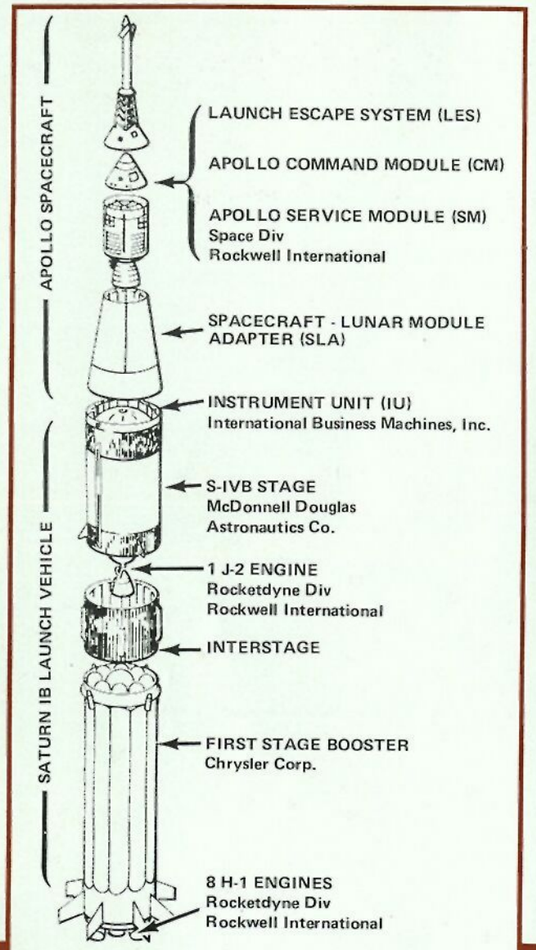
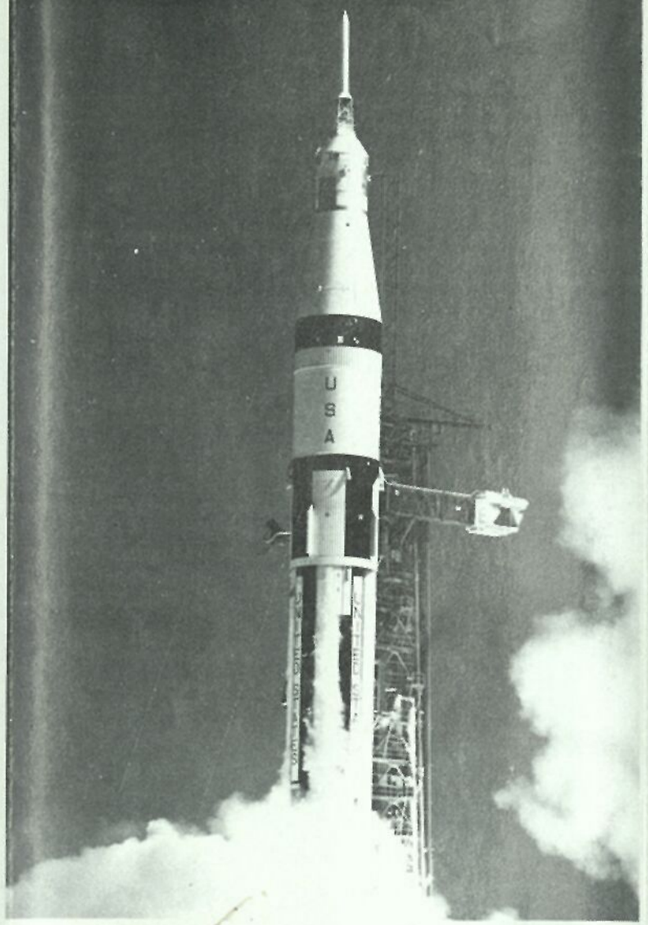


Each member of the space team has an important role in achieving the Manned Flight Awareness objective of preventing errors and defects in space flight hardware and operations. The error prevented helps ensure a safe and successful mission - and eliminates the cost of correction. Error-free performance truly means more space program per dollar.

MANNED FLIGHT AWARENESS
Marshall Space Flight Center, S&A - DIR
Marshall Space Flight Center, Alabama 35812



skylab 3

SCIENCE & ENGINEERING IN ORBIT

ALAN BEAN OWEN GARRIOTT JACK LOUSMA

2nd Skylab crew...

ALAN L. BEAN
Commander

Commander for the second manned Skylab mission, Alan L. Bean is a veteran of the Apollo Program, having served as lunar module pilot for the flight of Apollo XII in November, 1969. During that Apollo mission, he brought the lunar module to a precision landing within 300 feet of the targeted landing point. He helped install the first nuclear power generator on the moon. He has logged a total of 244 hours, 36 minutes of space flight, which includes seven hours and 45 minutes outside the spacecraft on the lunar surface.

A captain in the U.S. Navy, Bean became a NASA astronaut in 1963. He was born in Wheeler, Texas, on March 15, 1932. After graduating from Paschal High School in Fort Worth, Texas, he received a BS degree in aeronautical engineering from the University of Texas in 1955.

Bean holds many awards, including the NASA Distinguished Service Medal, Navy Astronaut Wings and the Navy Distinguished Service Medal. During his career, he has flown 27 types of military aircraft, logging more than 4,410 hours flying time.

OWEN K. GARRIOTT
Science Pilot

Making his first space flight, Owen K. Garriott was selected as a scientist-astronaut by NASA in June, 1965. He has since completed a course in flight training and has logged more than 1,600 hours flying time.

Garriott was born in Enid, Okla., on Nov. 22, 1930. He graduated from Enid High School and then received a BS degree in electrical engineering from the University of Oklahoma in 1953. He also holds a master of science degree and a doctorate in electrical engineering from Stanford University in 1957 and 1960, respectively. He has performed research in ionospheric physics since obtaining his doctorate, and he has authored and coauthored more than 25 scientific papers and one book.

He was awarded a National Science Foundation Fellowship at Cambridge University and at the Radio Research Station at Slough, England, 1960-1961.

JACK R. LOUSMA
Pilot

Also making his first space flight, Jack R. Lousma was one of 19 astronauts selected by NASA in April, 1966. He served as a member of astronaut support crews for the Apollo IX, X, and XIII missions. A major in the U.S. Marine Corps, he has logged more than 2,600 hours of flight time.

He was born in Grand Rapids, Mich., on Feb. 29, 1936. He attended Ann Arbor High School and received a BS degree in aeronautical engineering from the University of Michigan in 1959. He holds the degree of aeronautical engineer from the U.S. Naval Post-graduate School in 1965.

Lousma has been a Marine Corps officer since 1959. He was awarded the MSC Certificate of Commendation in 1970.

BACKUP CREW

Vance D. Brand, Commander
William B. Lenoir, Science Pilot
Don L. Lind, Pilot

SL-3 EXPERIMENT ASSIGNMENTS

Number	Title	Cluster Location	Cmdr.	Pilot	Science Pilot
M071	Mineral Balance	OWS	•	•	•
M073	Bioassay of Body Fluids	OWS	•	•	•
M074	Specimen Mass Measurement	OWS			•
M092	In-Flight Lower Body Neg Press.	OWS	•	•	•
M093	Vectorcardiogram	OWS	•	•	•
M112	Blood Studies	OWS	•	•	•
M115					
M131	Human Vestibular Function	OWS	•	•	•
M133	Sleep Monitoring	OWS			•
M151	Time and Motion Study	OWS	•	•	•
M171	Metabolic Activity	OWS	•	•	•
M172	Body Mass Measurement	OWS			•
T003	In-Flight Aerosol Analysis	OWS		•	
M479	Zero Gravity Flammability	MDA		•	
T002	Manual Navigation Sightings	OWS	•		
T027	ATM Contamination Measurement	OWS		•	
M487	Habitability and Crew Quarters	OWS	•	•	•
T020	Foot Controlled Maneuvering Unit	OWS	•		
S019	UV Stellar Astronomy	OWS		•	
S020	UV/X-Ray Solar Photography	OWS		•	
S063	UV Airglow Horizon Photo.	OWS		•	
S073	Gegenschein/Zodiacal Light	OWS		•	
S149	Particle Collection	OWS		•	
S183	Ultraviolet Panorama	OWS		•	
S228	Transuranic Cosmic Rays	OWS		TBD	
S230	Magnetospheric Particle Collection	ATM		TBD	
S052	White Light Coronagraph	ATM	•	•	•
S054	X-Ray Spectrographic Telescope	ATM	•	•	•
S055A	UV Scanning Polychromator/ Spectroheliometer	ATM	•	•	•
S056	X-Ray Telescope	ATM	•	•	•
S082A	XUV Coronal Spectroheliograph	ATM	•	•	•
S082B	UV Spectrometer	ATM	•	•	•
S190A	Multispectral Photo. Facility	MDA	•	•	
S190B	Earth Terrain Camera	OWS			•
S191	Infrared Spectrometer	MDA	•	•	
S192	Multispectral Scanner	MDA	•	•	
S193	Microwave Radiometer/ Scatterometer Radar and Altimeter	MDA	•	•	
S194	L Band Radiometer	MDA	•	•	
S071	Circadian Rhythm of Pocket Mice	CSM	•		
S072	Circadian Rhythm of Vinegar Gnats	CSM	•		

SCHEDULE OF EVENTS

DATE	TIME/EDT	EVENT AND BRIEF DESCRIPTION
JULY 28	7:08 a.m.	Liftoff of Second Skylab Crew
	7:10 a.m.	First/Second Stage Separation
	7:18 a.m.	Spacecraft in Orbit
	9:26 a.m.	First Spacecraft Maneuver to Accomplish Rendezvous
	2:21 p.m.	Final Maneuver Toward Rendezvous With Skylab
	3:38 p.m.	Docking With Workshop Cluster
SEPT. 22	3:21 p.m.	Undocking From Cluster
	8:38 p.m.	Landing

NOTE: At printing time of this brochure, the above timeline was tentative and subject to change

MISSION PROFILE

The second Skylab crew will be launched to a rendezvous with the orbiting cluster atop a Saturn IB and aboard a modified Apollo Command and Service Module.

They are first launched into a preliminary orbit. Several sequence maneuvers are required to reach the orbit of the Skylab cluster. After docking, the crew rests before entering the station.

Present plans call for the crew, early in the mission, to replace a sun shade which was deployed above the cluster by the first Skylab crew. Tests have shown that the sun shade deteriorates in strength due to exposure to direct rays of the Sun. The shade will be replaced by the astronauts working outside the orbiting station. They will deploy two long poles. The new sun shade will be sent out along the poles in a manner similar to raising a flag.

While the first crew completed a 28-day mission, the second crew plans to remain aloft for 56 days. The mission will be similar to the first one, but places more emphasis on solar astronomy and earth resources experiments.

SKYLAB REPAIRS

Two problems developed during the launch of the unmanned Skylab cluster on May 14, 1973. The meteoroid shield, a thin, .025-inch aluminum cover on the outside of the station, was torn loose during launch. This caused extreme overheating of the station.

The second problem involved the loss of one of two large solar array wings attached to the sides of the station. The second wing deployed only partially. This caused the loss of more than half the electrical power needed to operate the station.

Because of these problems, the launch of the first crew was delayed eleven days. During this interim, thousands of persons in NASA and industry worked around the clock to conceive, design, produce, and test the methods needed to save the mission.

The effort was successful.

A sun shield was deployed over the station's habitable area reducing temperatures to acceptable levels. Later, the astronauts made a space walk that resulted in a successful deployment of the jammed solar array wing.

TYPICAL WORK DAY IN SPACE

The mission will be run on Central Daylight Time and the sleep periods will run fairly constantly from 10 p.m. to 6 a.m. After entering the workshop, the first two big jobs will be shutting down the command module and activating the Workshop.

During a regular mission day, the crew will spend the morning hours from 6 to 8 preparing for work. Checklists and plans for the day's work will be sent to Skylab from the ground, and received on a teleprinter aboard Skylab.

The major experiments are solar astronomy, using the Apollo Telescope Mount; earth resources, using the camera and sensor package; biomedical, involving the crew and several items of equipment; and another large group called the corollary experiments.

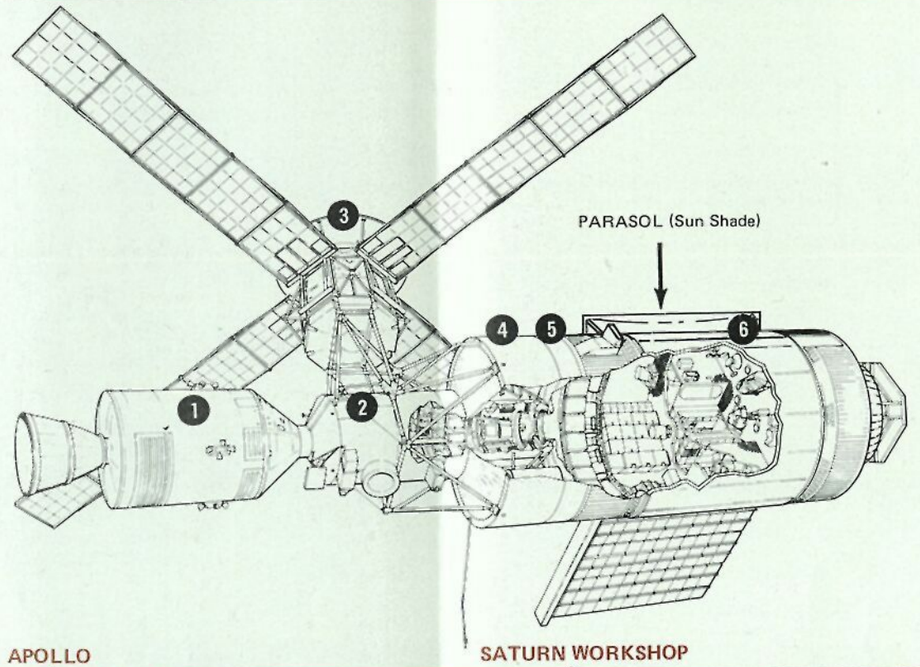
Each of these major areas, with their various experiments, must be fitted into the crew's work day. Conducting earth resources experiments will depend upon the orbital position of Skylab and the condition of the cloud cover on earth. When the solar astronomy experiments are being conducted, the ATM consoles must be manned during every daylight pass. However, solar flares or other sun conditions might call for manning the console at odd hours.

Two out of every three days, each crewman will be a subject in the various medical experiments. At other times he will monitor equipment while another crewman is the subject.

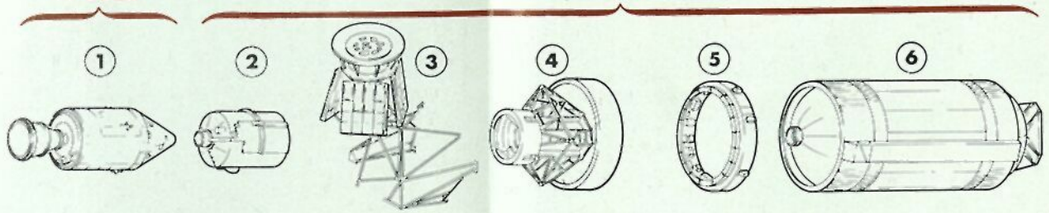
The one period in which the astronauts will attempt to stop work and get together will be the dinner hour. At this time they can take a look at the flight plan and tighten up loose ends.

SKYLAB OBJECTIVES

President Nixon: "...the Skylab... will be aimed not at advancing the exploration of deep space, but at gaining in space new knowledge for the improvement of life here on Earth. It will help develop new methods of learning about the Earth's environment and the Earth's resources, and new methods of evaluating programs aimed at preserving and enhancing the resources of all the world. It will seek new knowledge about our star, the Sun, and about its tremendous influence on our environment."



APOLLO — SATURN WORKSHOP



Element	Command and Service Module	Multiple Docking Adapter	Apollo Telescope Mount	Airlock Module/Fixed Airlock Shroud	Instrument Unit	Orbital Workshop
Function	Crew Ascent & Descent	Docking Interface ATM/EREP Controls & Displays	Solar Observation	Power Control & Distribution Environmental Control Utility Center Data System Extravehicular Activity Port	Launch Vehicle Control	Primary Living & Working Area Experiment Laboratory Stowage
Length (ft)	34.3	17.3	13.3	17.6	3.0	48.1
Diameter (ft)	13.0	10.0	–	10.0	21.5	21.6
Working Volume (cu ft)	366	1,140	–	613	–	9,550