GP-929A
Revised January 31, 1973

OTV CAMERA
REFERENCE HANDBOOK
SKYLAB/ASTP

(NAS1-CR-X-69526) OTV CAMERA REFERENCE
HANDBOOK SKYLAB/ASTP (NASA) 85 P HC
$8.25

UNCLASSIFIED

VIDEO SYSTEMS BRANCH
OIS AND TELECOMMUNICATIONS DIVISION
INTRODUCTION

1.1 PURPOSE

This publication defines all Television Camera locations as well as the specific area to be covered by each camera to provide the Television coverage of Skylab testing and launches in accordance with operational and engineering requirements.

1.2 SCOPE

This publication is to be used as a reference by engineering, operations and other cognizant personnel who wish to obtain information pertinent to television requirements specified in the Skylab Program Support Requirement Document (PSRD), KSC Skylab Requirements Document and KSC Requirement Document.

1.3 TELEVISION REQUIREMENTS

Television coverage of all launch area and vehicle operations is required for real-time operational and engineering analysis, public information and by all NASA agencies. To meet these requirements the Kennedy Space Center (KSC), LC-39, Operational Television System (OTV) utilizes television cameras equipped with pan and tilt units and zoom lenses which are remotely controlled from the Launch Control Center (LCC). This equipment and mode of operation enable KSC to provide television coverage of Skylab prelaunch functions, launch functions and events of the first 1,300 feet of vehicle flight.

1.4 CAMERA LOCATIONS

The following photographs and accompanying locator views illustrate the location and fields of view of each camera on the Mobile Launchers 1 and 2, pad aprons, LC-39A and B perimeter camera sites, Mobile Service Structure (MSS), and the Vehicle Assembly Building (VAB) roof.

Due to the flexibility of the system the entire fields of view cannot be shown and only those areas of primary concern shall be depicted.

The photographs and locator views are to be used specifically to locate and identify areas to be covered by the cameras and should not be used for study of the illustrated item as such. Where it is not possible to obtain photographs of the Skylab vehicles, the Apollo photographs have been used.

1.5 INDEX

Table 1 is an index for camera fields of view for locating the page for any specific camera.
<table>
<thead>
<tr>
<th>Camera No.</th>
<th>Page</th>
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### TABLE 1B INDEX FOR CAMERA FIELDS OF VIEW
SKYLAB 2, 3, 4, and ASTP

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FIGURE 3. LC-39B camera locations
FIGURE 4. ML-1 camera locations
FIGURE 5. MSS camera locations
CAMERA No. P1: located LC39A Perimeter Site 2, coverage: ML, Vehicle, Service Arms and Primary Damper.

CAMERA No. P2: located LC39A Perimeter Site 5, coverage: ML, Vehicle, Service Arms and Primary Damper.
CAMERA No. IA; located ML-2 Rm. 4AB; coverage: hydraulic service unit.

CAMERA No. IA (Cont'd.); hydraulic service unit.
CAMERA No. 1A (Cont'd.); RP-1 piping.

CAMERA No. 2A; located ML-2 Rm. 15A; coverage: RCA-110 computer maintenance panel.
CAMERA No. 3A; located Pad Apron at NW corner of flame trench; coverage: flame deflector cooling water.

CAMERA No. 3A (Cont'd.); LH2 disconnect tower piping and ML connection.
CAMERA No. 3A (Cont'd.); LH2 vent piping, ML side 3.

CAMERA No. 3A (Cont'd.); LOX disconnect tower piping and ML connection.
CAMERA No. 4A; located ML2 Rm. 15A; coverage:
RCA 110 computer astrionics equipment.

CAMERA No. 4A; (Cont'd.) discrete equipment.
CAMERA No. 5A; located ML2 0-foot level, east side; coverage: tail service mast 1-2.

CAMERA No. 6A; located ML2 0-foot level, SW corner; coverage: tail service mast 3-4.
CAMERA No. 7A; located ML2 0-foot level, west side; coverage: tail service mast 3-2.

CAMERA No. 9A; located ML 180-foot level, Side I, coverage: S11 stage insolation.
CAMERA No. 9A (Cont'd.); S7-41D console.

CAMERA No. 10A; located ML2 30-foot level, north side; coverage: LOX valve complex and 30' level general view.
CAMERA No. IIA; located ML2 60-foot level, SE corner; coverage: (view IIA) ML deck and SI-C stage.

CAMERA No. IIA (Cont'd.); SI-C stage.
CAMERA No. 11A (Cont'd.); ML deck and service arm 1 operation.

CAMERA No. 12A; located ML2 100-foot level, SW corner; coverage: SI-C stage and service arms 2, 3, and 4.
CAMERA No. 12A (Cont'd.); SI-C stage and ML deck.

CAMERA No. 13A; located ML2 120' hot level, north side; coverage: LH2 valve complex.
CAMERA No. 14A; located ML2 120-foot level, east side; coverage: LOX valve complex.

CAMERA No. 15A; located ML2 130-foot level, SE corner; coverage: Service Arm 4.
CAMERA No. 15A (Cont'd.); Service Arm 2.

CAMERA No. 16A; located ML2 180-foot level, SW corner; coverage: SII stage, insulation and Service Arms 5 and 6.
CAMERA No. 16A (Cont'd.); S11 stage insulation and Service Arm 4.

CAMERA No. 17A; located ML2 180-foot level, north side; coverage: LH2 heat exchanger and piping.
CAMERA No. 18A; located ML2 200-foot level, north side; coverage: LH2 valve complex and general level view.

CAMERA No. 24A; located ML2 260-foot level, south side; coverage: Service Arm 6, 7, 8 and IU access door.
CAMERA No. 24A; (View 24B) Service Arm 7.

CAMERA No. 26A; located ML2 320-foot level, south side; coverage: top of water riser.
CAMERA No. 27A, located ML2 360-foot level, SE corner; coverage: Service Arm 8 and primary damper.

CAMERA No. 28A, located LC39A LO2 storage facilities; coverage: LO2 pumps, valves and lines.
CAMERA No. 28A (Cont'd.); LC2 pumps, valves and lines.

CAMERA No. 29A; located LC39A LO2 storage facility; coverage: LO2 pumps, valves and lines.
CAMERA No. 29A (Cont'd.); L02 line from L02 storage facility to Pad Apron.

CAMERA No. 30A; located LC39A LH2 storage facility; coverage: LH2 vaporizer.
CAMERA No. 30A (Cont'd.); LH2 vaporizer, lines and valves.

CAMERA No. 30A (Cont'd.); LH2 vaporizer, valves and lines.
CAMERA No. 30A (Cont'd.); LH2 vaporizer, valves and lines.

CAMERA No. 31A; located LC39A perimeter site 1; coverage: LH2 storage tank, valves and lines.
CAMERA No. 31A; (Cont'd.) LH2 lines to pad apron

CAMERA No. 32A; located LC-39A LH2 storage facility; coverage: (view 32A) LH2 storage tank, valves and lines
CAMERA No. 32A; (Cont'd.) LH2 valves and lines

CAMERA No. 33A; located LC-39A RP-1 storage facility; coverage: RP-1 pump
CAMERA No. 33A (Cont'd.); RP-I pumps, valves and lines.

CAMERA No. 34A; located LC39A SW corner pad apron; coverage: Space vehicle and water riser to ML 320-foot level.
Camera No. 34A (Cont'd.); Space vehicle.

CAMERA No. 34A (Cont'd.); Industrial water pit area.
CAMERA No. 35A; located SE corner pad apron; coverage: space vehicle and ML including side 1 of umbilical tower.

CAMERA No. 36A; located LC39A center, east side of pad apron; coverage: LH2 lines and storage tank.
CAMERA No. 36A (Cont'd.); space vehicle and ML side 4.

CAMERA No. 37A; located LC39A west side of flame trench; coverage: bottom of SI-C thrust structure and engine thrust chambers.
CAMERA No. 38A; located LC39A NE corner of pad apron; coverage: LH2 lines and storage tank.

CAMERA No. 38A (Cont'd.); LH2 expansion joints, ML side 4 and space vehicle.
CAMERA No. 38A (Cont'd.); LH2 disconnect: tower piping and ML connection.

CAMERA No. 38A (Cont'd.); pad apron at ground level, east side.
CAMERA No. 39A; located LC39A east side of flame trench; coverage: LO2 F-I overboard drain.

CAMERA No. 41A; located LC39A on photographic tracking mount at perimeter site 2; coverage: space vehicle during first 1,300 feet of flight (special bore-sight camera).
CAMERA No. 42A; located LC39A on photographic tracking mount at perimeter site 5; coverage: space vehicle during first 1,300 feet of flight (special bore-sight camera).
SATURN 1B SECTION
SKYLAB 2, 3, 4, R
AND
APOLLO SOYUZ TEST PROJECT
CAMERA No. AAS-1; located MLI 330-foot level, south side, looking downward; coverage: space vehicle and service arms.

CAMERA No. AAS-2; located MLI 330-foot level, south side, looking downward; coverage: space vehicle and service arms.
CAMERA No. AAS-3; located LC39B perimeter site 2; coverage: overall view of space vehicle and showing clearance during vertical motion.

CAMERA No. AAS-4; located LC39B perimeter site 5; coverage: overall view of space vehicle and showing clearance during vertical motion.
CAMERA No. 2B; located MLI Rm. 15A, coverage: RCA-110 computer maintenance panel.

CAMERA No. 3B; located LC39A pad apron at NW corner of flame trench; coverage: (view 3A) flame deflector cooling water.
CAMERA No. 3B (Cont'd.); LH2 disconnect tower piping and ML connection.

CAMERA No. 3B (Cont'd.); LH2 vent piping, ML side 3.
CAMERA No. 3B; (view 3D) LOX disconnect tower piping and ML connection.

CAMERA No. 4B; located MLI Rm. 15A; coverage: (view 4A) RCA 110 computer astronics equipment.
CAMERA No. 4B (Cont'd.); discrete equipment.

CAMERA No. 9B; located MLI 160-foot level. SE corner; coverage: SIB overall, RPI fuel mast, pedestal deck quench and emergency egress activities.
CAMERA No. 10B; located MLI 30-foot level, side I; coverage: SIB engines and engine service platform.

CAMERA No. 13B; located MLI 127-foot level, north side; coverage: Pedestal deck and SI-B exit plane.
CAMERA No. 14B; located ML 120-foot level, east side; coverage: LOX valve complex, IWS fogging system and general area view.

CAMERA No. 15B; located ML, 100-foot level, south side, coverage: SIB RPI valve complex.
CAMERA No. 16B; located ML1 180-foot level, SW corner; coverage: service arms IA and 6, emergency egress activities 127’ level deck and LOX service mast.

CAMERA No. 18B; located ML1 200-foot level, north side; coverage: LH2 valve complex.
CAMERA No. 19B; located MLI 200-foot level, east side; coverage: LOX valve complex.

CAMERA No. 21B; located MLI 240-foot level, SW corner; coverage: SIV-B service arm 6, APS module and LH2 umbilical.
CAMERA No. 21B (Cont'd.); facilities inside of pad perimeter west of pad apron.

CAMERA No. 22B; located MLI 240-foot level, south side; coverage: service arm 5, SIV-B and APS module.
CAMERA No. 23B; located ML 240-foot level, east side; coverage: LH2 heat exchanger and valve panel.

CAMERA No. 24B; located ML 260-foot level, south side; coverage: SIV-B APS module and service arm 6.
CAMERA No. 24B; Service arm 7 and IU access door.

CAMERA No. 24B; Service arm 8.
CAMERA No. 25B; located MLI 320-foot level, environmental chamber rear wall; coverage: interior of environmental chamber and command module (CM).

CAMERA No. 26B; located MLI 320-foot level, south side; coverage: access arm 9, CM and service module (SM).
CAMERA No. 27B (Cont'd.); Access arm 9, CM, SM, damper arm and Launch Escape System (LES).

CAMERA No. 27B; located MLI 360-foot level, SE corner; coverage: Access arm 9, service arm 8, CM, SM
CAMERA No. 28B; located LC39B LO2 storage facilities; coverage: LO2 pumps, valves and lines.

CAMERA No. 28B (Cont'd.); LO2 pumps, valves and lines.
CAMERA No. 29B; located LC39B LO2 storage facility; coverage: (View 29A) LO2 pumps, valves and lines.

CAMERA No. 29B (Cont'd.); LO2 line from LO2 storage facility to pad apron.
CAMERA No. 30B; located LC39B LH2 storage facility; coverage: LH2 vaporizer.

CAMERA No. 30B (Cont'd.) LH2 vaporizer, lines and valves.
CAMERA No. 30B (Cont'd.); LH2 vaporizer, valves and lines.
CAMERA No. 31B; located LC39B perimeter site 1; coverage: (View 31A) LH2 storage tank, valves and lines.

CAMERA No. 31B (Cont'd.) LH2 lines to pad apron.
CAMERA No. 32B; located LC39B LH2 storage facility; coverage: LH2 storage tank, valves and lines.

CAMERA No. 32B; (Cont'd.) LH2 valves and lines.
CAMERA No. 33B; located RP-I storage facility; coverage: (cont'd.) RP-I pump.

CAMERA No. 33B (Cont'd.); RP-I pumps, valves and lines.
CAMERA No. 34B; located LC39B SW corner pad apron; coverage: Space vehicle and water riser to ML 320-foot level.

CAMERA No. 34B (Cont'd.) personnel ingress and egress at ground level elevator entrance.
CAMERA No. 34B (Cont'd.); Oxidizer transfer and conditioning unit.

CAMERA No. 35B; located LC39B SE corner pad apron, coverage: Fuel transfer unit.
CAMERA No. 35B; (Cont'd.) Pad apron and ML including side 1 of umbilical tower.

CAMERA No. 36B; located LC39B center, east side of pad apron; coverage: LH2 lines and storage tank.
CAMERA No. 36B; Space vehicle and ML side 4.

CAMERA No. 38B; located LC39B NE corner of pad apron; coverage: LH2 lines and storage tank.
CAMERA No. 38B (Cont'd.); LH2 expansion joints, ML side 4 and space vehicle.

CAMERA No. 38B (Cont'd.); LH2 disconnect tower piping and ML connection.
CAMERA No. 38B (Cont'd.); Pad apron at ground level, east side.

CAMERA No. 41B; located LC39B on photographic tracking mount at perimeter site 2; coverage: space vehicle during first 1,300 feet of flight (special bore-sight camera).
CAMERA No. 42B; located LC39B on photographic tracking mount at perimeter site 5; coverage: space vehicle during first 1,300 feet of flight (special bore-sight camera).
CAMERA No. 46B; located MSS 22-foot level, east side; coverage: LM and CSM RCS fuel service units.

CAMERA No. 47B; located MSS 22-foot level, west side; coverage: RCS oxidizer servicing unit.
CAMERA No. 47B (Cont'd.); Oxidizer servicing unit.

CAMERA No. 47B (Cont'd.) helium transfer unit.
CAMERA No. 48B; located MSS 44-foot level, east side; coverage: fuel ready storage unit and fuel toxic vapor disposal unit.

CAMERA No. 48B; (Cont'd.) pad apron east side.
CAMERA No. 49B; located MSS 44-foot level, west side; coverage: oxidizer ready storage unit and oxidizer toxic vapor disposal unit.

CAMERA No. 49B (Cont'd.); Apron, west side.
CAMERA No. 50B; located MSS 224-foot level F, west side; coverage: SIV-B APS module.

CAMERA No. 50B (Cont'd.) SIV-B APS module.
CAMERA No. 51B; located MSS 224-foot level F, east side; coverage: SIV-B APS module.

CAMERA No. 51B (Cont'd.); SIV-B APS module.
CAMERA No. 52B; located MSS level 3A; coverage: SLA area below CSM.

CAMERA No. 53B; located MSS level 4A; coverage: SM fill ports and RCS motors.
CAMERA No. 53B (Cont'd.); RCS motors and GSE interface.

CAMERA No. 54B; located MSS level 4A; coverage: SM fill ports and hardlines.
CAMERA No. 54B (Cont'd.) RCS motors and hardlines.

CAMERA No. 55B; located MSS level 4A; coverage: fill ports and RCS motors.
CAMERA No. 55B (Cont'd.) Fill ports and RCS Motors.

CAMERA No. 56B; located MSS level 4C; coverage;
CM HE port and umbilical disconnect.
CAMERA No. 56B (Cont'd.) CM HE port and umbilical disconnect.

CAMERA No. 57B; located MSS level 4C; coverage: CM HE service.
CAMERA No. 57B (Cont'd.) CM HE service.

CAMERA No. Roof; located VAB roof, SE corner; coverage: Crawler way and pad area.
CAMERA No. Roof (Cont'd.); Kennedy Parkway for coverage of astronaut transfer van.

CAMERA No. Roof (Cont'd.); Turn basin and roadway south of VAB.
APPROVAL

GP929A

OTV CAMERA
REFERENCE HANDBOOK

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