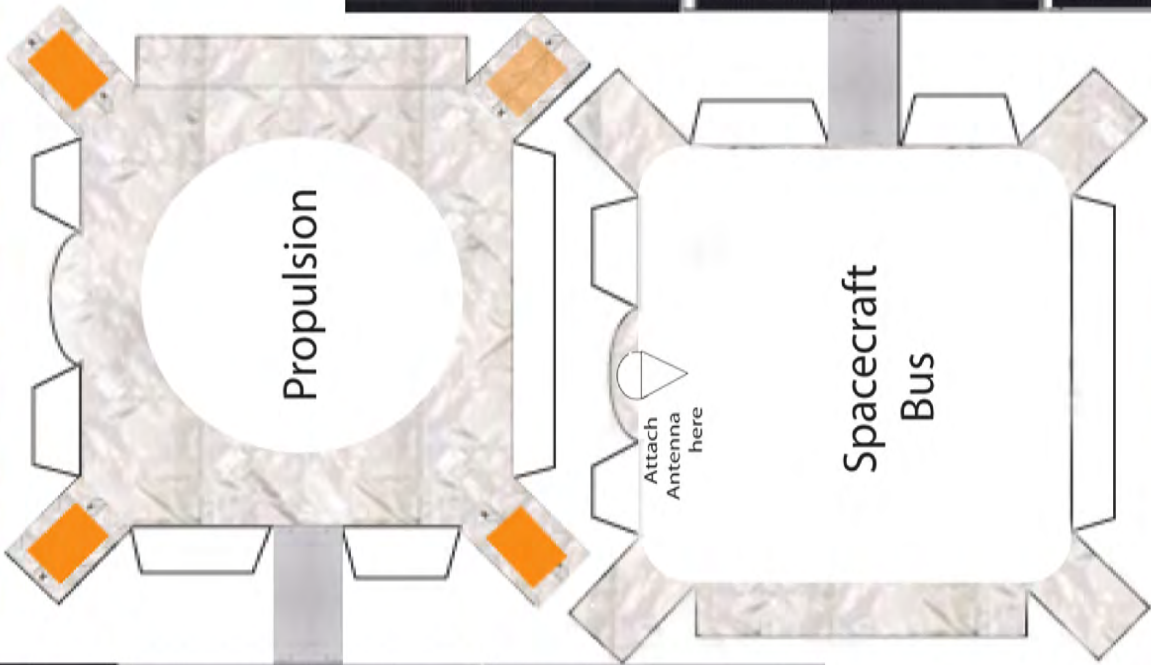
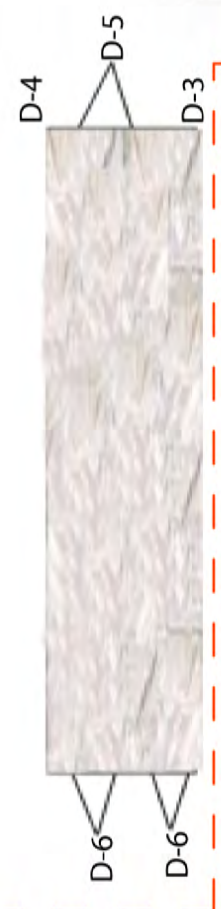
Instrument Module



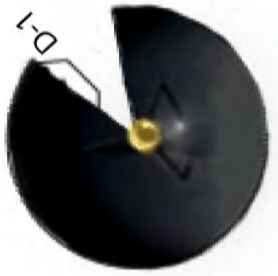
F-2



C



B



D

