Ground Processing and Launch Facilities

- Historical examples
  - Early Launch Facilities
  - Saturn I
  - Saturn V
  - Russian
- Modern examples
  - Shuttle
  - Delta IV Heavy
  - DC-XA
  - Falcon 9

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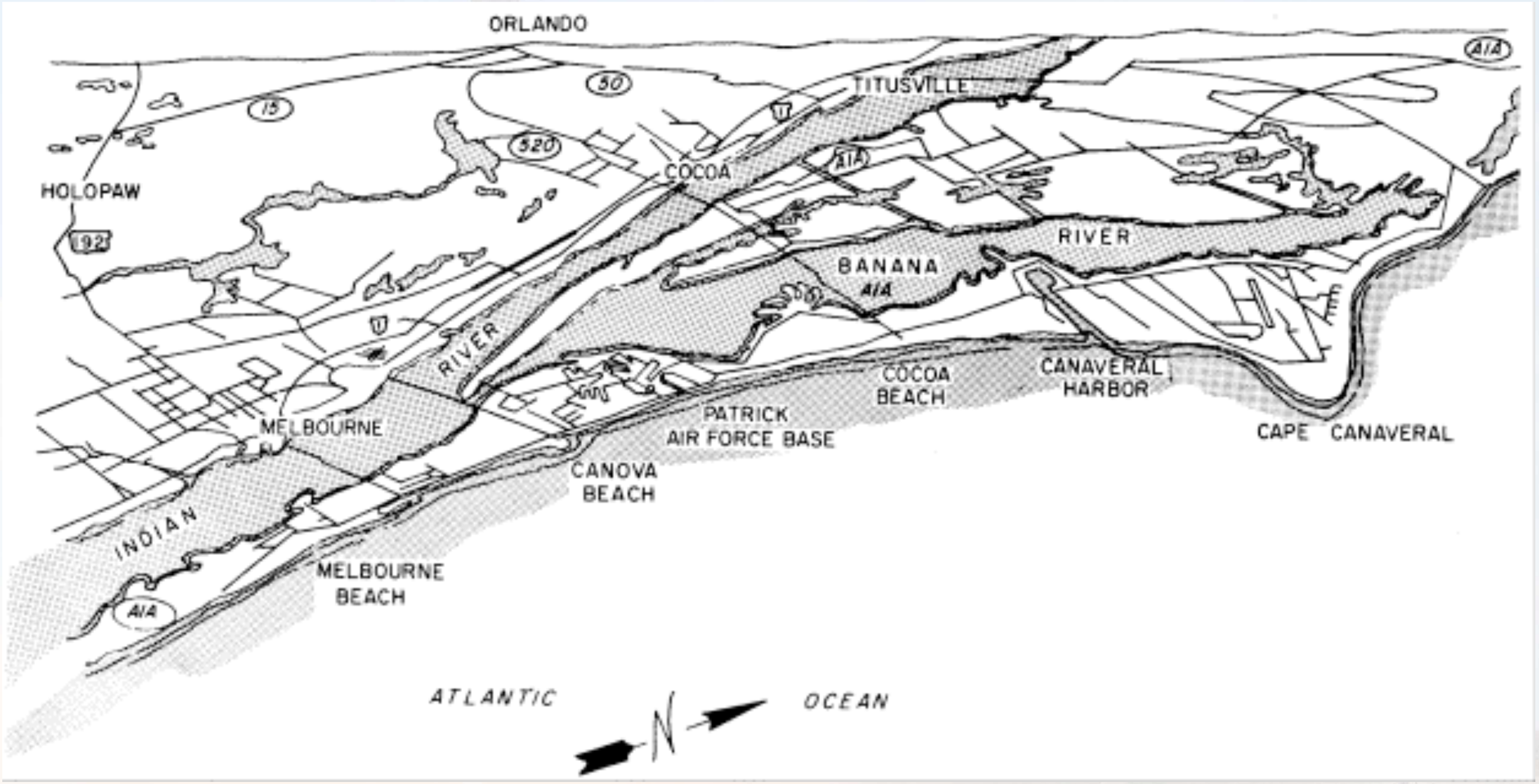
Cape Canaveral circa 1950

Map of Cape Canaveral



“ICBM Row”

LC-5 – Mercury-Redstone

LC-5 Emergency Crew Escape System

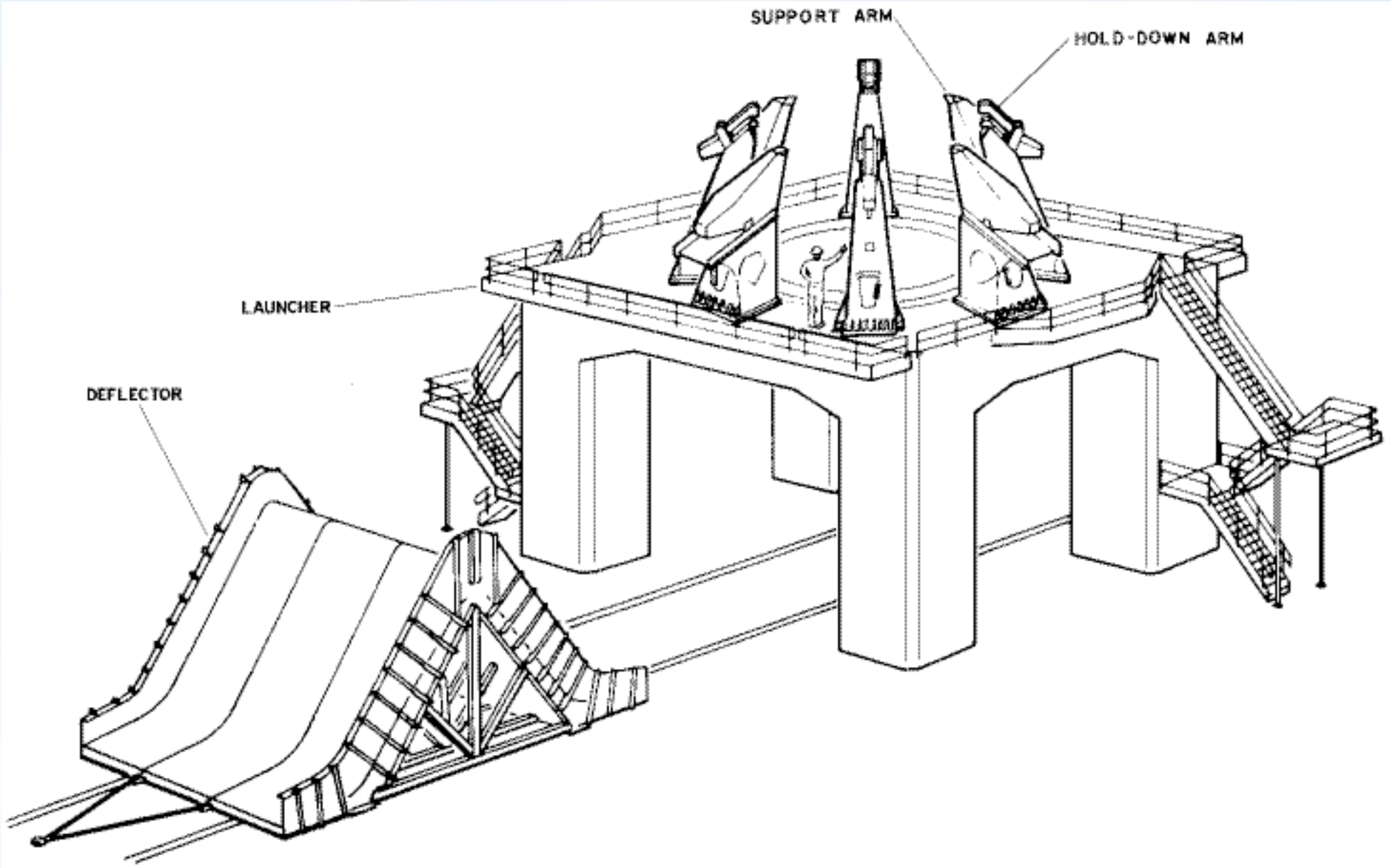
Atlas Support Gantry

LC-14 – Mercury-Atlas

Titan II Access Tower Operation

LC-34 Schematic

Saturn I Launch Pedestal

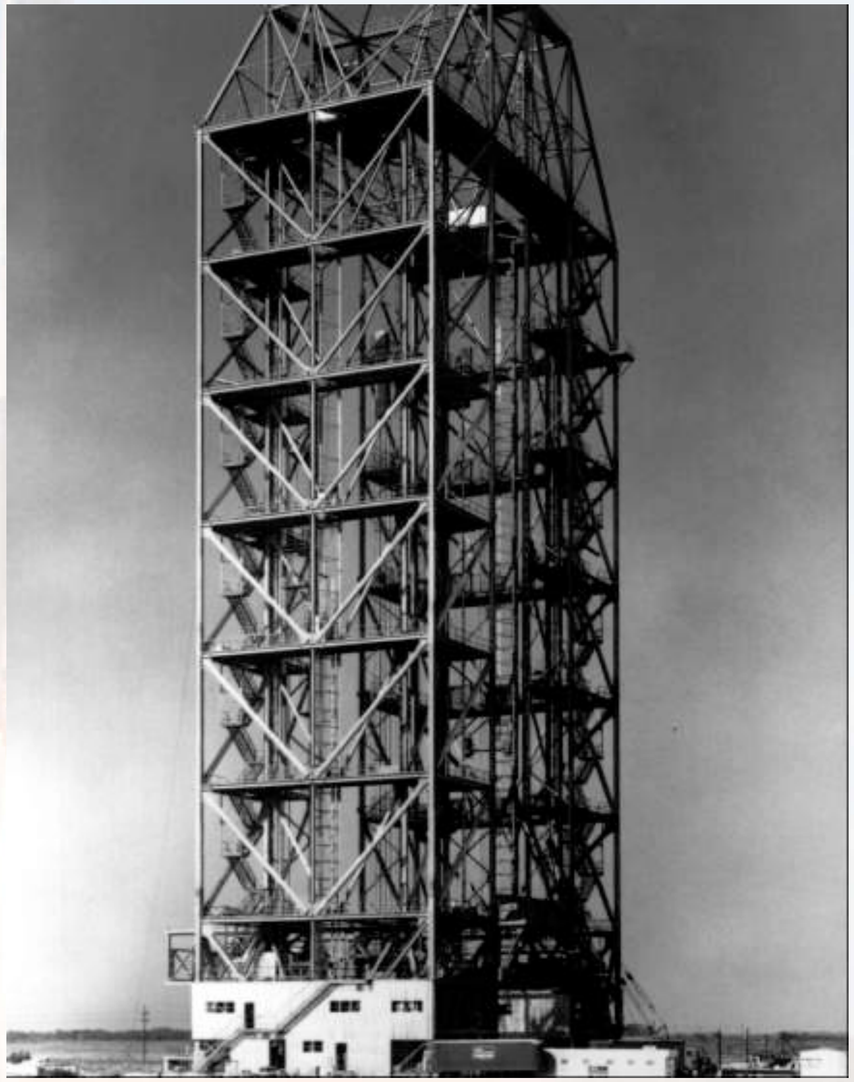


LC-34 Launch Pedestal Under Construction

LC-34 Flame Deflector

LC-34 Blockhouse

LC-34 Service Structure



Aerial View of LC-34

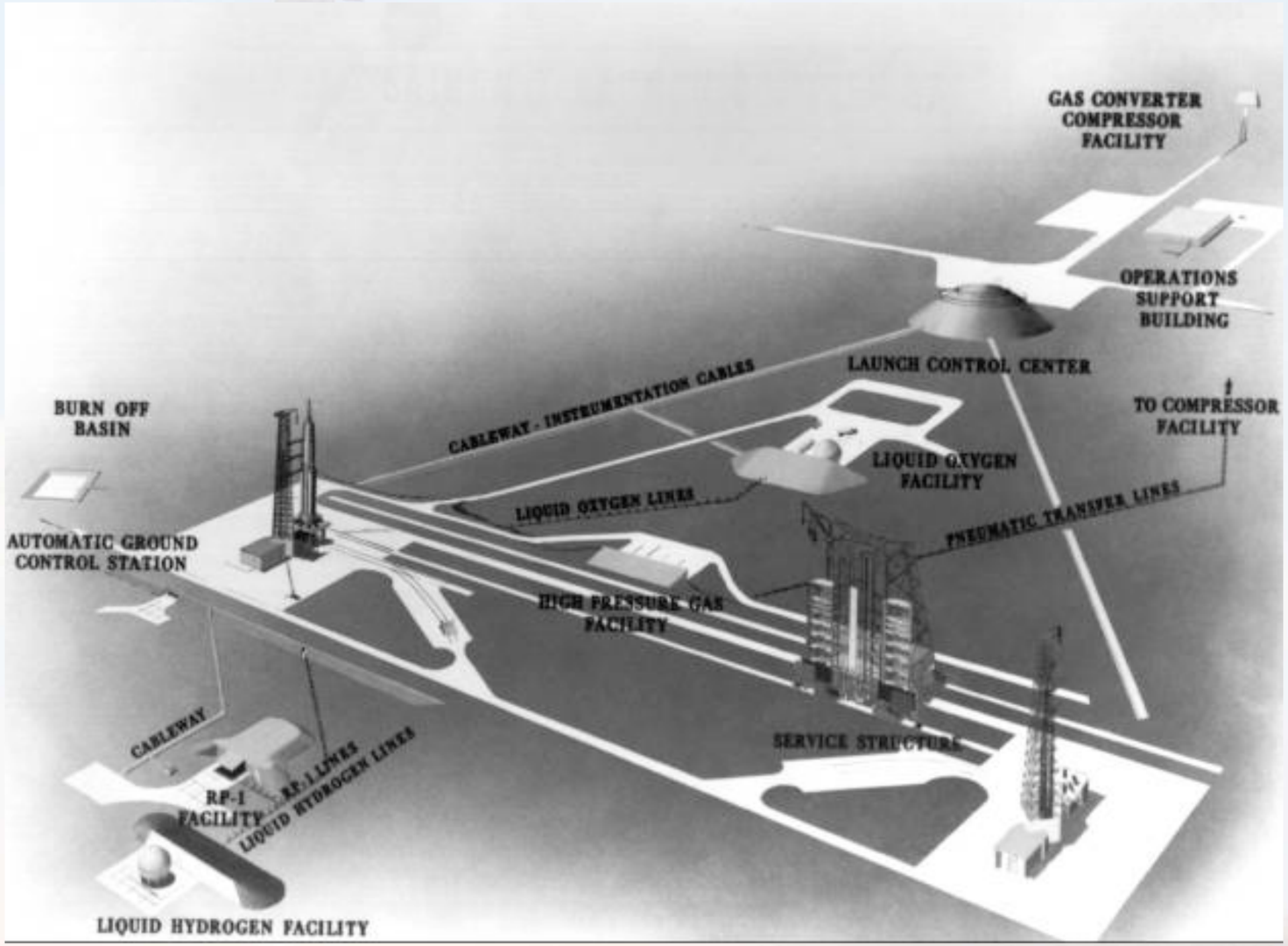
S-I Stage Rotation

S-I Stage Rotation

Assembly of Saturn I

SA-201 Launch

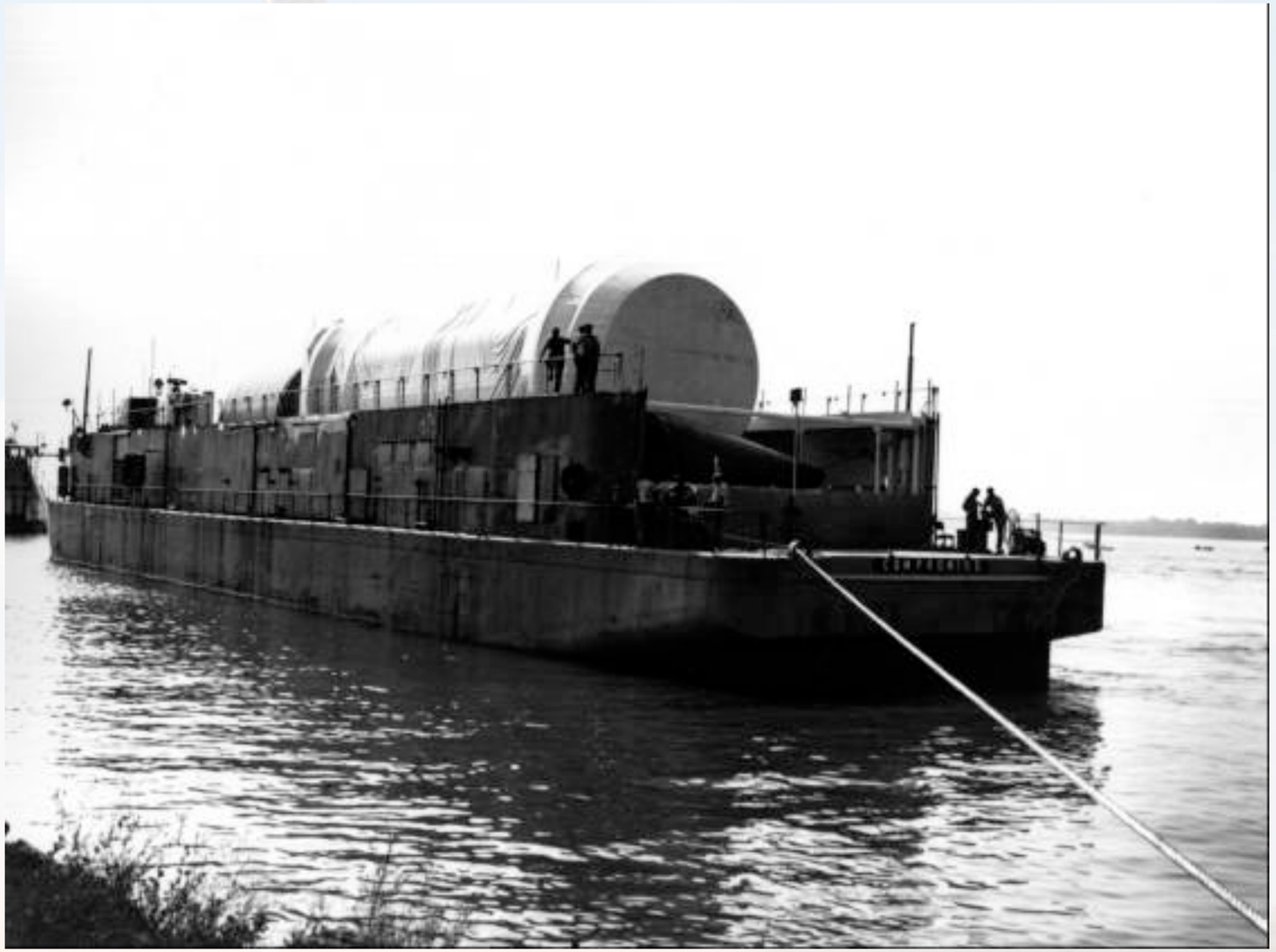
LC-37 Concept



LC-37 Under Construction (1963)

LC-37 Construction Photo

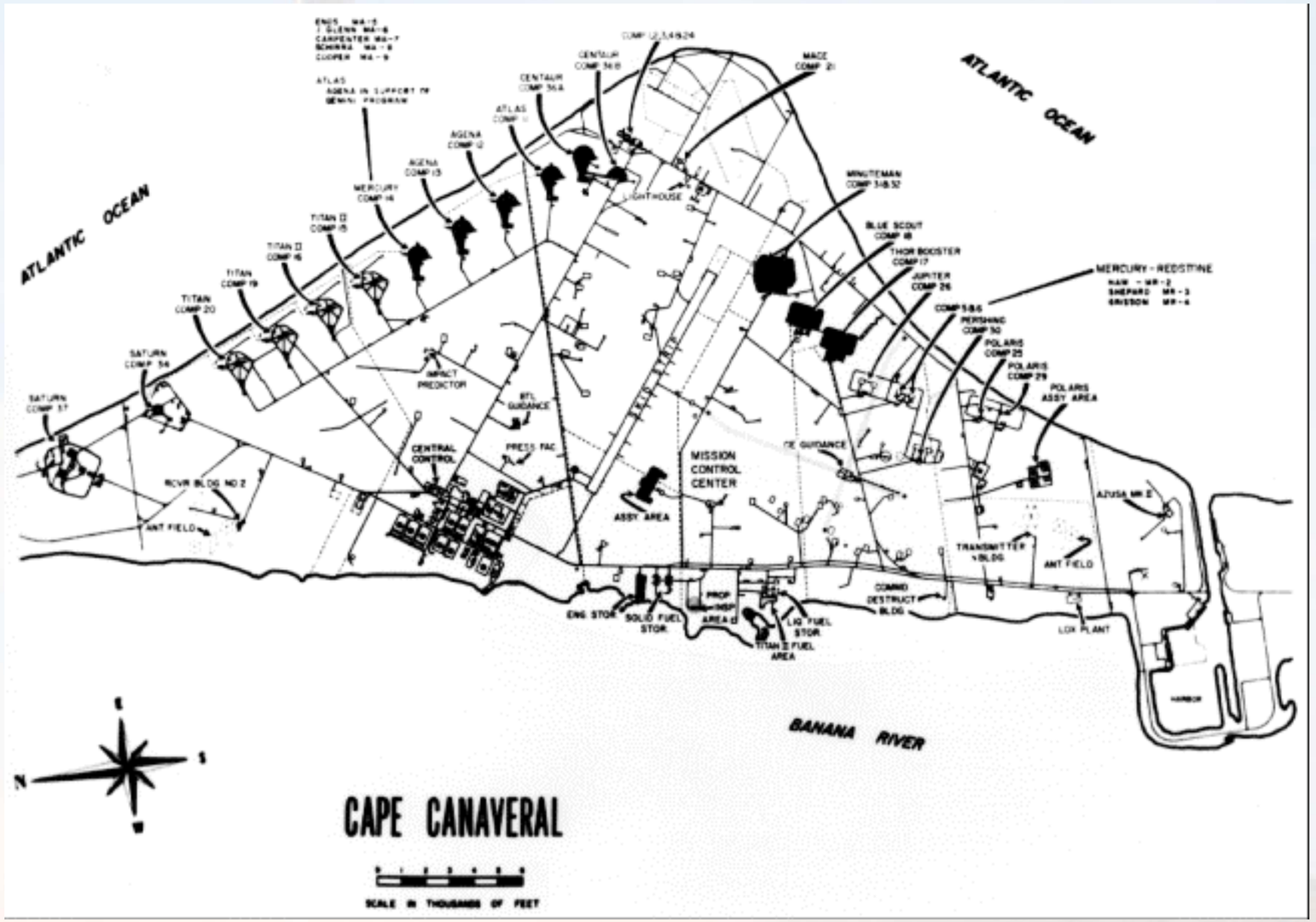
Barge Transport of Launch Vehicle Stages



Aerial Transport of Stages

Saturn V Launch Facility

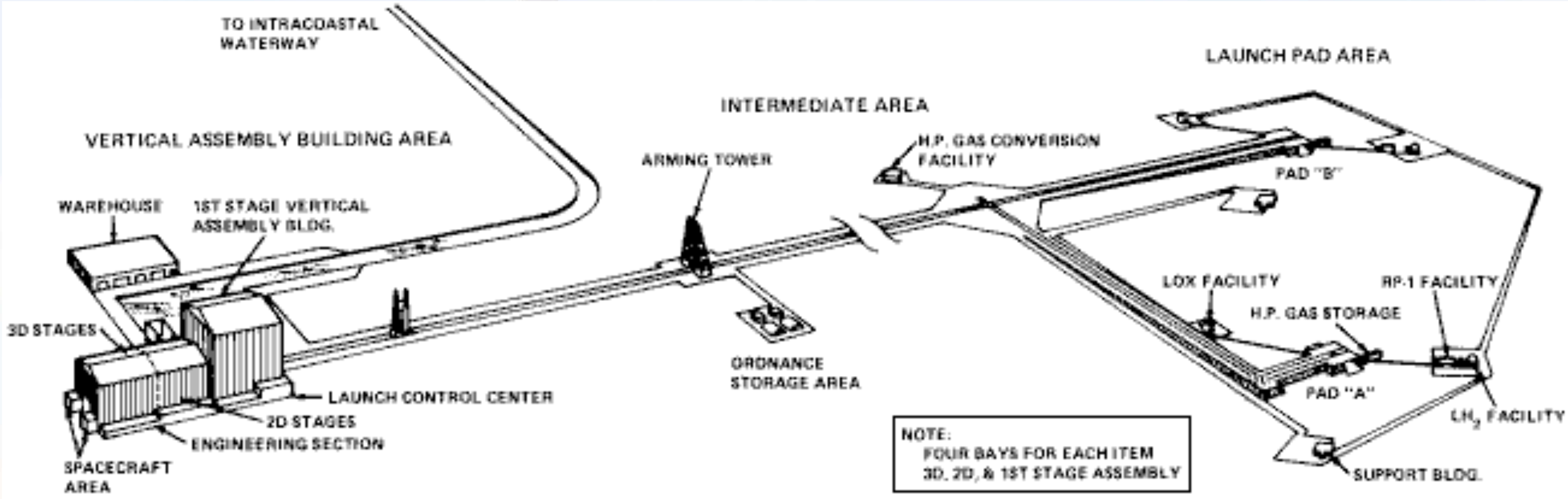
Cape Canaveral Siting Map



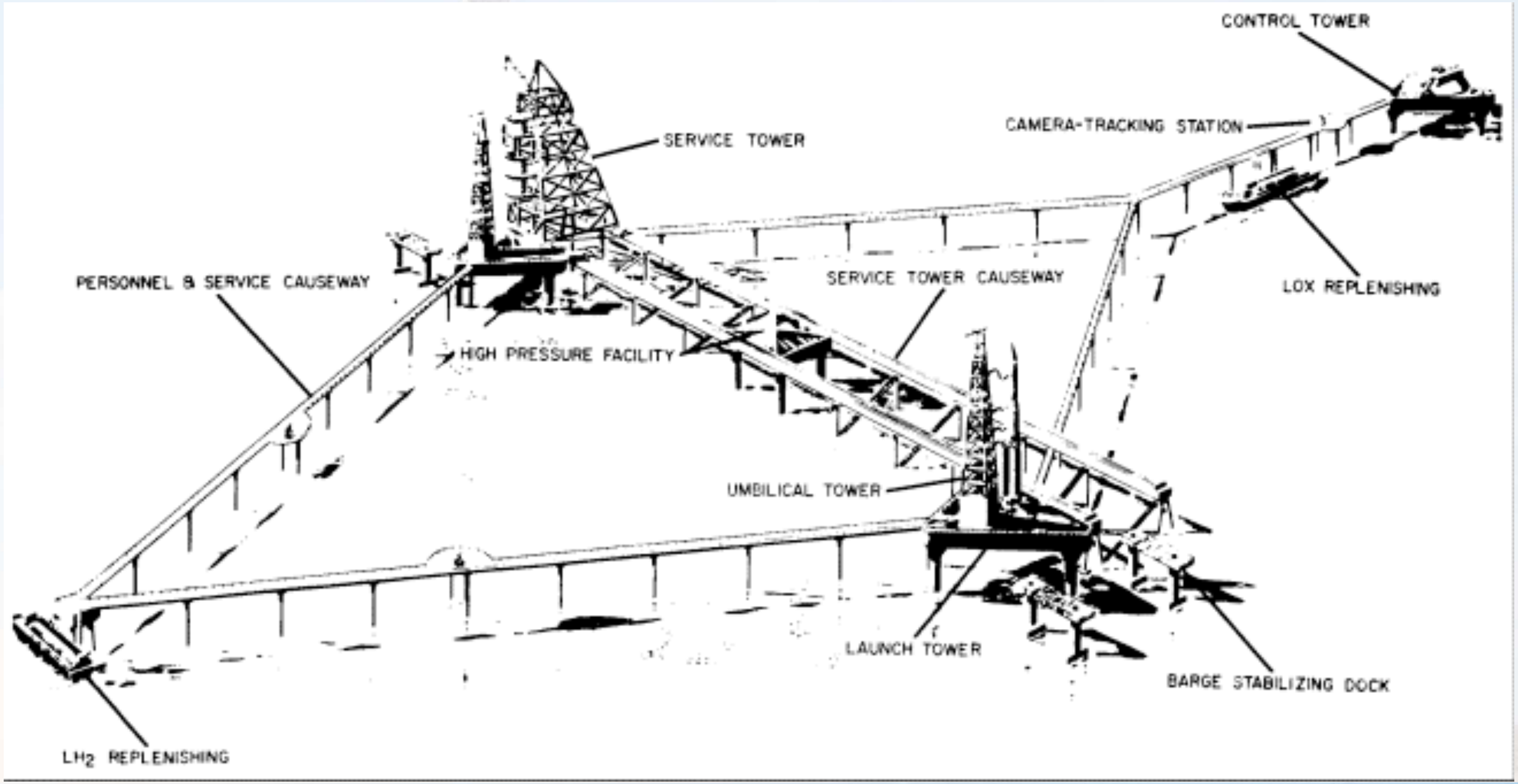
Launch Sites Considered for Apollo

- Cape Canaveral
- Offshore from Cape Canaveral
- Mayaguana Island in the Bahamas
- Cumberland Island, Georgia
- A mainland site near Brownsville, Texas
- White Sands Missile Range in New Mexico
- Christmas Island in the mid-Pacific south of Hawaii
- South Point on the island of Hawaii

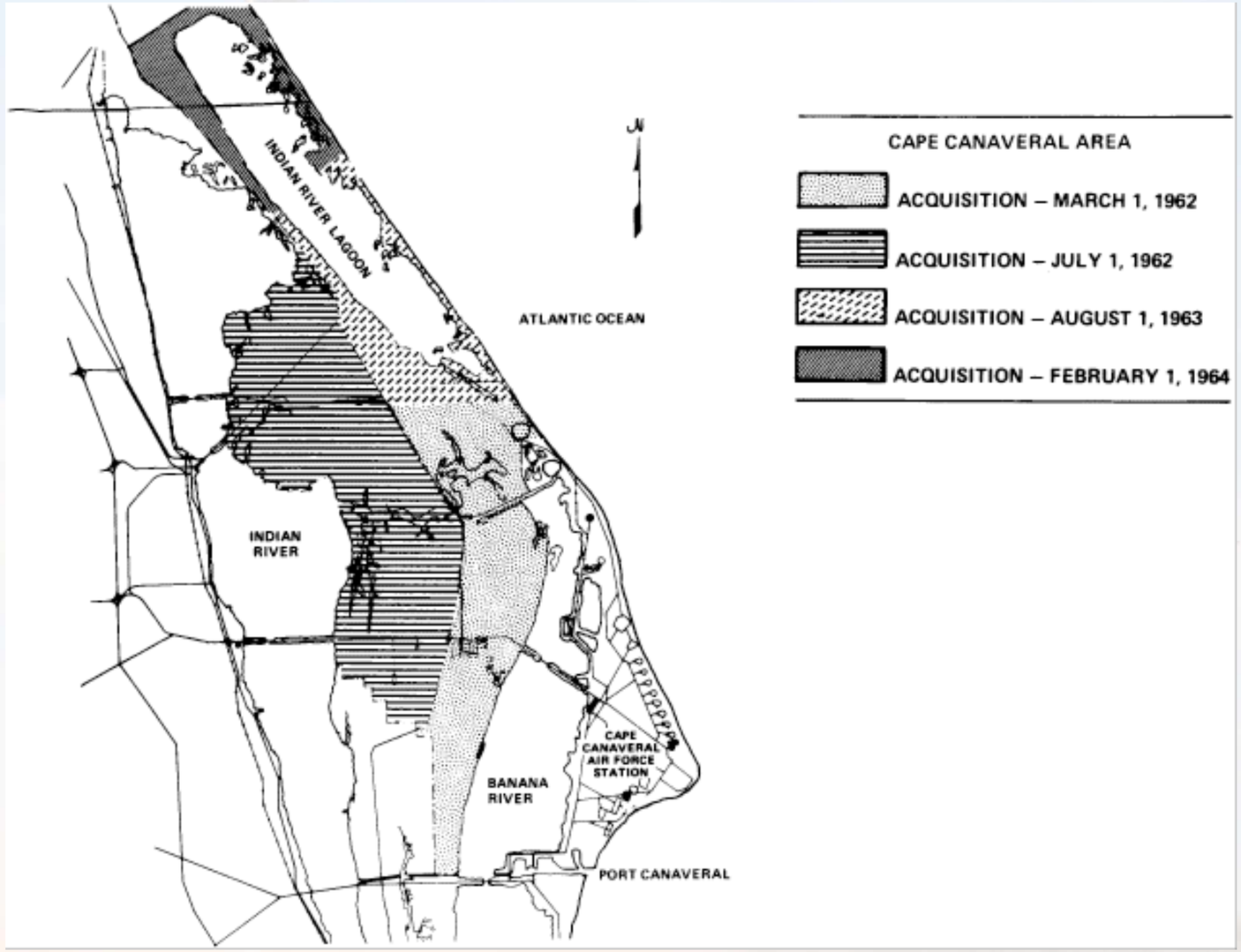
Early Mobile Launch Complex Concept



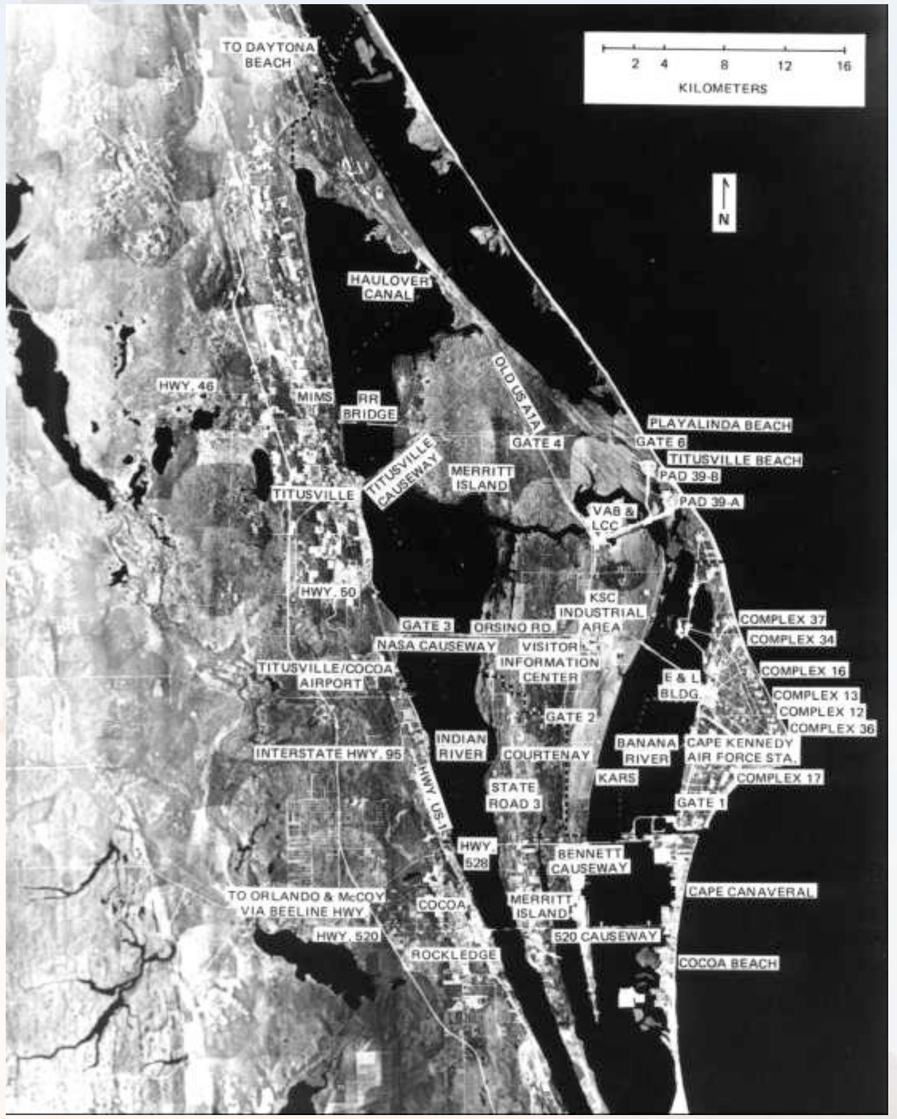
Concept of an Off-Shore Launch Facility



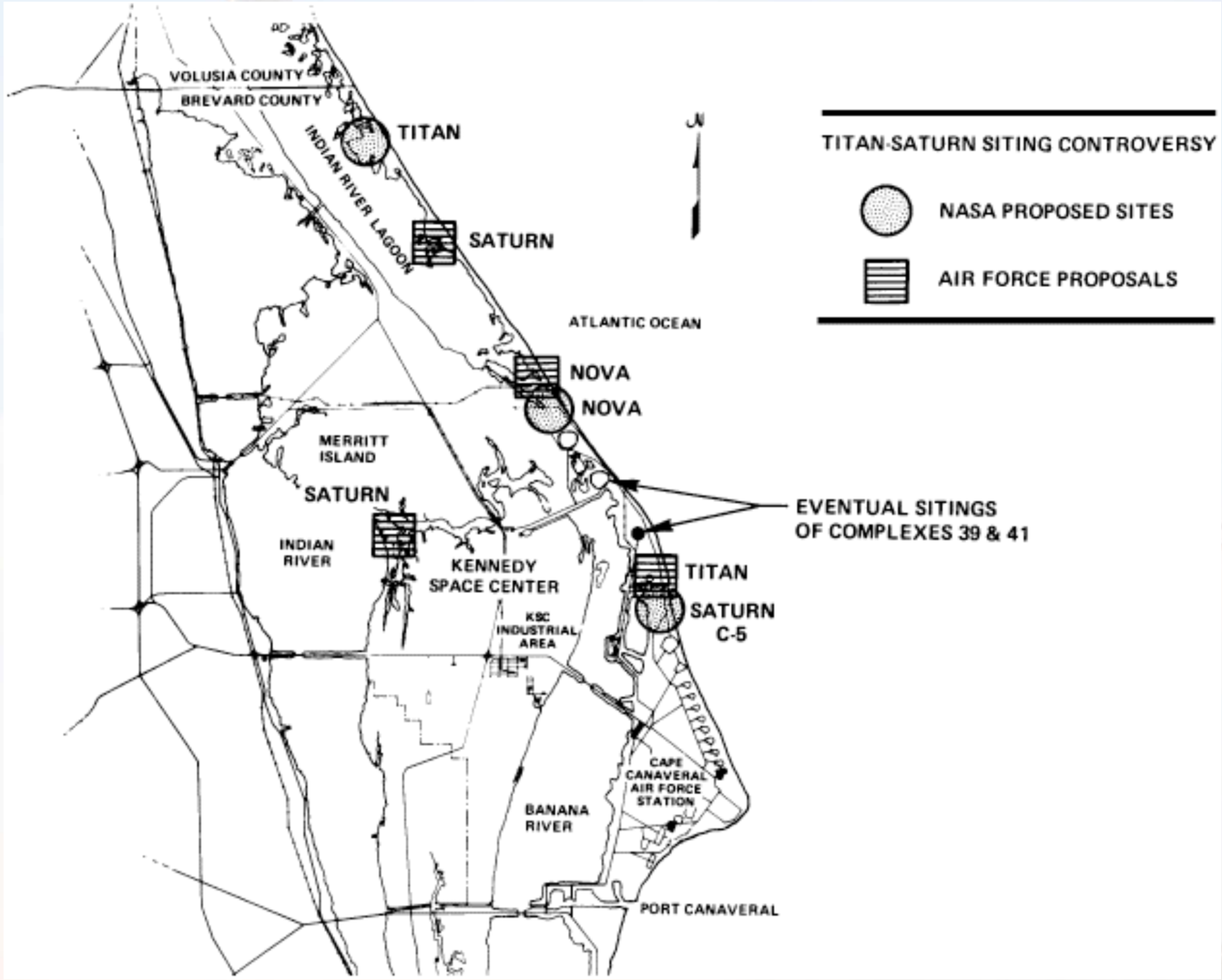
Merritt Island Launch Area (MILA)



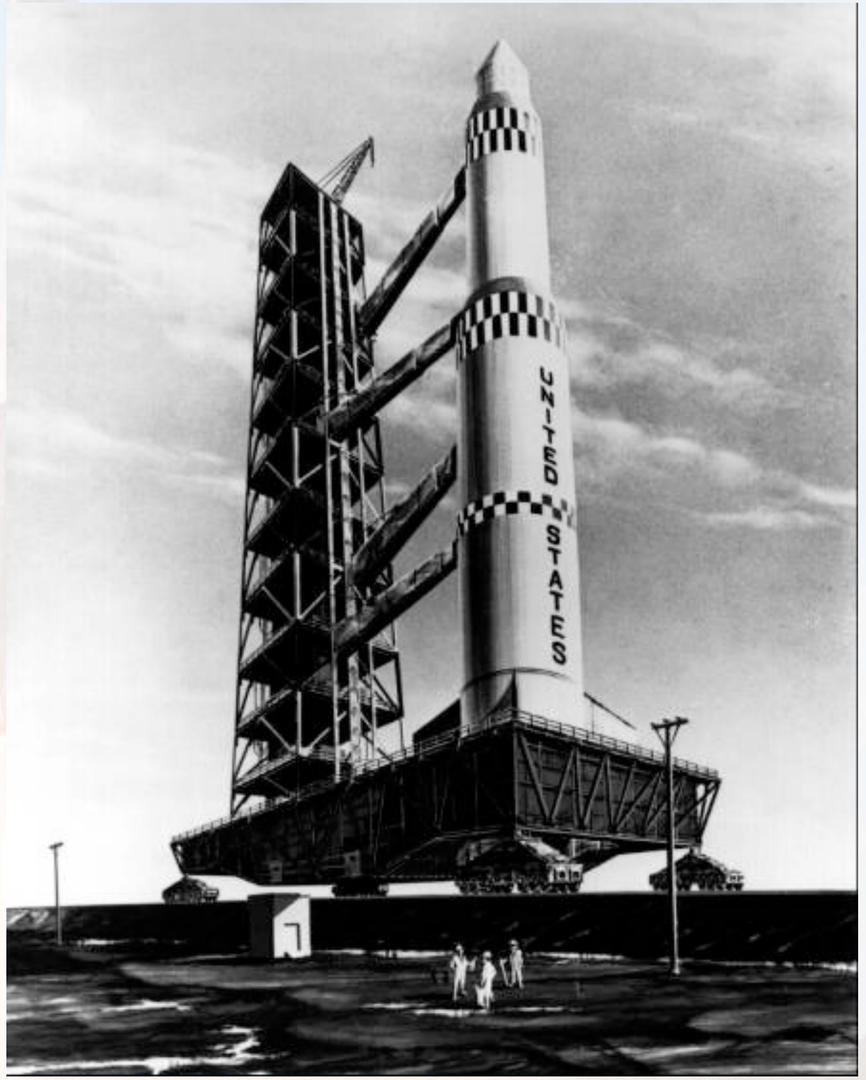
Map of KSC and CCAFS



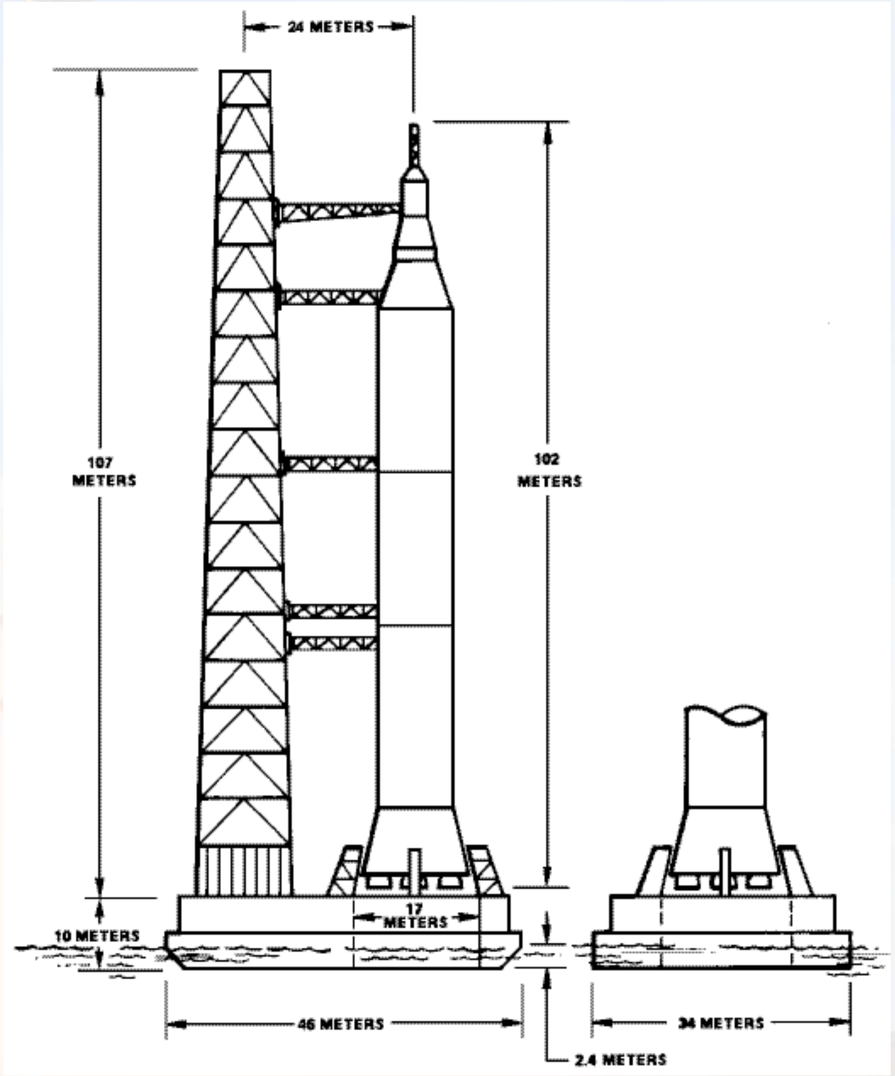
Competition for MILA Launch Sites



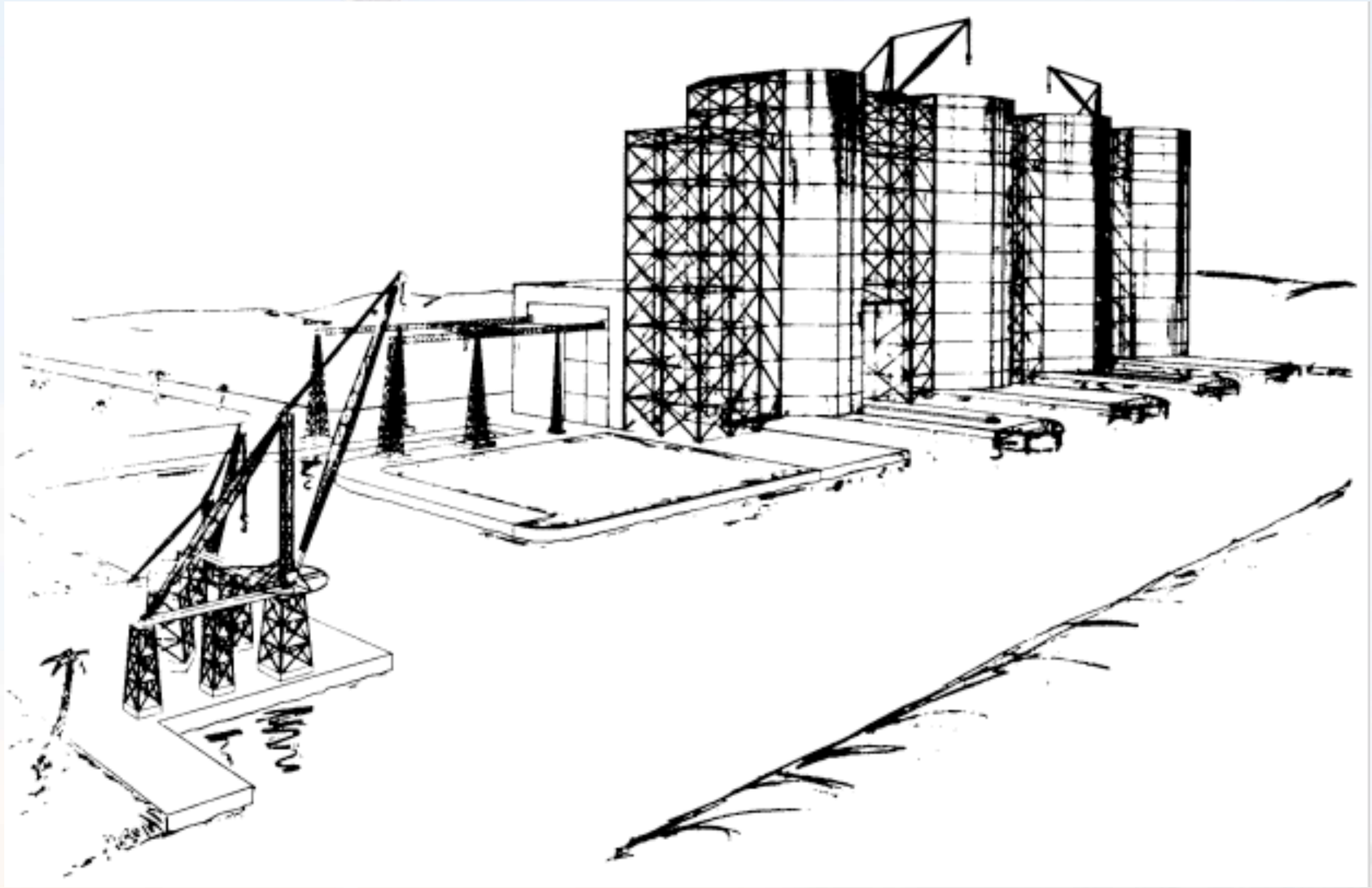
Rail-Based Nova Launch Concept



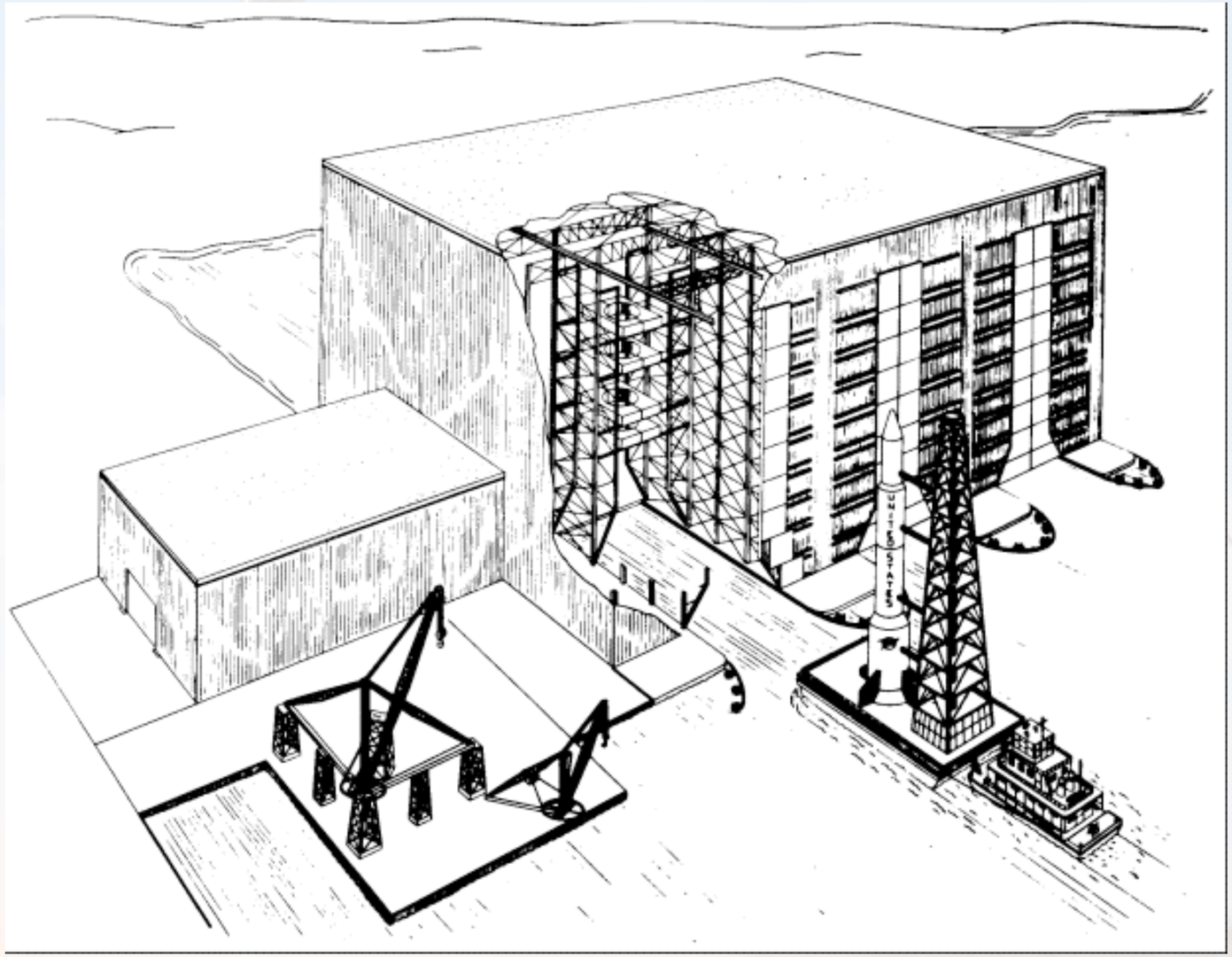
Barge-Based Saturn V Launch Concept



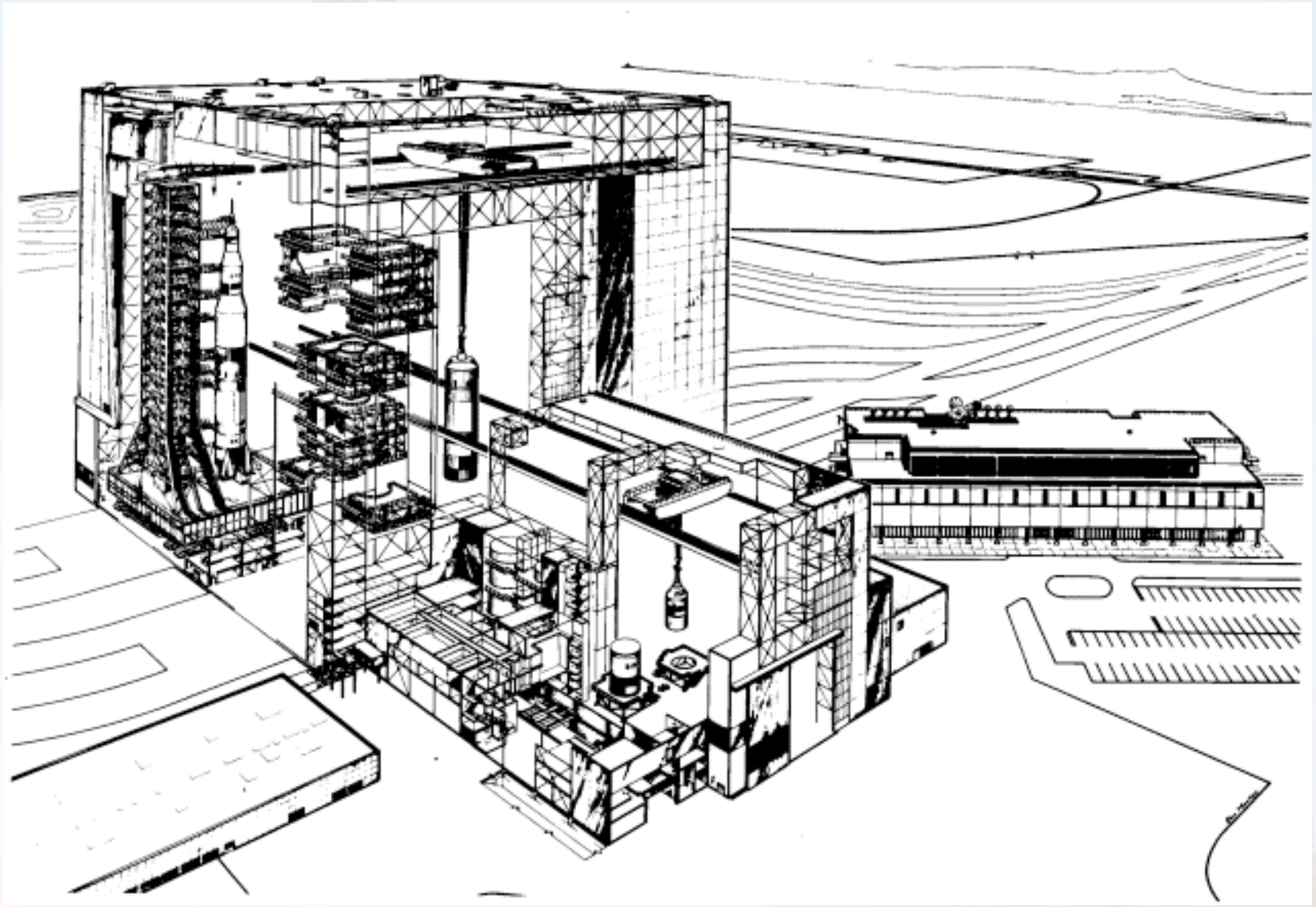
Barge-Based Vertical Assembly Building



Barge-Based VAB (Enclosed)



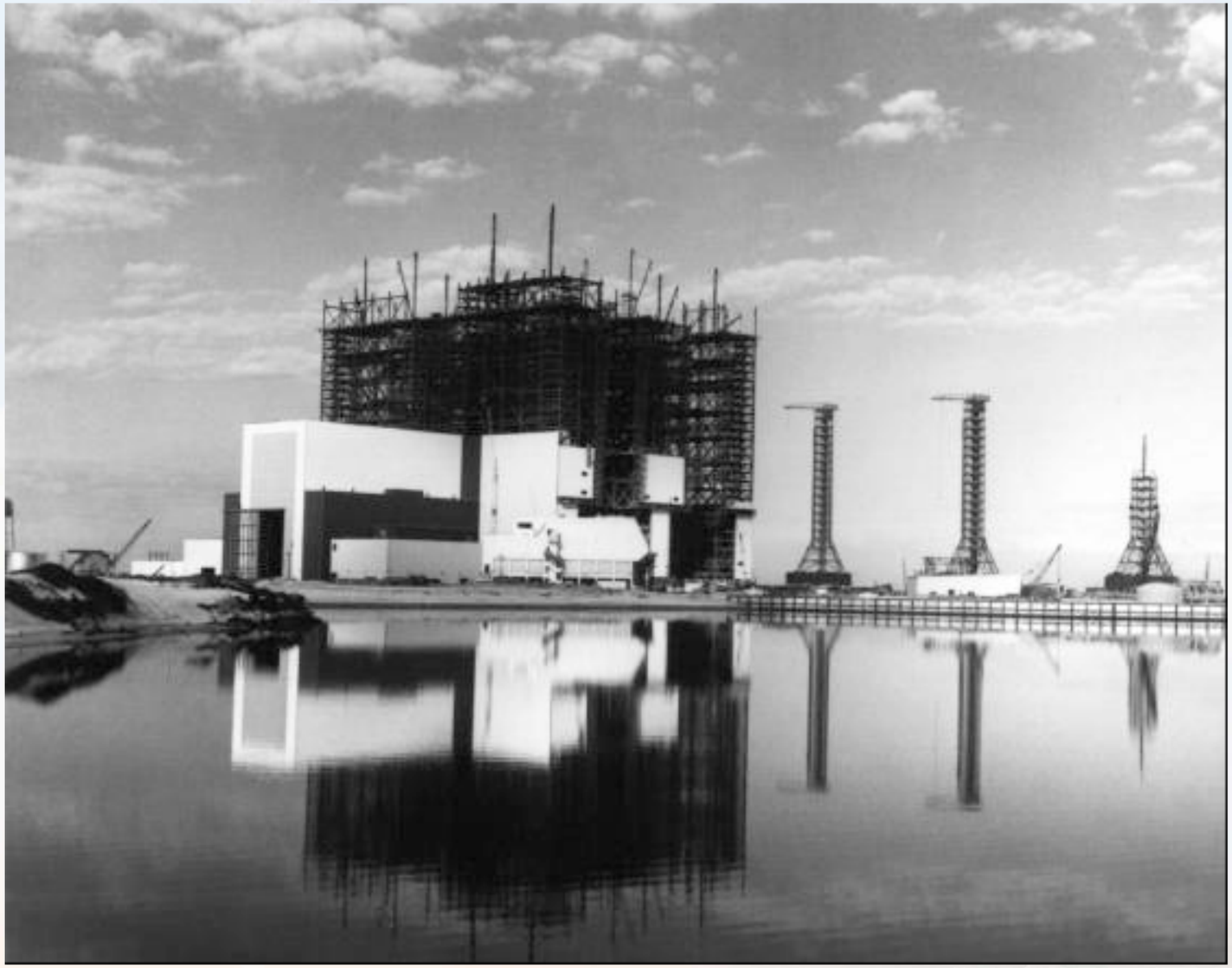
Interior Concept of VAB



Early Construction of VAB

VAB and LCC Under Construction

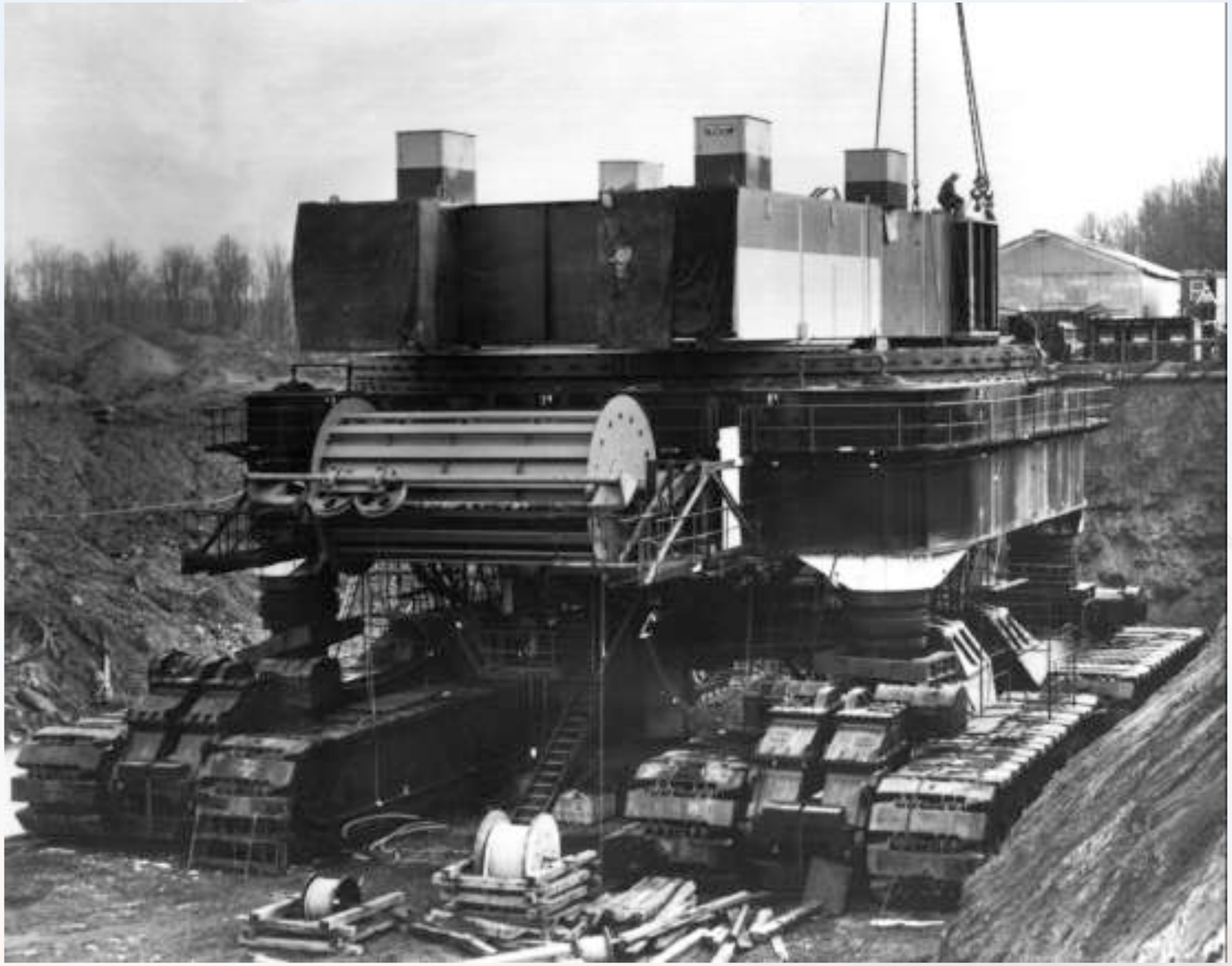
VAB from Turning Basin



Interior of Launch Control Center

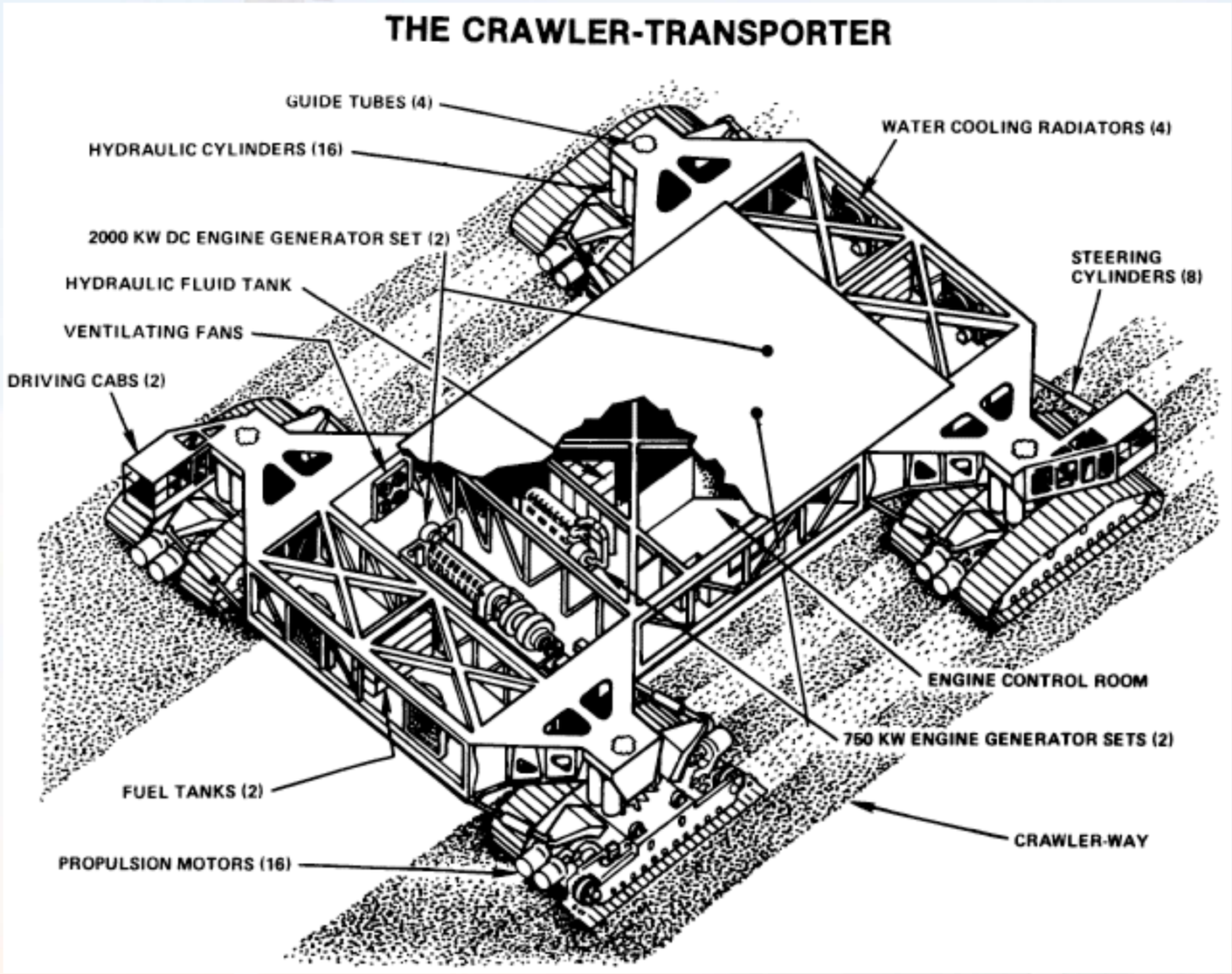
Interior of Launch Control Center

West Virginia Strip-Mine Coal Shovel

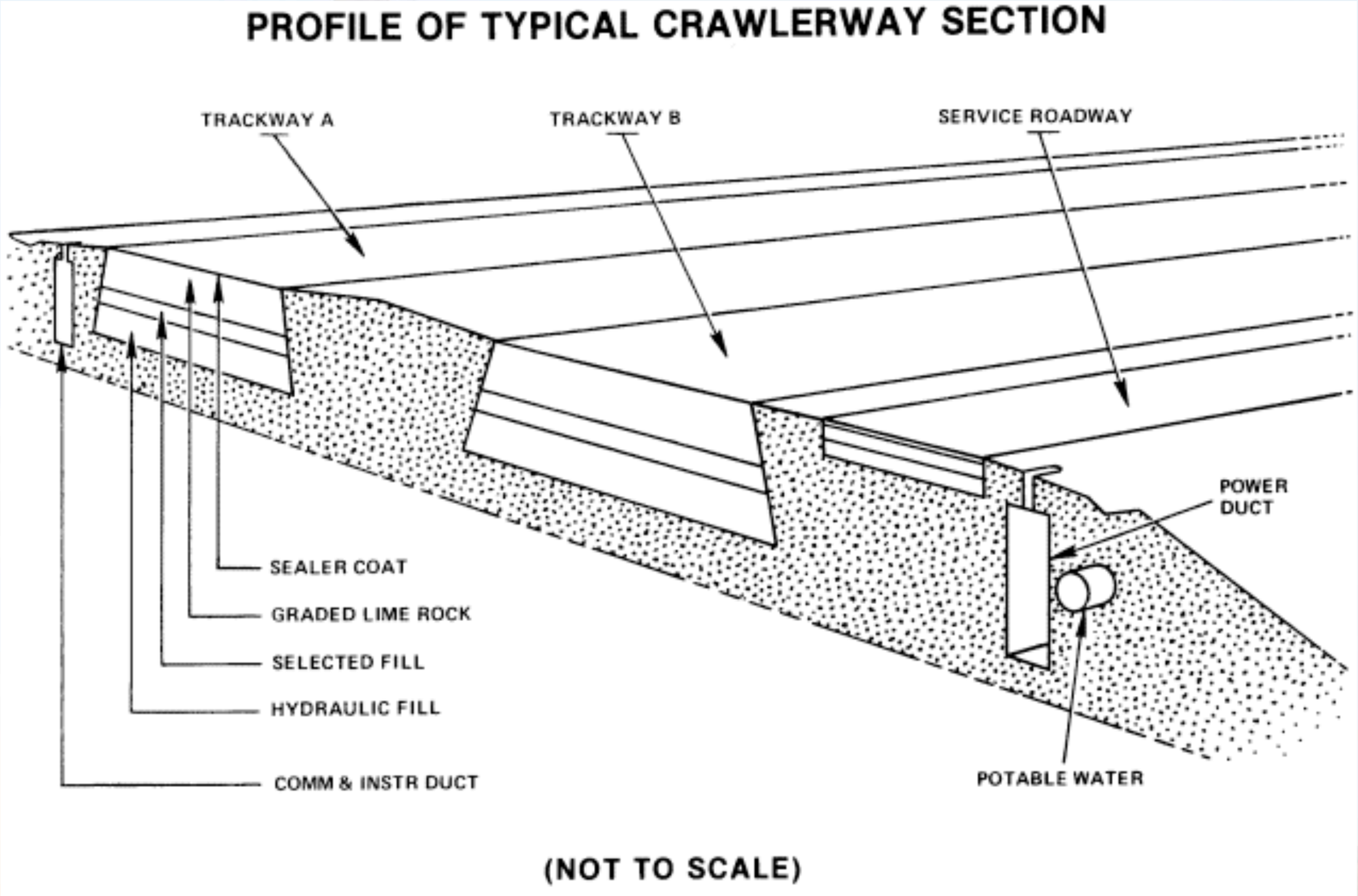


Crawler-Transporter

Cutaway of Crawler-Transporter

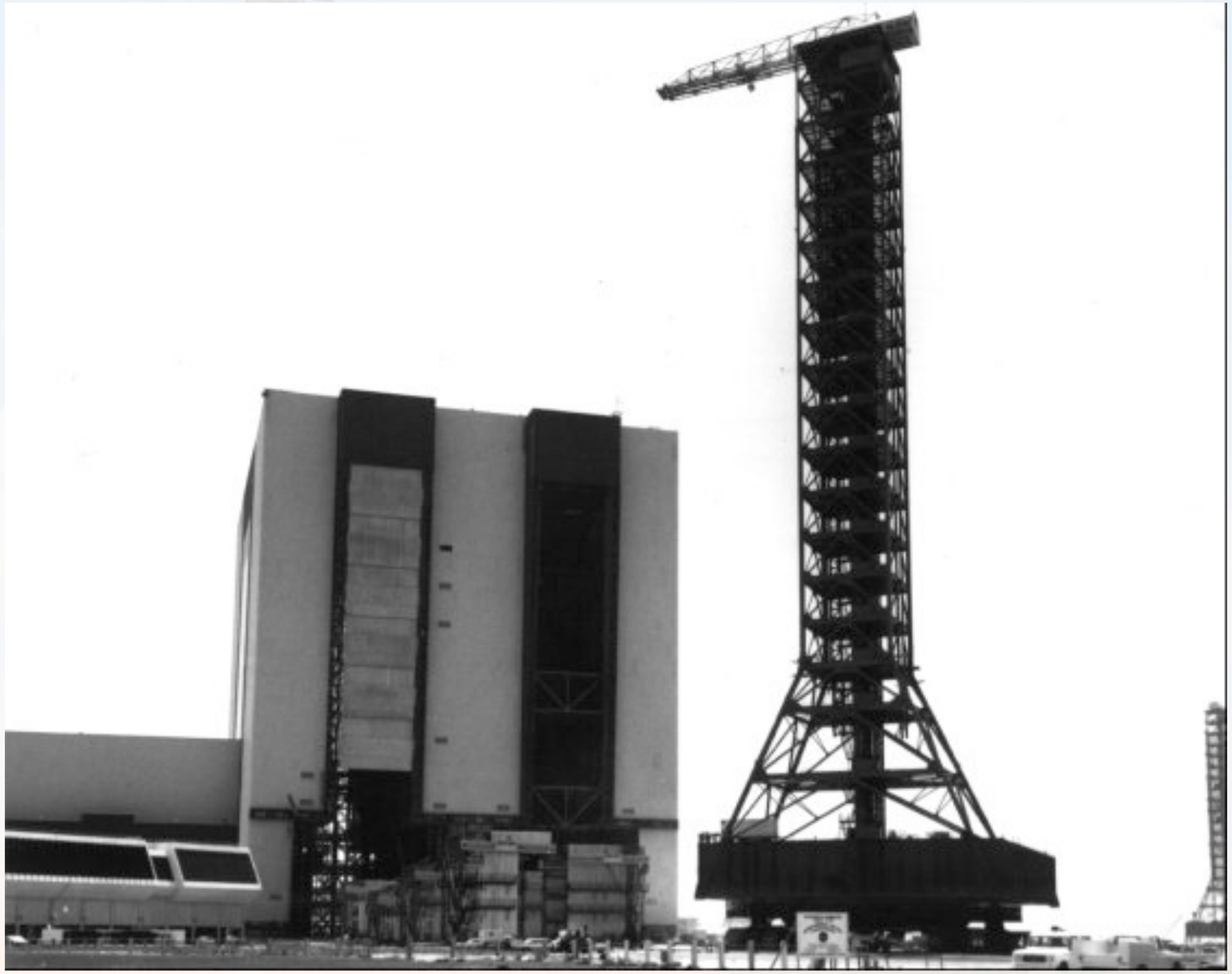


Complex 39 Crawlerway

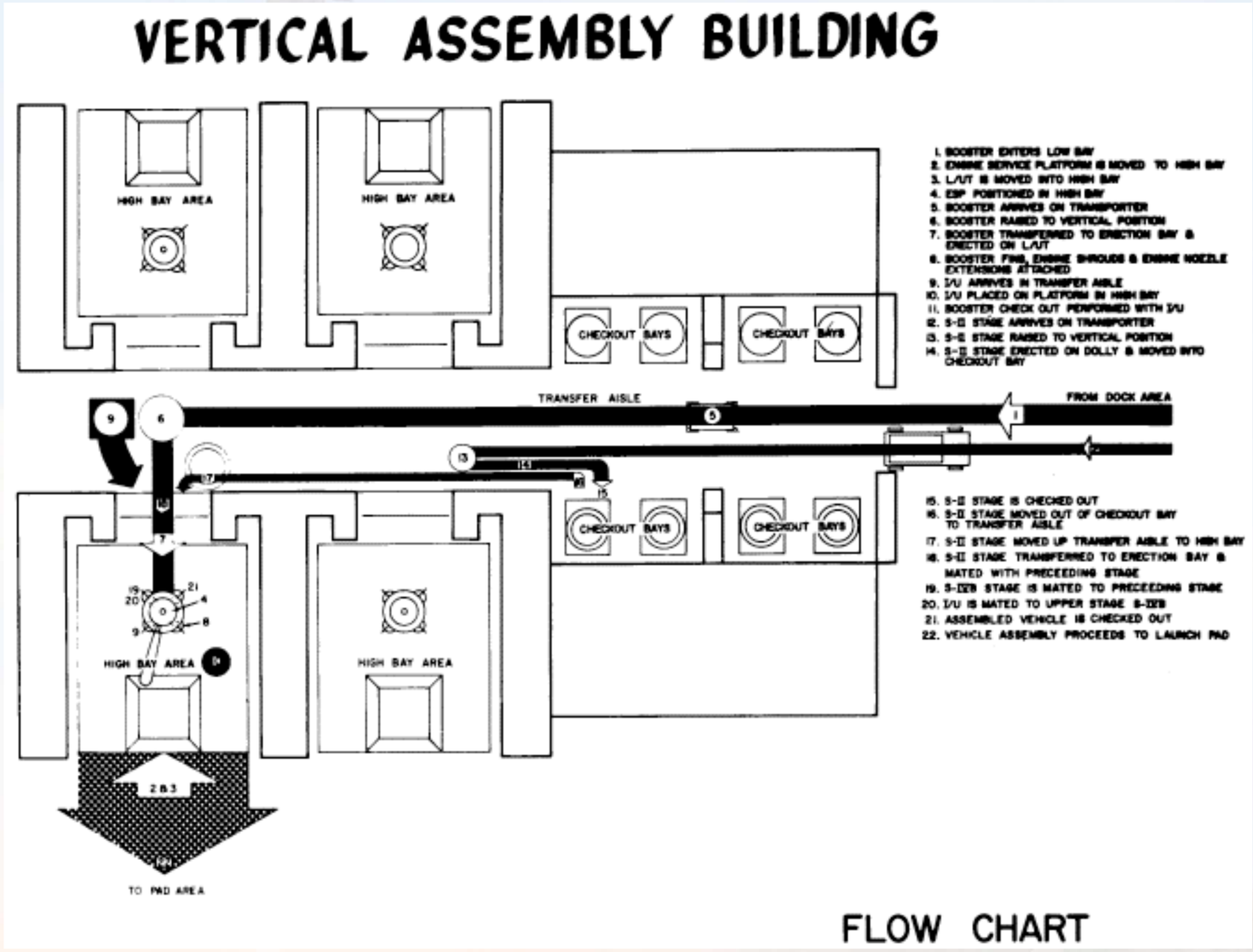


Saturn V Mobile Launch Platforms

MLP Transport Tests

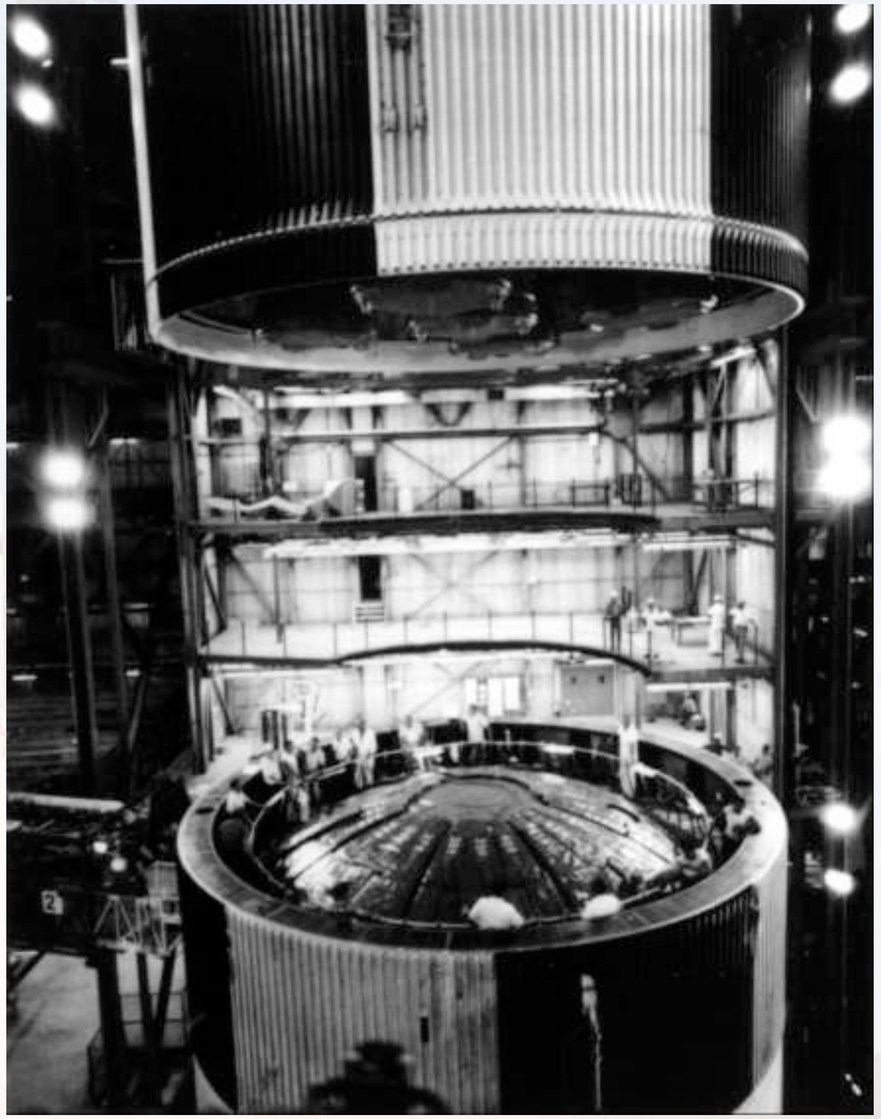


Interior of VAB

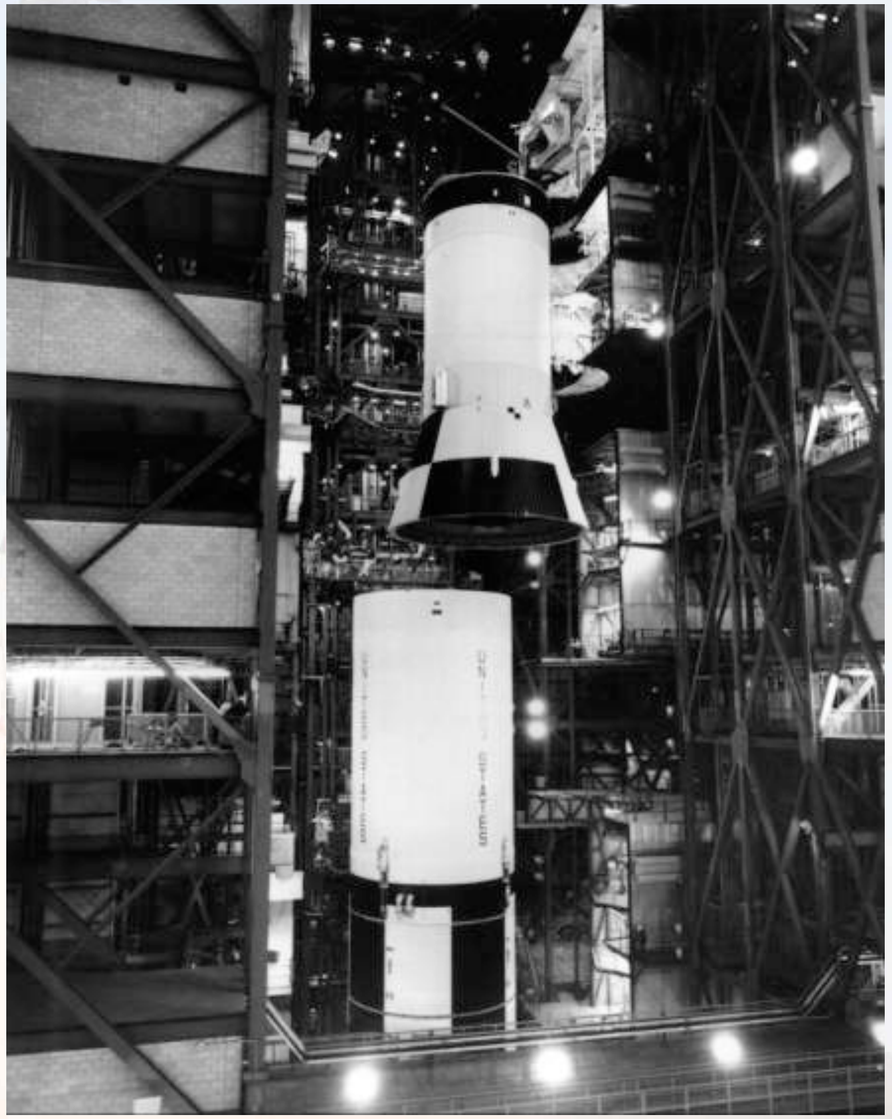


S-IC Stage in VAB Transfer Aisle

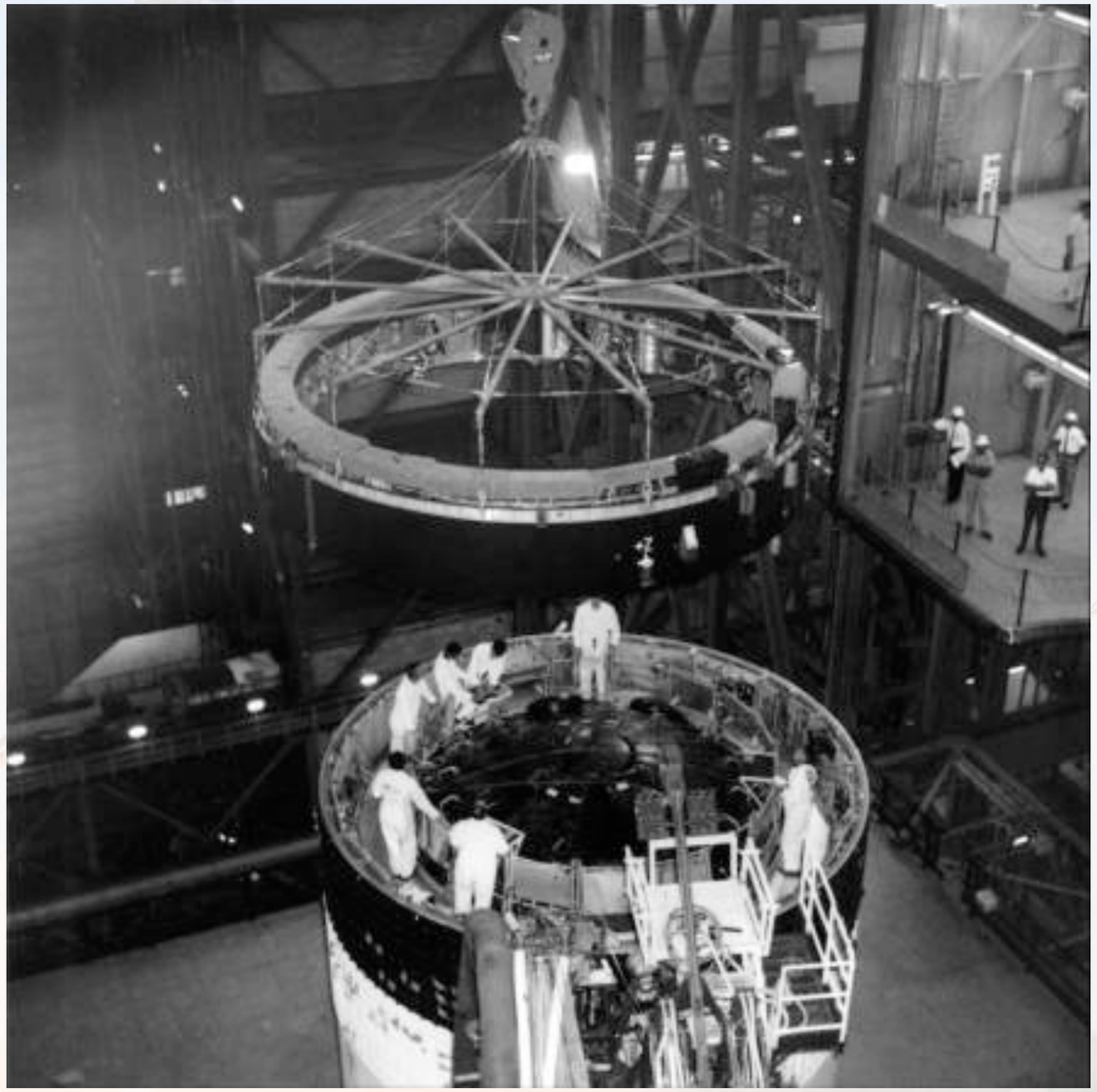
S-IC – S-II Stacking



S-II – S-IVB Stacking



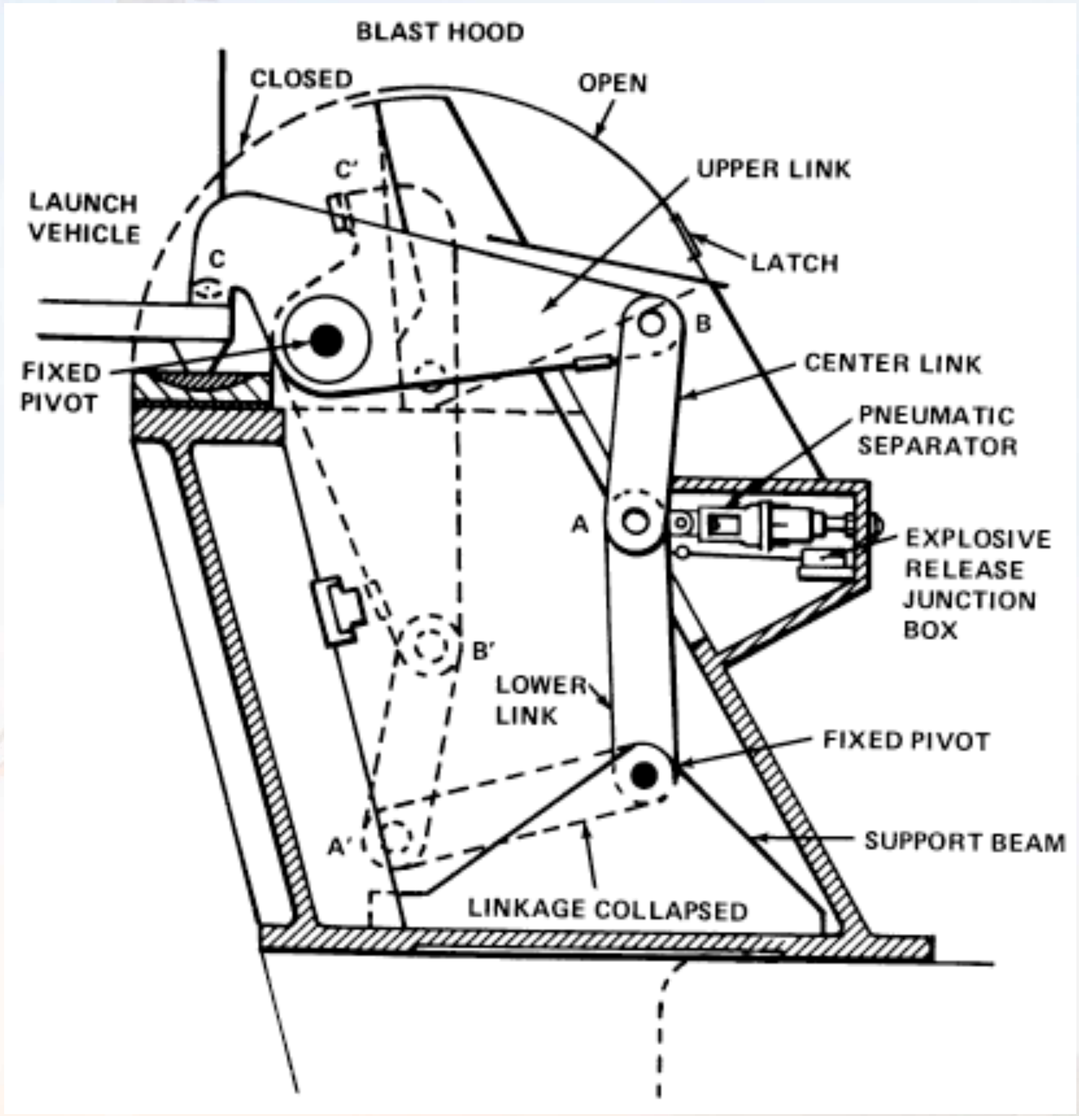
S-IVB – Instrument Unit Stacking



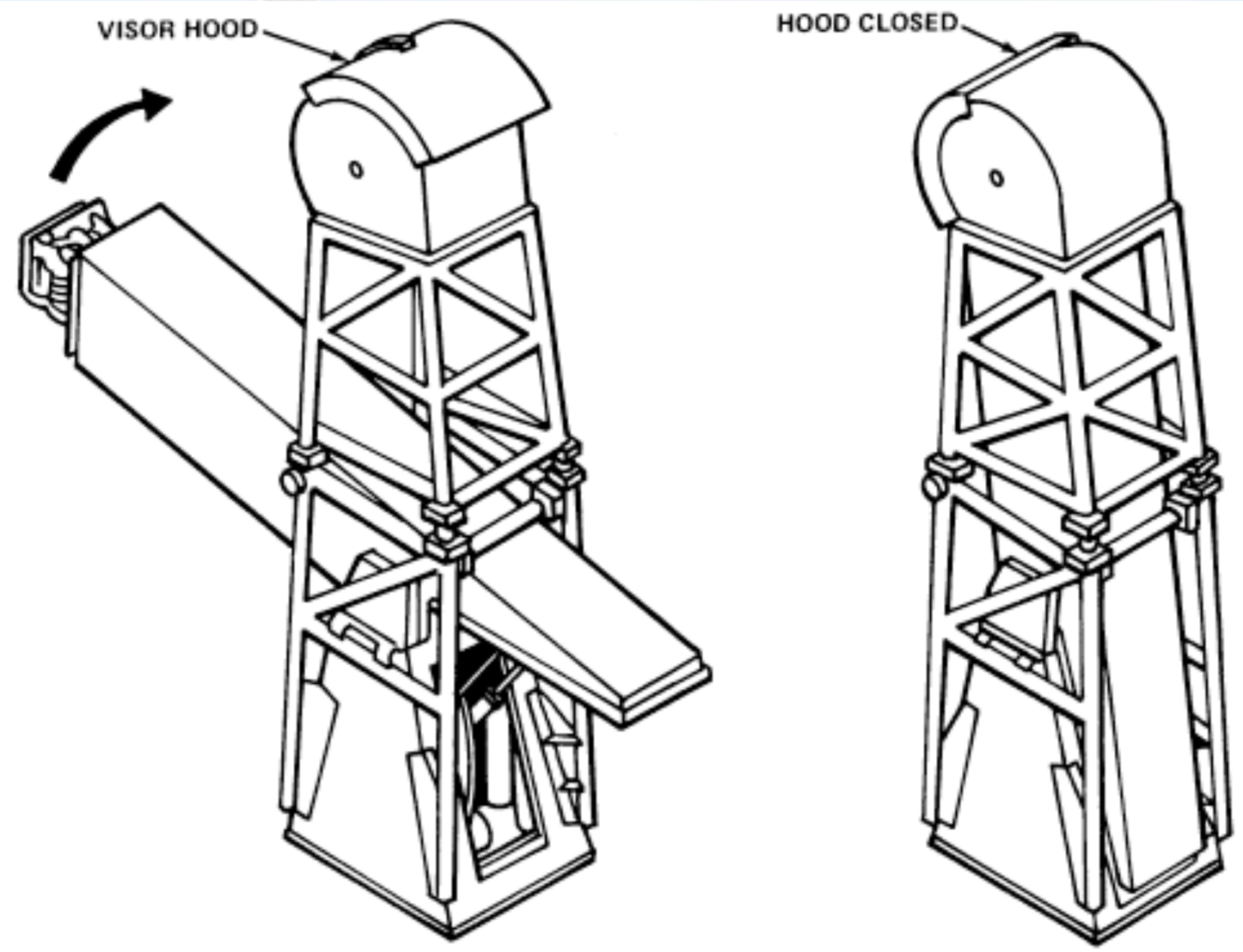
IU – Apollo Spacecraft Stacking

Apollo–Saturn V Completed Stack in VAB

Saturn V Hold-Down Restraints



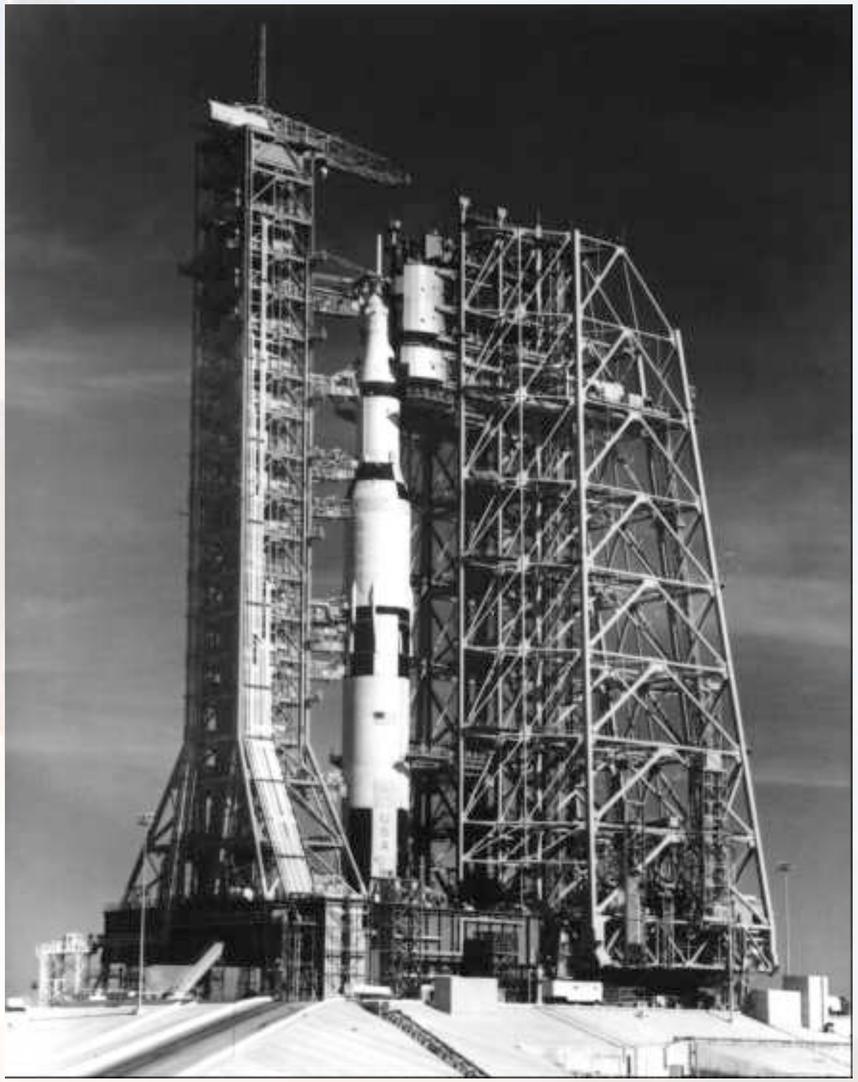
S-1C T-0 Disconnects



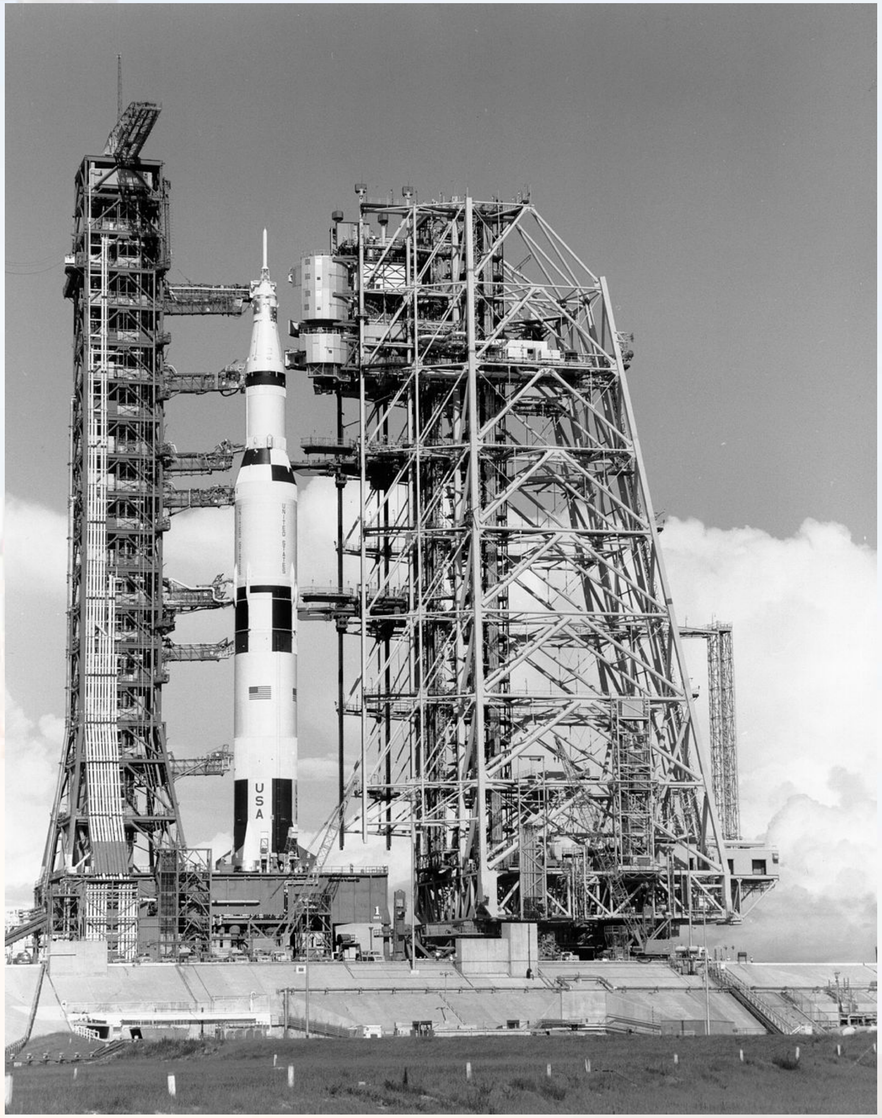
Building the LC-39 Launch Pads

LC-39 Crawlerway and Stacks

SA-501 at LC-39A



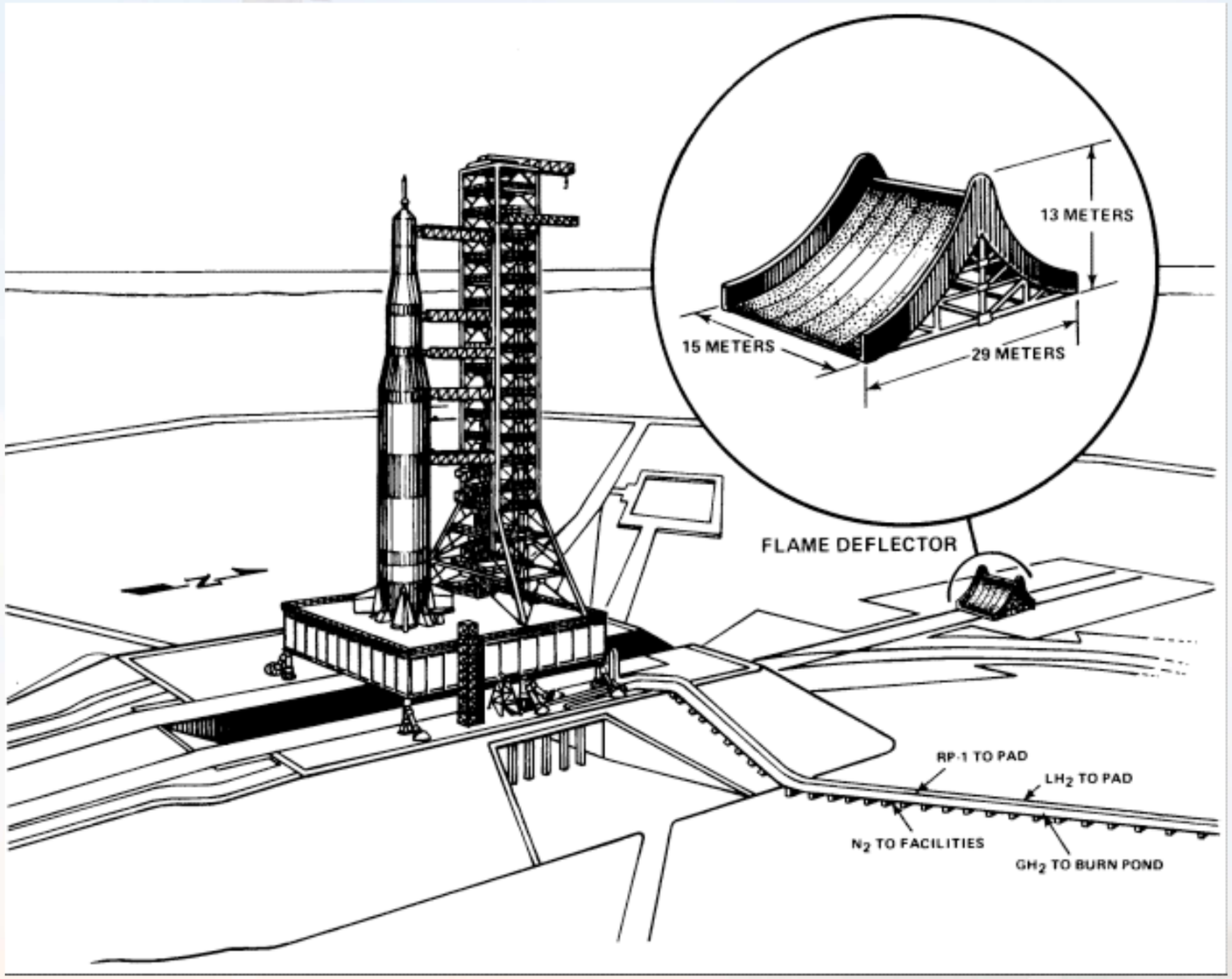
Mobile Service Structure with Saturn V



Saturn IB and “Toadstool” Launch

STS Fixed and Rotating Service Structure

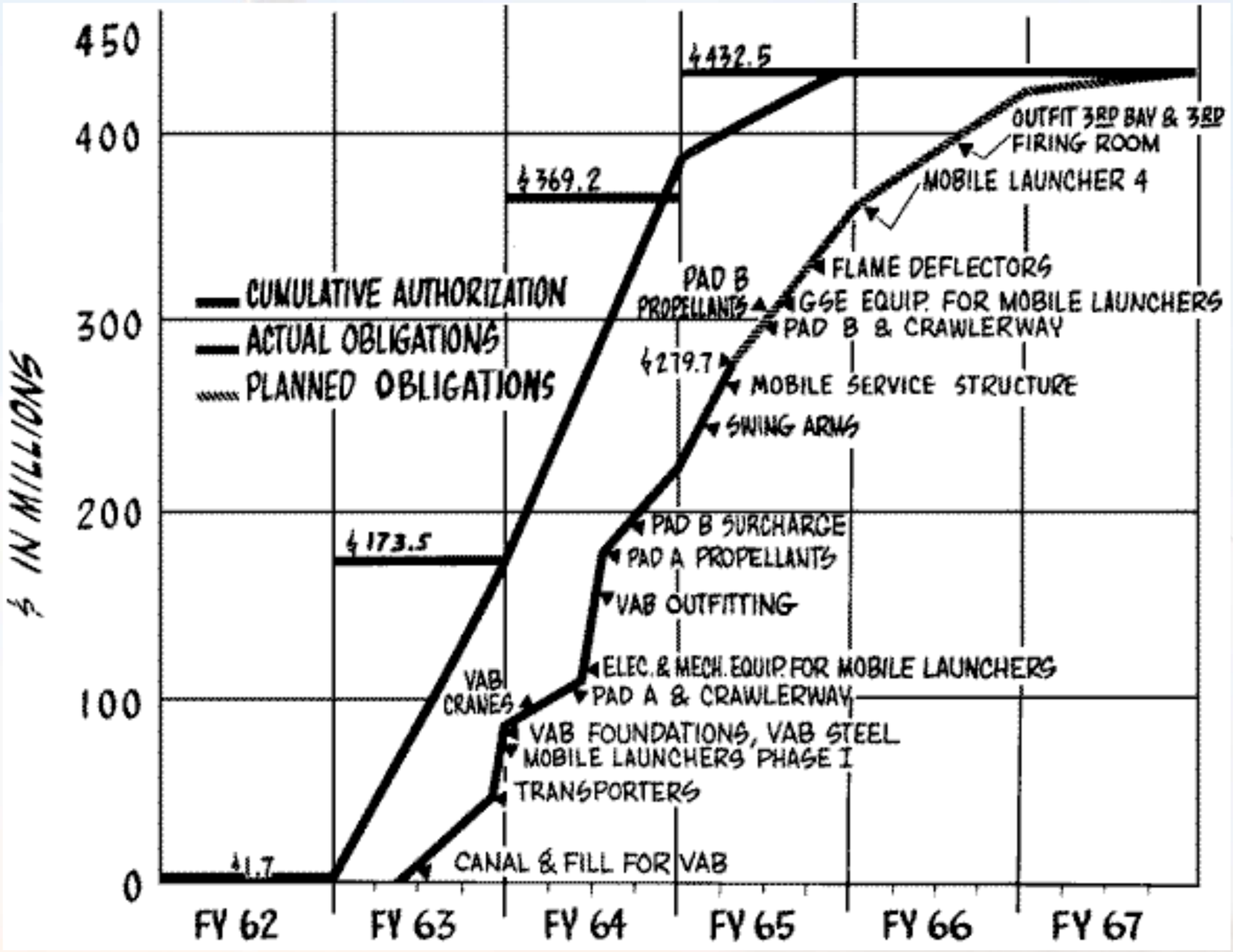
Complex 39 Launch Mounts



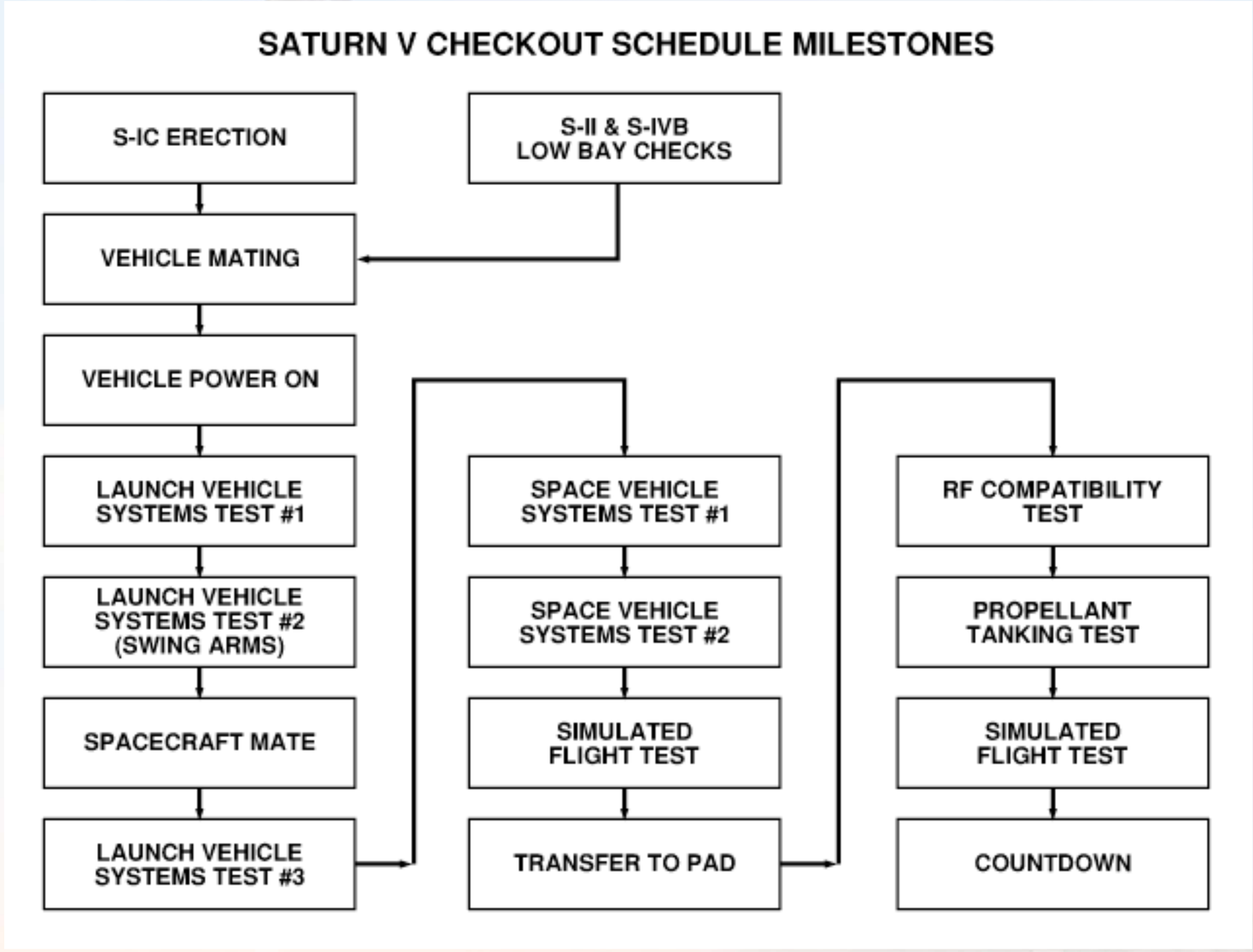
KSC LC-39 (Modern Era)

Details of LC-39 Pads

Expenditures for LC-39



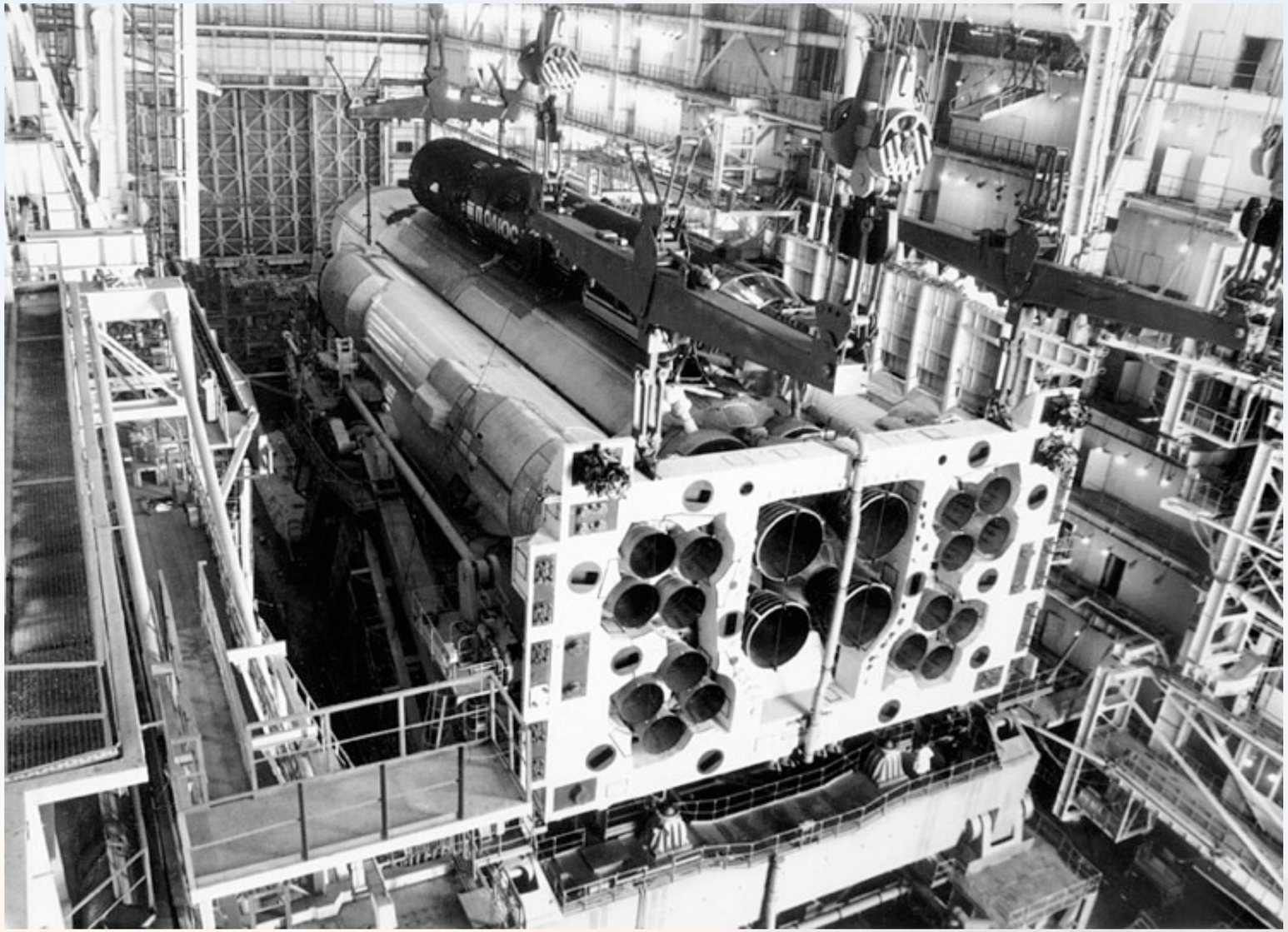
Saturn V Vehicle Checkout Flow



Soyuz Launch Vehicle Moving to Pad

Soyuz Launch Site

Energia in Horizontal Integration



Energia Transported to Pad

Energia at Pad

Energia Erection

Energia on Pad

Shuttle Landing Facility

Transport to Orbiter Processing Facility

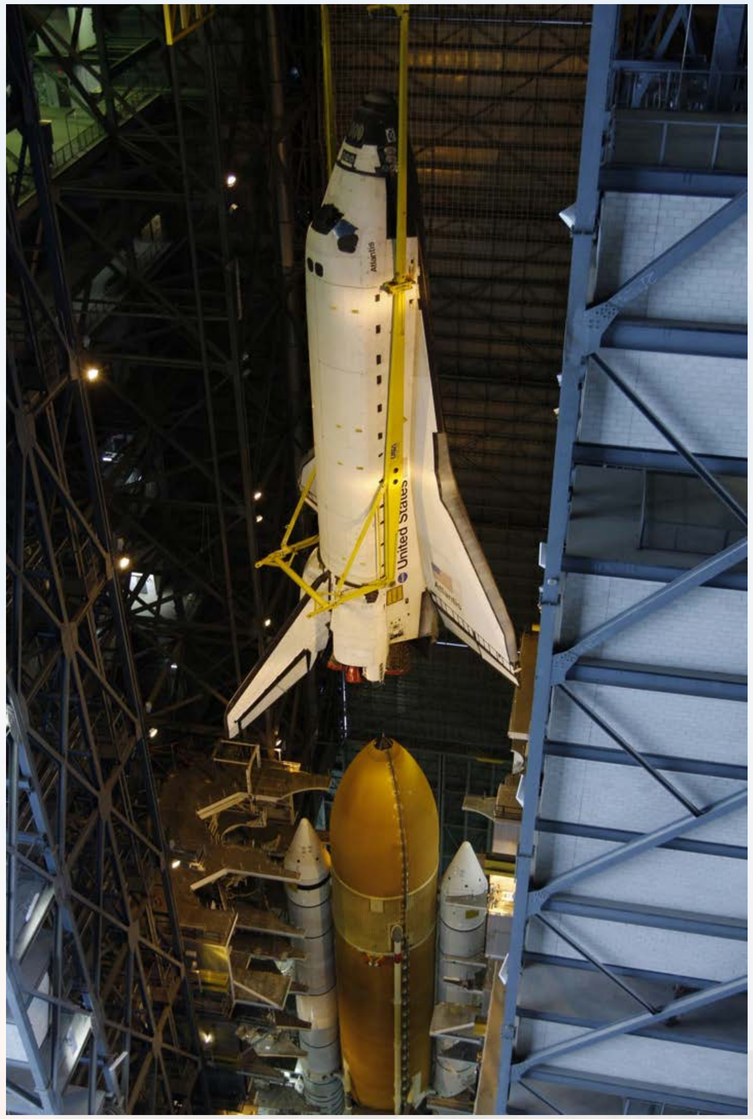
Payload Bay Inspection in OPF

SSME Removal/Installation

Transfer to Vehicle Assembly Building

Attaching Hoisting Fixtures

Attaching Orbiter to Shuttle Stack



Shuttle Rollout

Delta IV Heavy Horizontal Integration

Delta IVH Horizontal Integation Facility

Delta IV Heavy Transporter

Delta IV Heavy at LC34 Blockhouse

Delta IV Heavy Arrives at LC-34

Delta IV Heavy Module Interconnects

Delta IV Heavy at Pad

Delta IV Heavy Rotation

Delta IV Heavy Rotation

Delta IV Heavy at Pad

DC-XA on Launch Pad

DC-X Flight Profile

LC40 at KSC - SpaceX Falcon 9

Falcon 9 v1.1 – SpaceX

KSC Landing Complex 1

Falcon 9 First Stage Landing

Falcon Heavy and Starman (SpaceX)

SLS/Mobile Launcher/LC-39B

Starship/Super Heavy Launch Facility

Starship Access Arms

Starship and Tank Farms