

To the Moon and Back:

Preserving NASA's
Apollo Mission Control
in Houston, Texas



PRESIDENT KENNEDY SPEAKS BEFORE A CROWD OF 35,000 PEOPLE AT RICE UNIVERSITY IN THE FOOTBALL FIELD ON SEPT. 12, 1962.

BUT I DO SAY SPACE CAN BE EXPLORED AND MASTERED WITHOUT FEEDING THE FIRES OF WAR, WITHOUT REPEATING THE MISTAKES THAT MAN HAS MADE WITH EXTENDING HIS WRIT AROUND THIS GLOBE OF OURS.

...THERE IS NO STRIFE, NO PREJUDICE, NO NATIONAL CONFLICT IN OUTER SPACE AS YET. ITS CONQUEST DESERVES THE BEST OF ALL MANKIND, AND ITS OPPORTUNITY FOR PEACEFUL COOPERATION MAY NEVER COME AGAIN.

BUT WHY, SOME SAY THE MOON? WHY CHOOSE THIS AS OUR GOAL? AND THEY MAY WELL ASK, WHY CLIMB THE HIGHEST MOUNTAIN? WHY – 35 YEARS AGO – WHY FLY THE ATLANTIC? WHY DOES RICE PLAY TEXAS?

WE CHOOSE TO GO TO THE MOON, WE CHOOSE TO GO TO THE MOON IN THIS DECADE AND DO THE OTHER THINGS, NOT BECAUSE THEY ARE EASY, BUT BECAUSE THEY ARE HARD, BECAUSE THAT GOAL WILL SERVE TO ORGANIZE AND MEASURE THE BEST OF OUR ENERGIES AND SKILLS, BECAUSE THAT CHALLENGE IS ONE THAT WE ARE WILLING TO ACCEPT, ONE WE ARE UNWILLING TO POSTPONE, AND ONE IN WHICH WE INTEND TO WIN, AND THE OTHERS TOO."

"Tumultuous" 1960s

- ▶ CIVIL RIGHTS
- ▶ ASSASSINATIONS
- ▶ VIETNAM WAR
- ▶ RIOTS
- ▶ VIOLENT CRIME RATE
INCREASED BY 126%
- ▶ POLITICAL RADICALISM
- ▶ COLD WAR

1969.
Apollo 11





The Heroes of Apollo



MOCR-2

GEMINI IV – VII (1965)

GEMINI VIII – XII (1966)

APOLLO 4 (NOVEMBER 9, 1967)

APOLLO 6 & 8 (1968)

APOLLO 9 - 12 (1969)

APOLLO 13 (APRIL 11-17, 1970)

APOLLO 14 & 15 (1971)

APOLLO 16 & 17 (1972)

STS-5 (NOVEMBER 11-16, 1982 FCR-2)

STS-6 – STS-9 (1983)

41-B, C, & G (1984)

51-C, D, G, I, & J (1985)

61-B (1985)

“CHALLENGER” 51-L (JANUARY 28, 1986)

STS-27 (FIRST POST-CHALLENGER DOD
MISSION, DECEMBER 1988)

SIX DOD SHUTTLE MISSIONS (JANUARY 1989-
DECEMBER 1992)





Restoration Background



Building 30 – Christopher C. Kraft, Jr. Mission Control Center

- National Historic Landmark
- 2 primary Mission Control Rooms - 2nd and 3rd Floor

Apollo Mission Control Center – 3rd Floor

Mission Operations Control Room (MOCR)

Visitors Viewing Room

Summary Display Room - “Bat Cave”

Simulation Control Room (SCR)

Recovery Operations Control Room (ROCR)

Apollo MCC

3RD Floor
Mission Operations
Wing

*Mission Operations Control
Room 2 (MOCR2)*

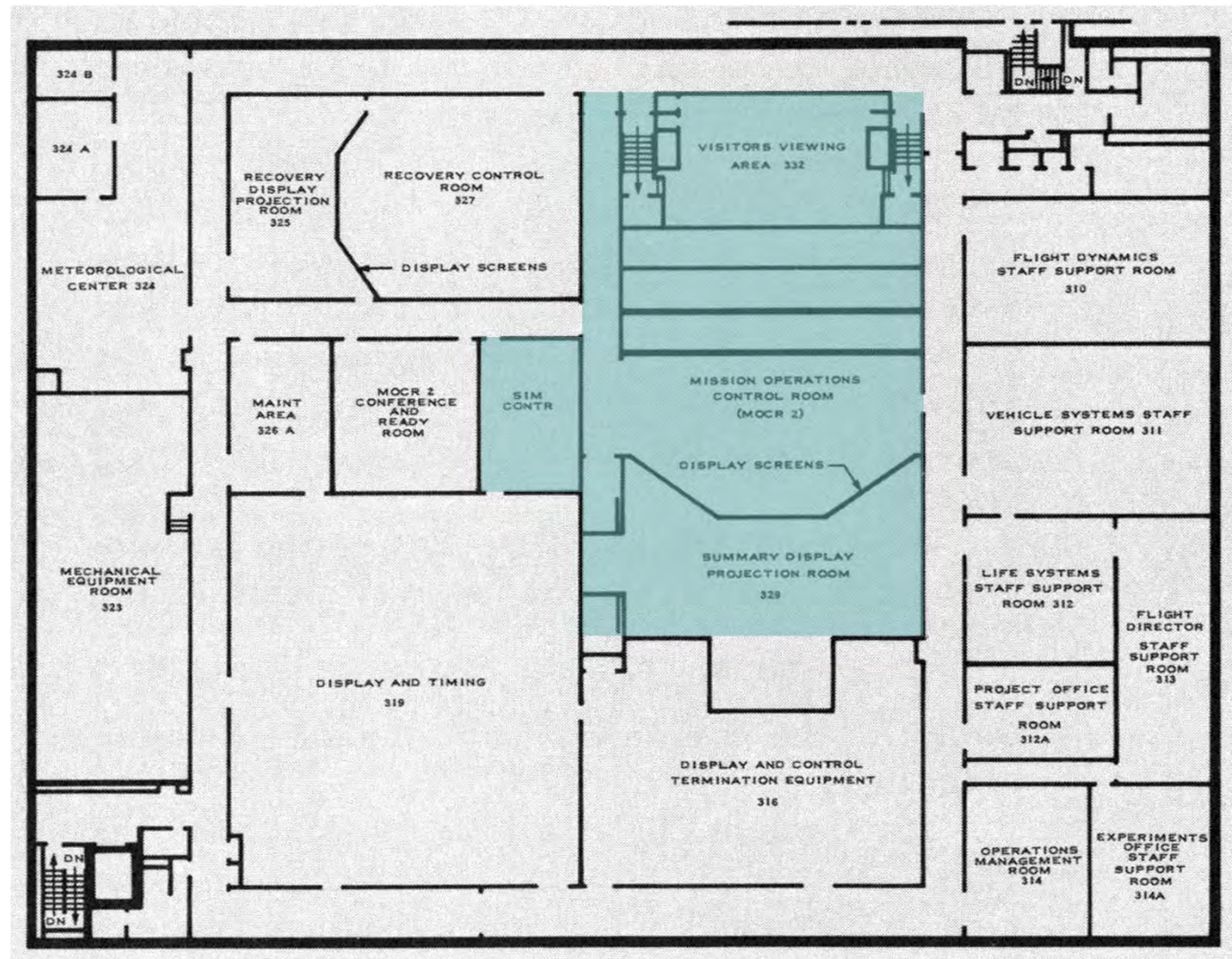
Visitors Viewing Area

*Summary Display Projection
Room
(Bat Cave)*

*Recovery Control Room
(ROCR)*

*Simulation Control Room
(SCR)*

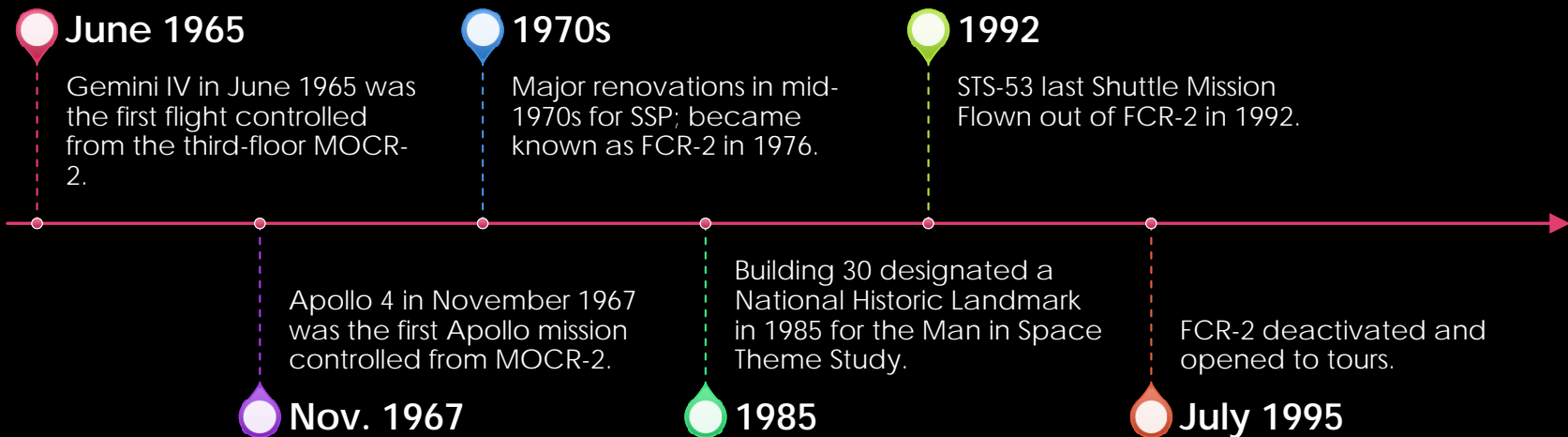
Staff Support Rooms





Building 30 1960s

History



Restoration Timeline: Initial Assessment



Restoration Timeline: Restoration Work Moves Forward



SEPTEMBER 2017 –
RESEARCH AND
GROUNDWORK
BEGINS TO BETTER
DEFINE SCOPE
AND COST.



JANUARY 2018 –
RESTORATION
BEGINS



50TH ANNIVERSARY
OF APOLLO 11,
JULY 16, 2019



RESTORATION
COMPLETED IN 18
MONTHS.

Period of Significance

"The period of significance upon which this plan is based, however, covers the final seven Apollo missions – from Apollo 11, July 16-24, 1969, to Apollo 17, December 6-9, 1972. These seven flights span the period from the globally significant first lunar landing to the period of lunar exploration and experiments conducted before the program's termination. As a group, these flights that involved actual moon landings are now understood as the culmination of the Space Race and the result of the United States' commitment to demonstrating what the combination of capitalism and western technology could achieve. The final missions also represent the height of the Apollo program's physical configuration in the Mission Control Center and its greatest technical and scientific demands."

► "Apollo Mission Control should be restored to a degree of accuracy that will feel to visitors like the day we walked out."

► Ed Fendell
Apollo Missions
Flight Controller





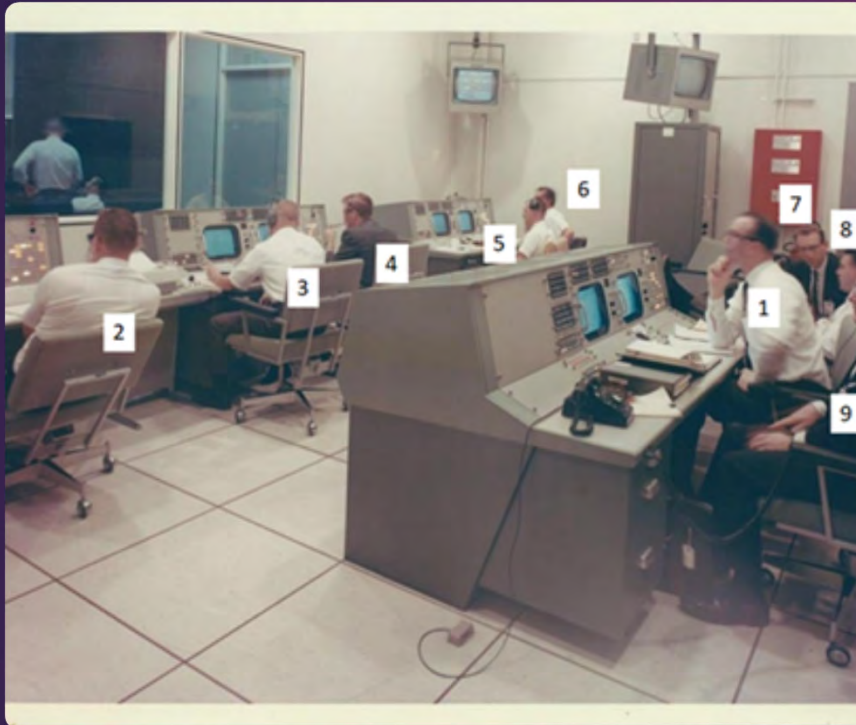
MOCR 2 Apollo 11, July 1969



Viewing Room



Communications Booths



Simulation Control Room



Recovery Operations Control Room



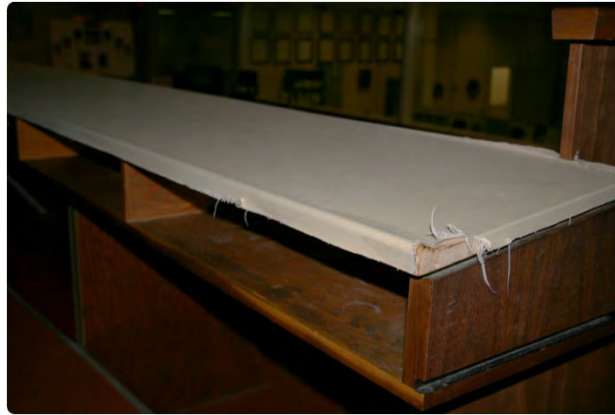
Pre-
restoration
Condition



Pre-
restoration
Condition

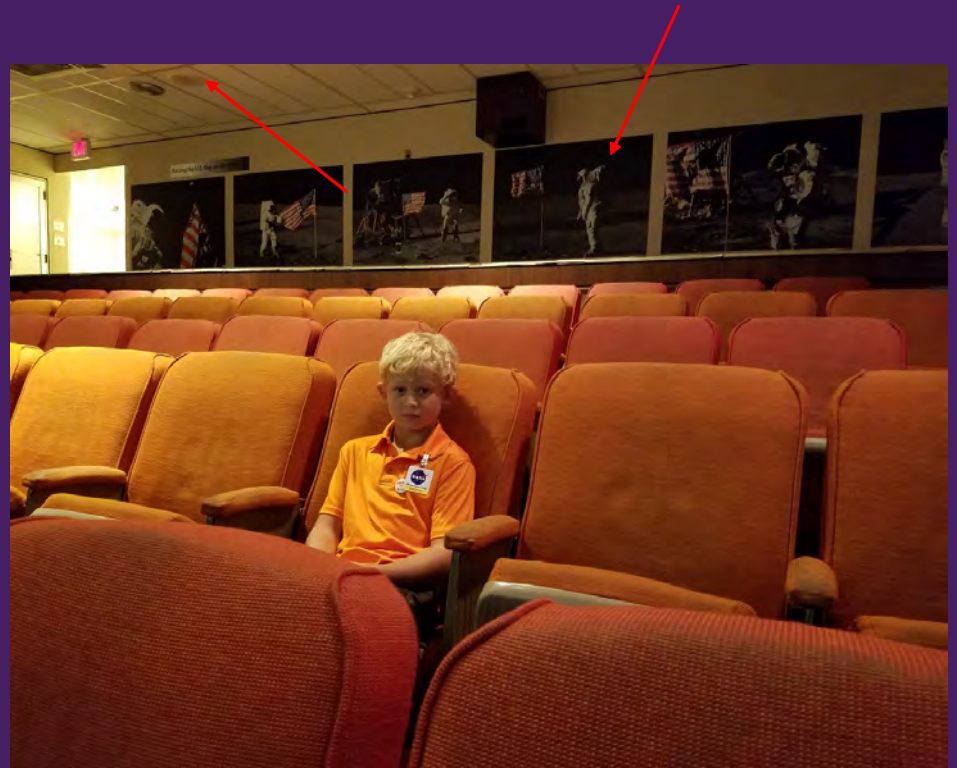


Pre-
restoration
Condition



Pre-restoration Condition

Pre-restoration Condition





Pre-
restoration
Condition

APOLLO MISSION CONTROL CENTER Restoration Team

Sandra Tetley, JSC HPO



PAE

Adam C. Graves, Ph.D.



Stern and Bucek Architects

Stephen Slater

Ben Feist

Tyler
Strahl





Research and Interviews

Film and Photographs



DATE 7/20/69	UNIT	CAMERA B-16
SCENE	TAKE	ROLL 4
CAMERAMAN BIRD <small>BURKE & SAWYER - Hollywood</small>		PROD. NO. A-V 586



Console Removal January 25, 2018



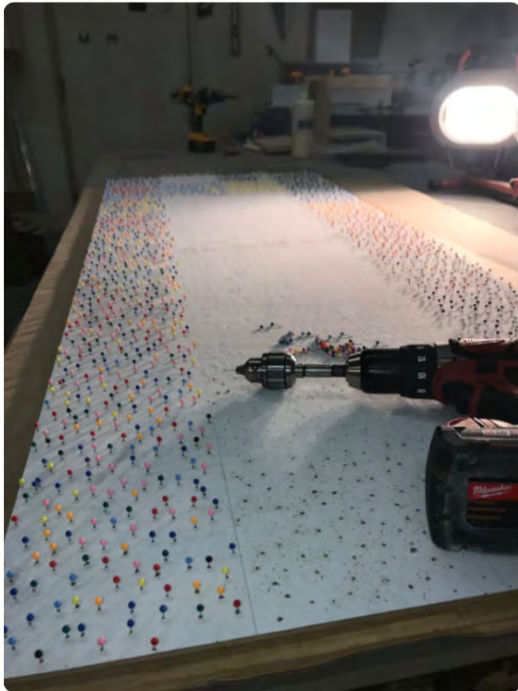
Wall Artifacts Removal



Ceiling
Removed



Ceiling Tile



Tile Stamp



Original Smoke Detector



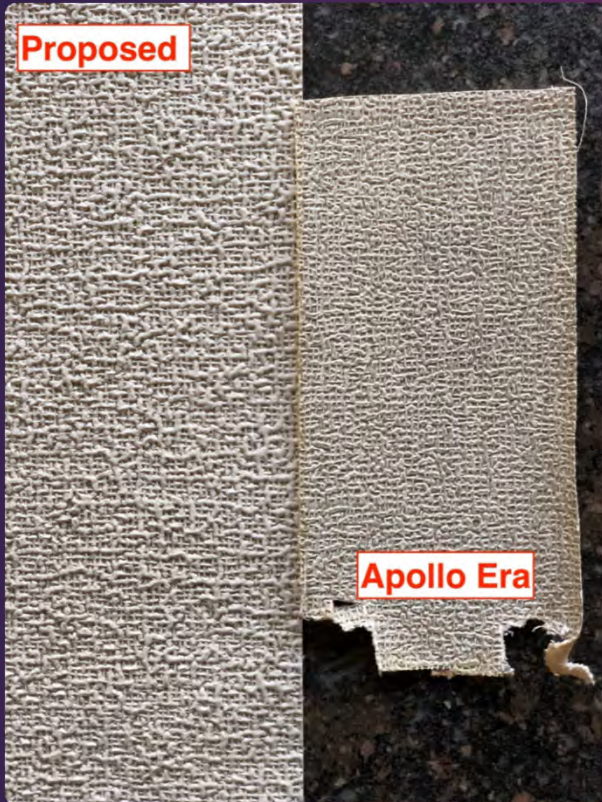
Hanging Cameras



New Ceiling



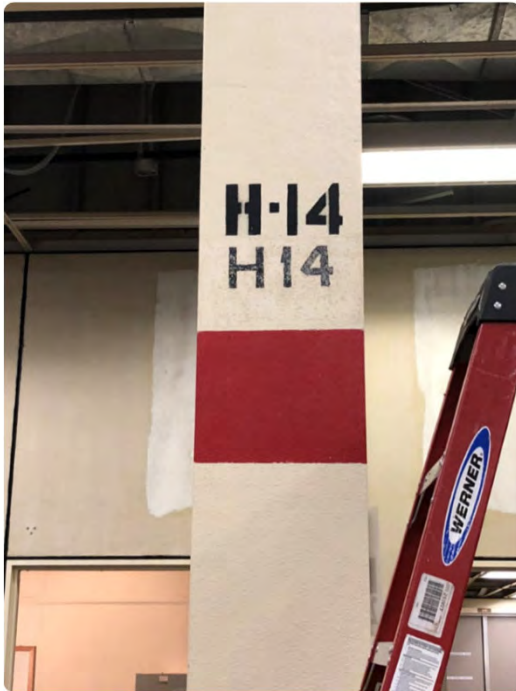
Wallpaper



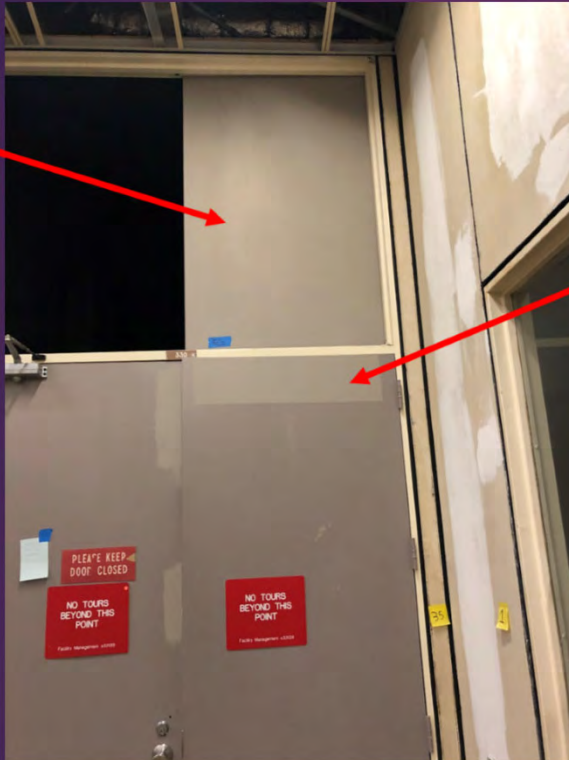
Recreated Wallpaper



Time Capsule



Paint



Original
vs.
Matched
Paint



Floor Re- Leveling

Carpet

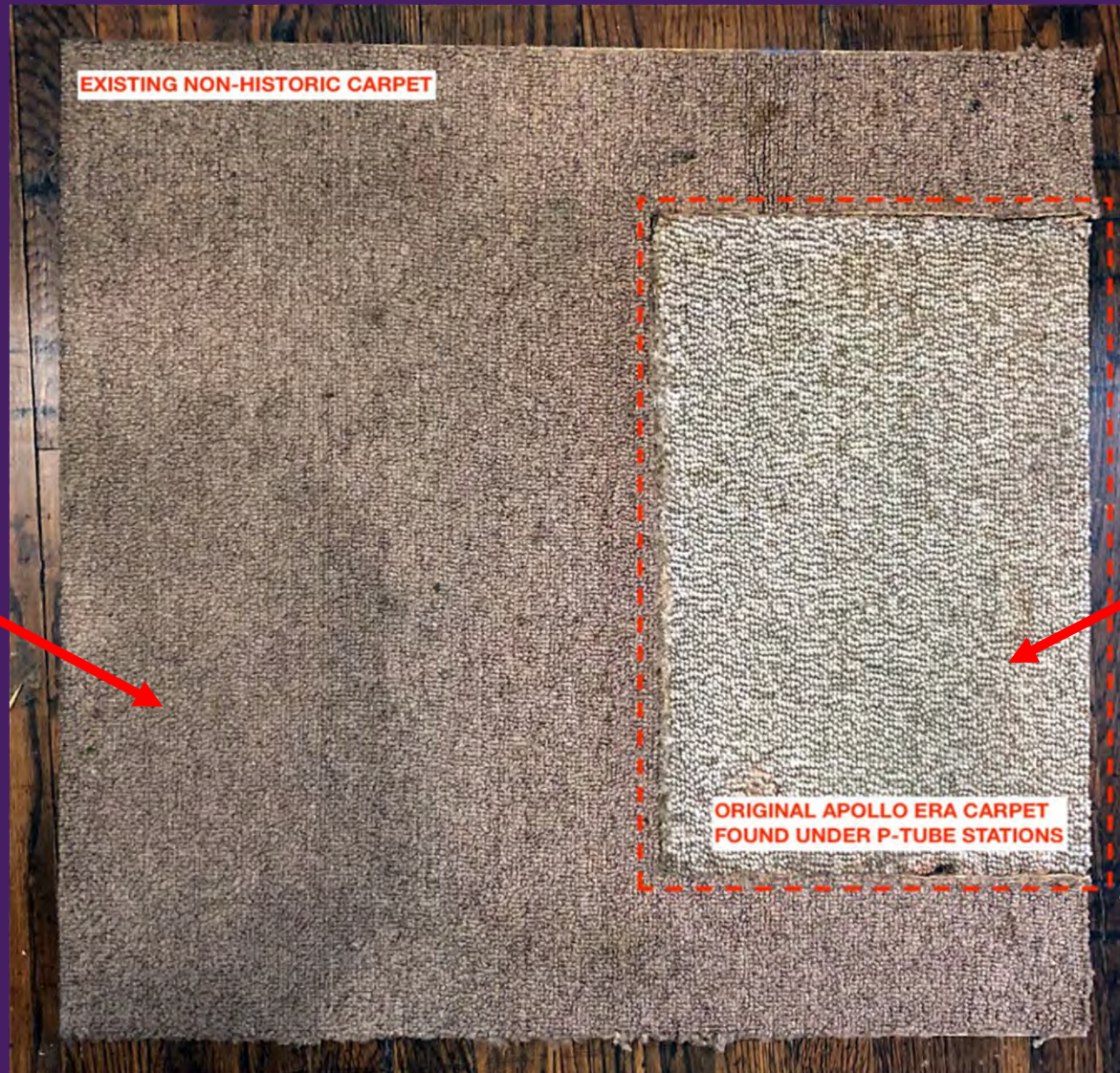
Original

Existing



Carpet

Existing
Post Apollo



Original
Apollo

Carpet



PROPOSED CARPET
(LEFT)

HISTORIC APOLLO ERA
CARPET FOUND UNDER
P-TUBE STATIONS (RIGHT)

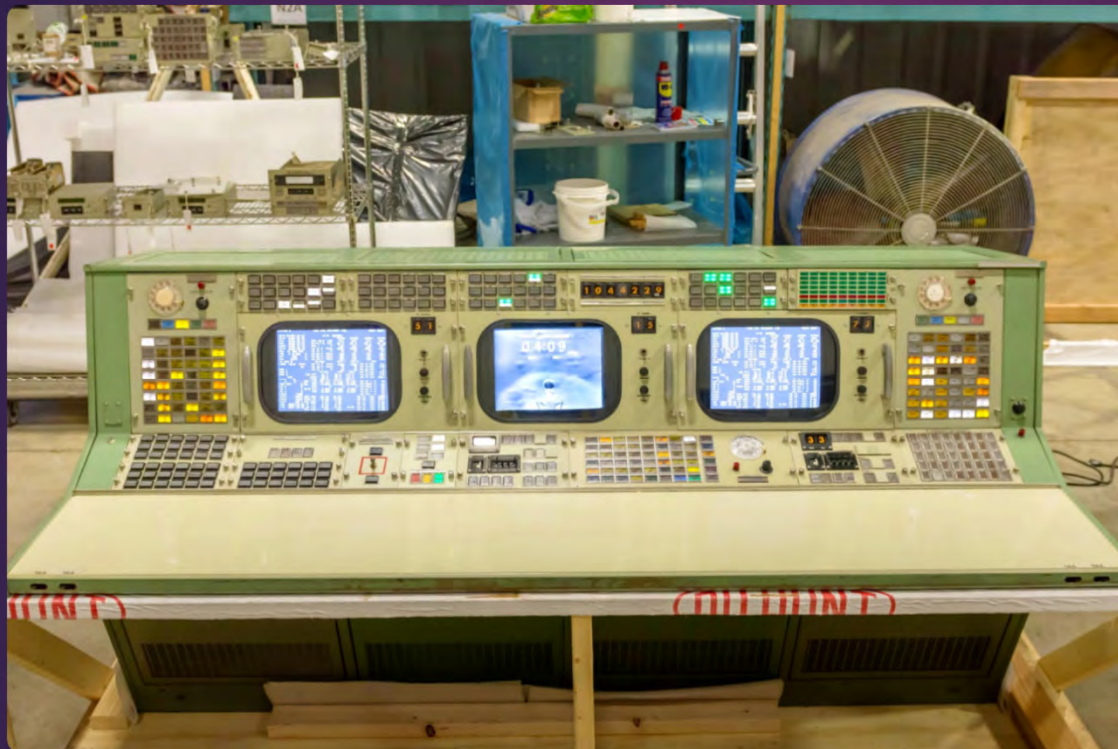


Meanwhile...Back
at the Kansas
Cosmosphere

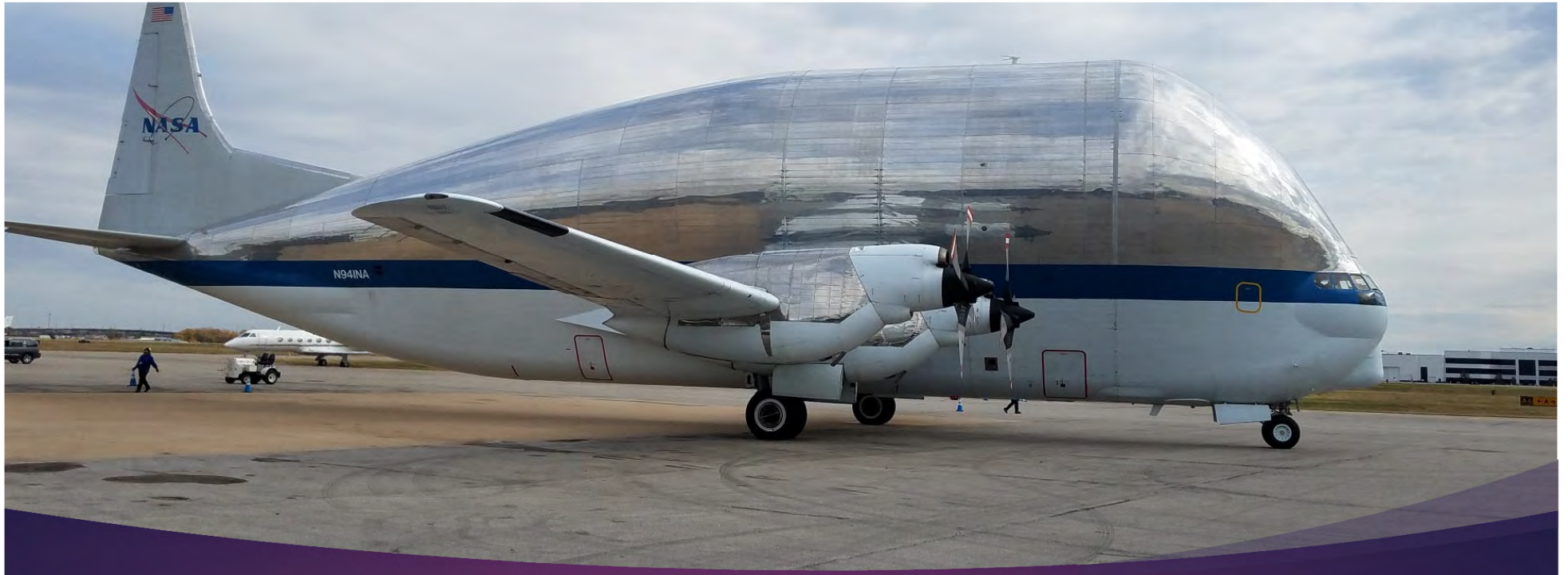


Original Face
Plate vs.
Replicated





Restored Console



Guppy Delivery



Guppy Delivery

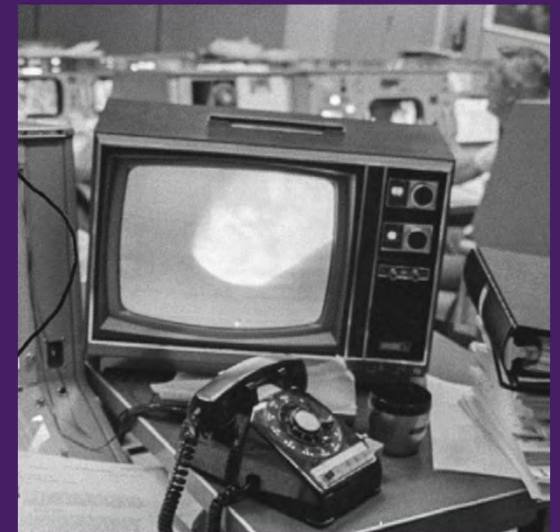


Console Re- installation and Testing



Simulation Control Room Consoles

Furnishings

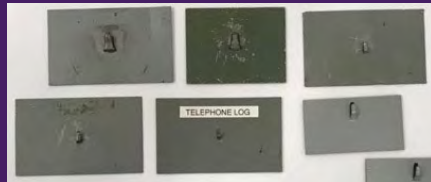


Furnishings

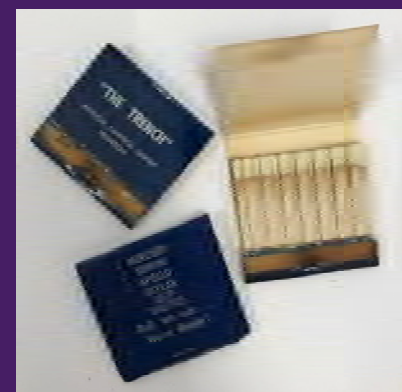




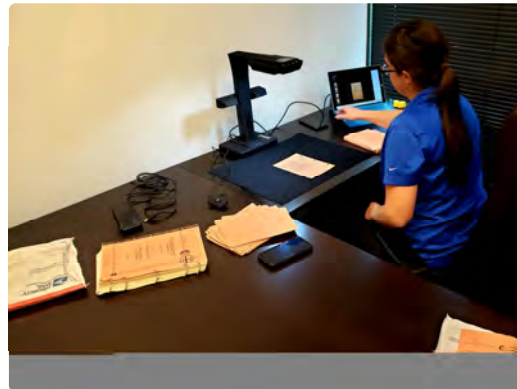
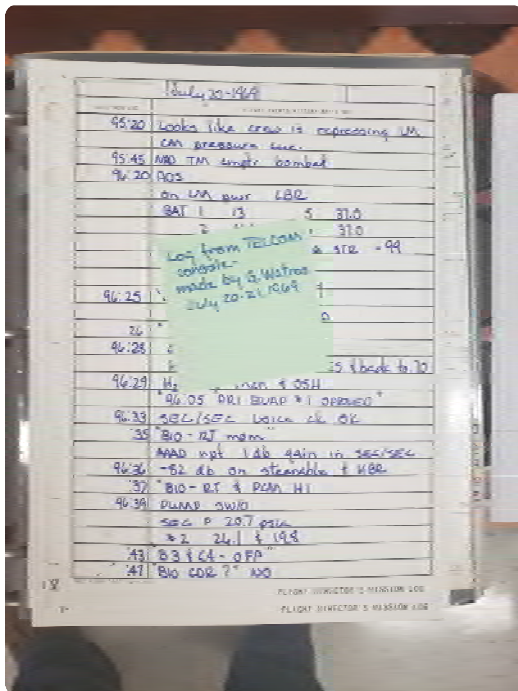
Furnishings



Furnishings







Donations



Medallions



Wall Artifact Decision- Making



Apollo 13 Commander
Jim Lovell

Apollo 13 Mirror



R U I J I Q D O #
 F R Q W U R O O H U #
 F K D I J # D Q G #
 V I G H # F K D I J

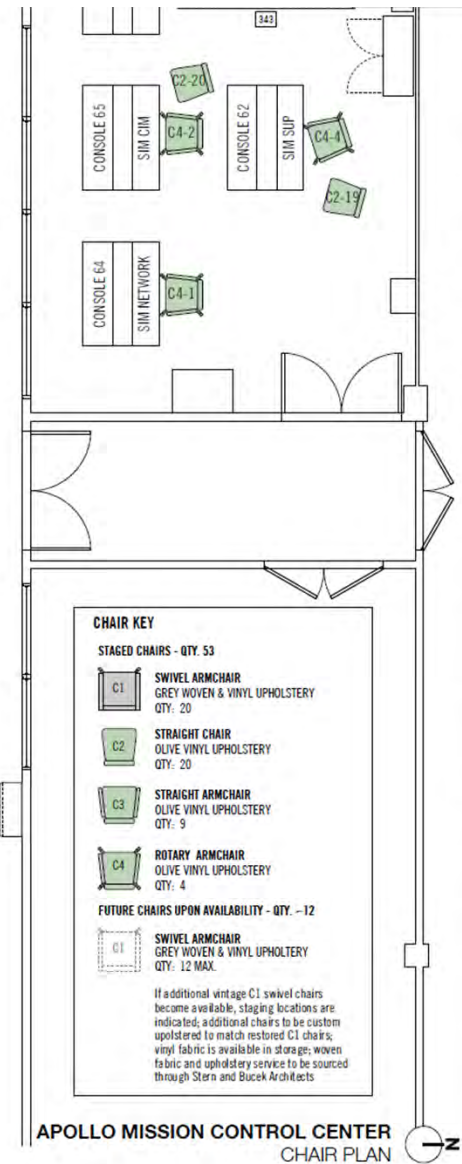
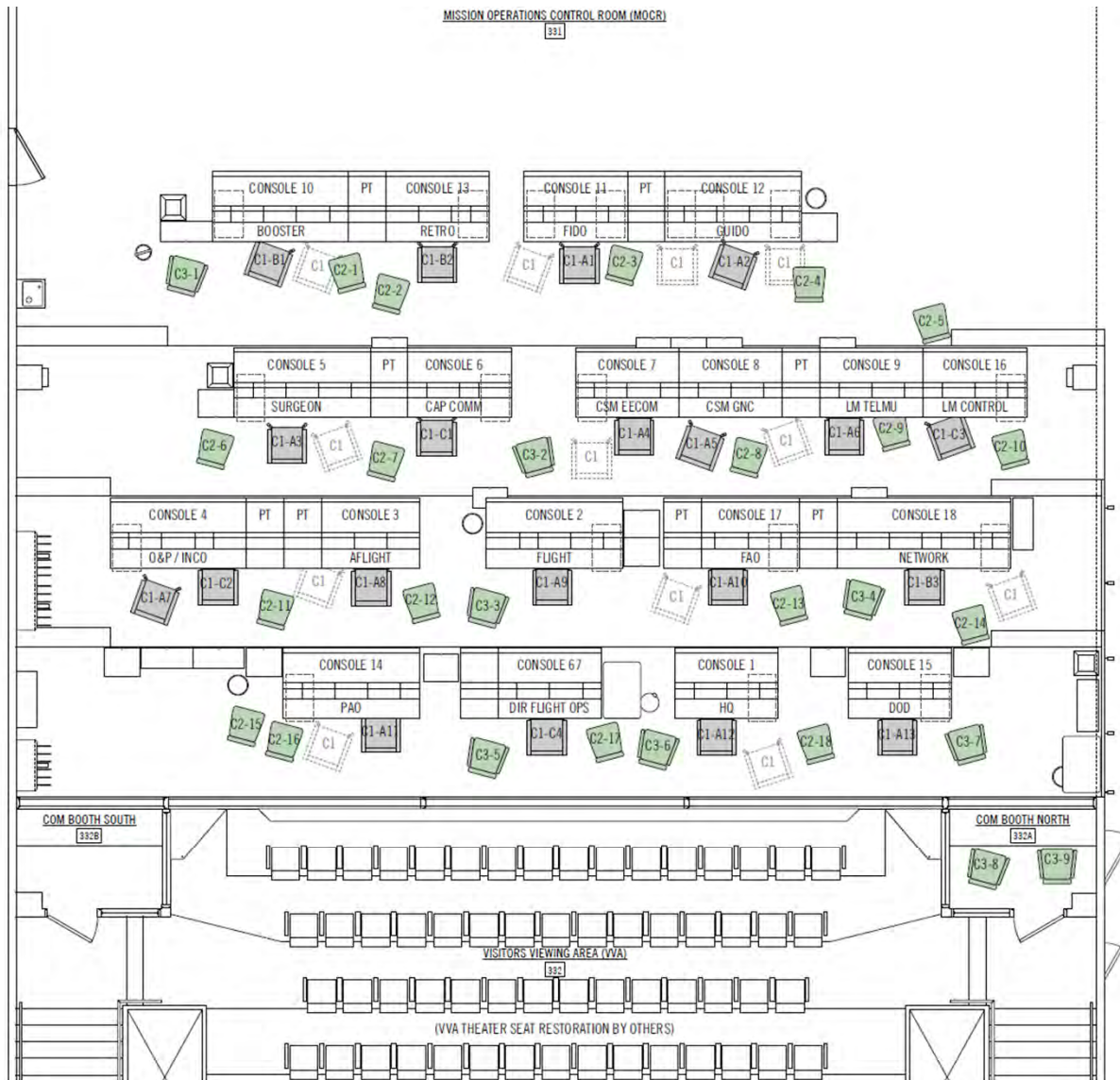


R U I J I Q D O #
 V W H H O F D V H
 V Z I Y H O # F K D I J



V I G H # F K D I J V # #
 V Z I Y H O #
 F K D I J V # S U I R U #
 W R #
 U H V W R U D W I R Q

MOCR
 Seating



00072019 - Based for Review
00072019 - Based for Construction
00072020 - Based for Construction

**Apollo Mission Control Center
Restoration - Console Chairs**
2101 NASA Road 1, Houston, TX 77058

MCC Chair Plan

A-FS-201



R U L J I Q D O # I Q \ O # D E U I F



R U L J I Q D O # H D W # D E U I F



Q H Z # K I Q \ O # D E U I F



Q H Z # K R Y H Q # H D W # D E U I F



K D Q G # K R Y H Q # D P S O H V



K D Q G # R R P # K I W K # D P S O H # W U H W F K

MOCR Seating



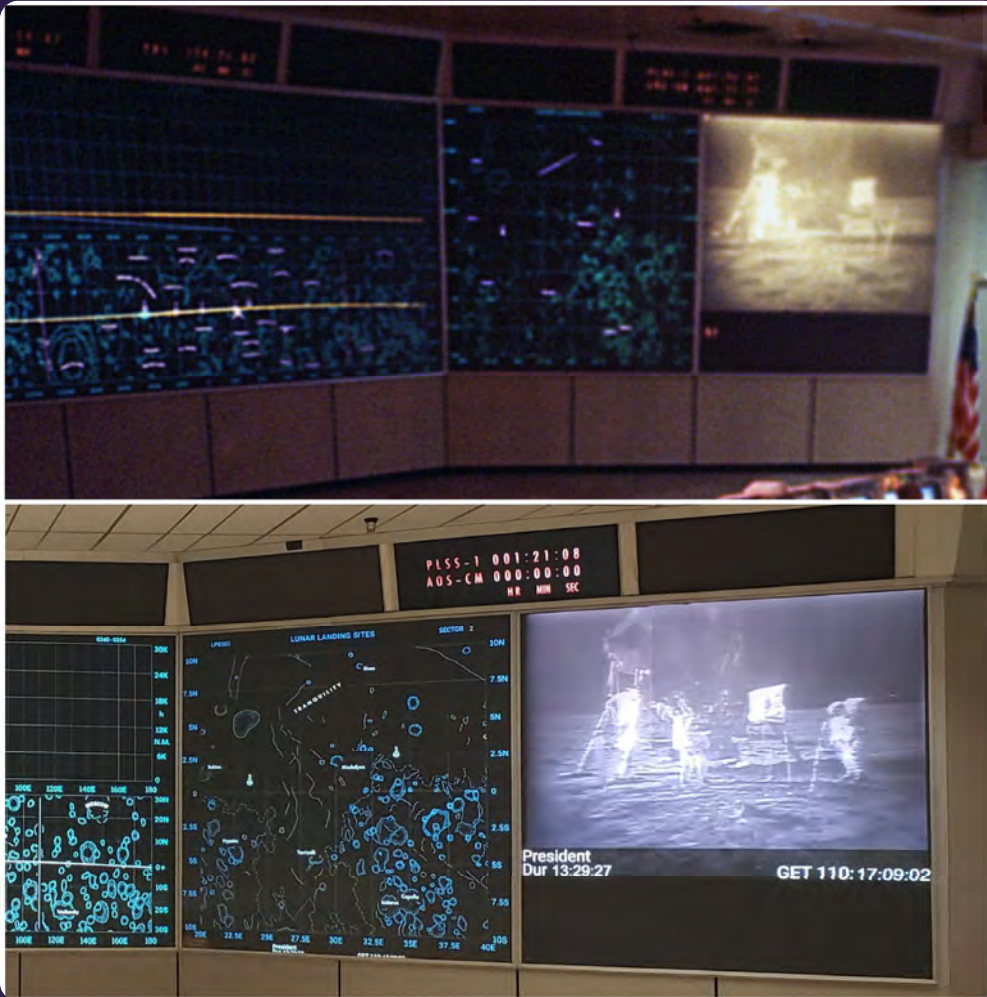
Restored
Seating



Bat Cave



Screens and “Mission Lighting”





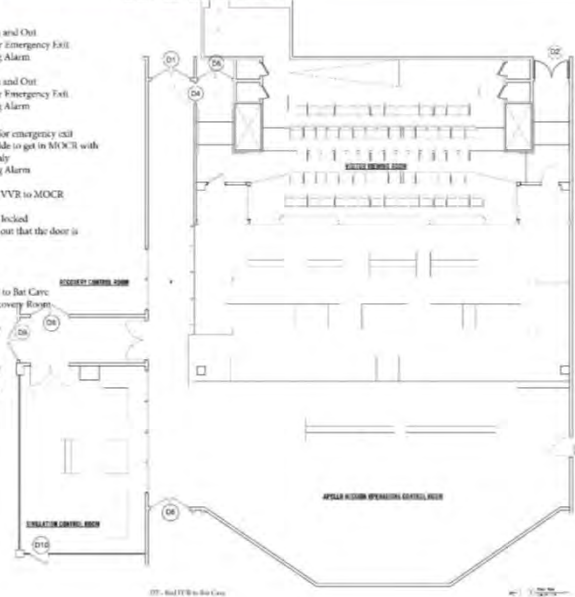
Access Controls



Door (D) Descriptions:

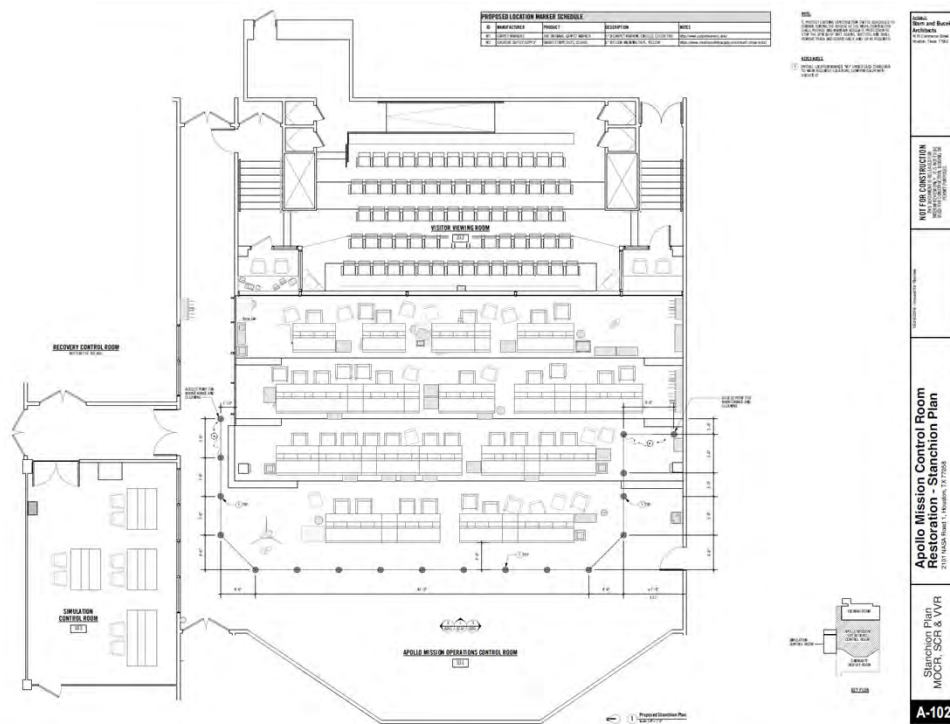
1. Apollo MOCR Entrance
 - a. Two-factor Card Reader In and Out
 - b. Crash Bar inside for Visitor Emergency Exit
 - c. Emergency Local Sounding Alarm
2. Viewing Room Entrance
 - a. Two-factor Card Reader In and Out
 - b. Crash Bar inside for Visitor Emergency Exit
 - c. Emergency Local Sounding Alarm
3. Emergency Exit from MOCR
 - a. Crash Handle inside door for emergency exit
 - b. 2-Factor Card Reader outside to get in MOCR with Guns and Hoses Access Only
 - c. Emergency Local Sounding Alarm
4. New VVR to MOCR Door
 - a. 2-Factor Card Reader from VVR to MOCR
5. VVR to CAA Door
 - a. Door to remain closed and locked
 - b. Signs will be posted in and out that the door is inoperable
6. MOCR to Bat Cave Door
 - a. Key Lock - High Level Key
7. Bat Cave to Bat Cave Door
 - a. Two-factor Card Reader in to Bat Cave
8. Door from SCB hallway to Recovery Room
 - a. Door blocked
 - b. Key Lock - High Level Key
9. Door at end of SCB hallway
 - a. Door blocked
 - b. Key Lock - High Level Key
10. Door at back of SCB
 - a. Key Lock - High Level Key

ENTRY AND EXIT FOR TOURS

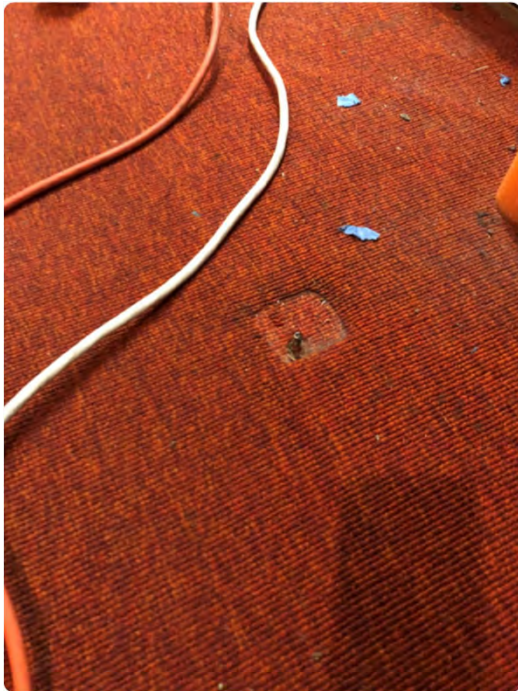


Apollo Mission Control Room
 Floor Plan
 MOCR, SCB & VVR
 Revision 1.0
 A-101

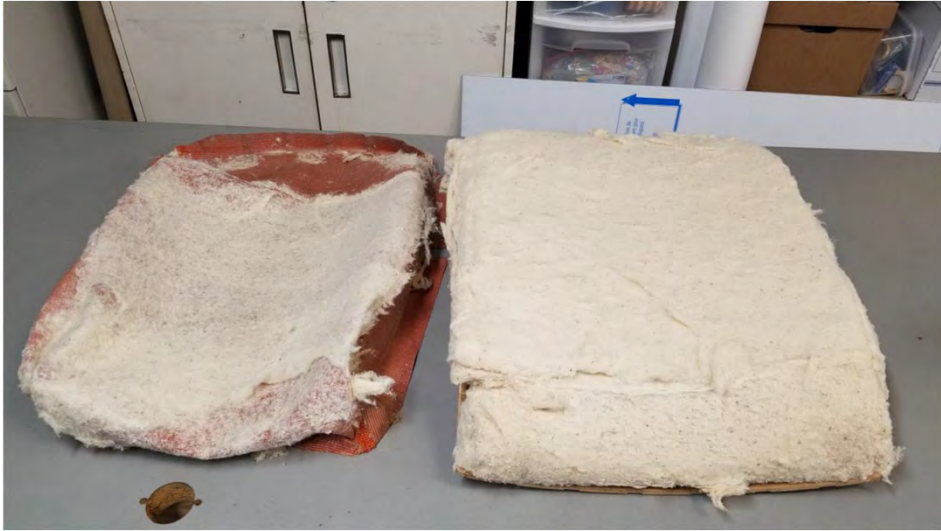
Access Controls



Access Controls - Stanchions

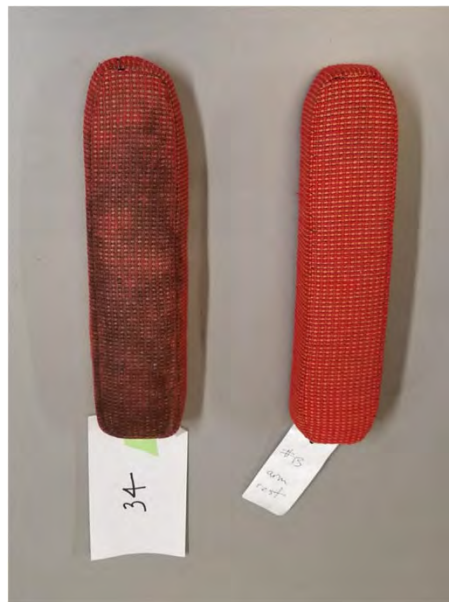


Viewing Room



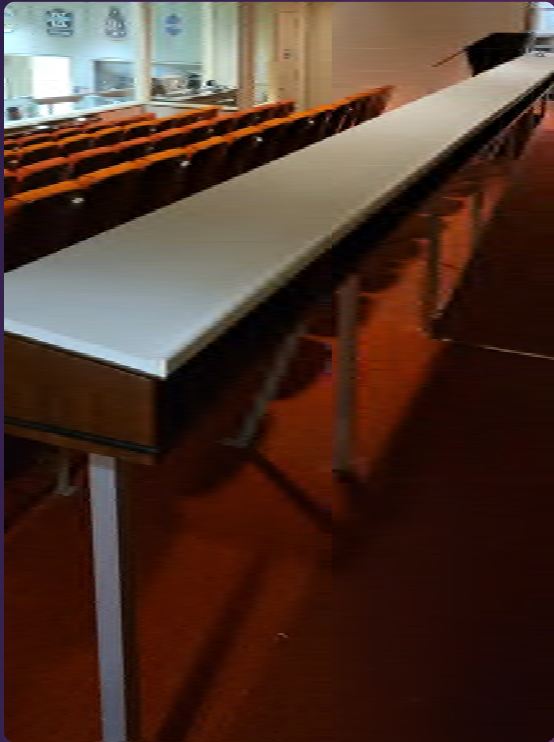
Original Seat Cushions

Before and After
Cleaning



3D Laser Printed
Ash Tray Tops





Restored Seating



Replica
TVs

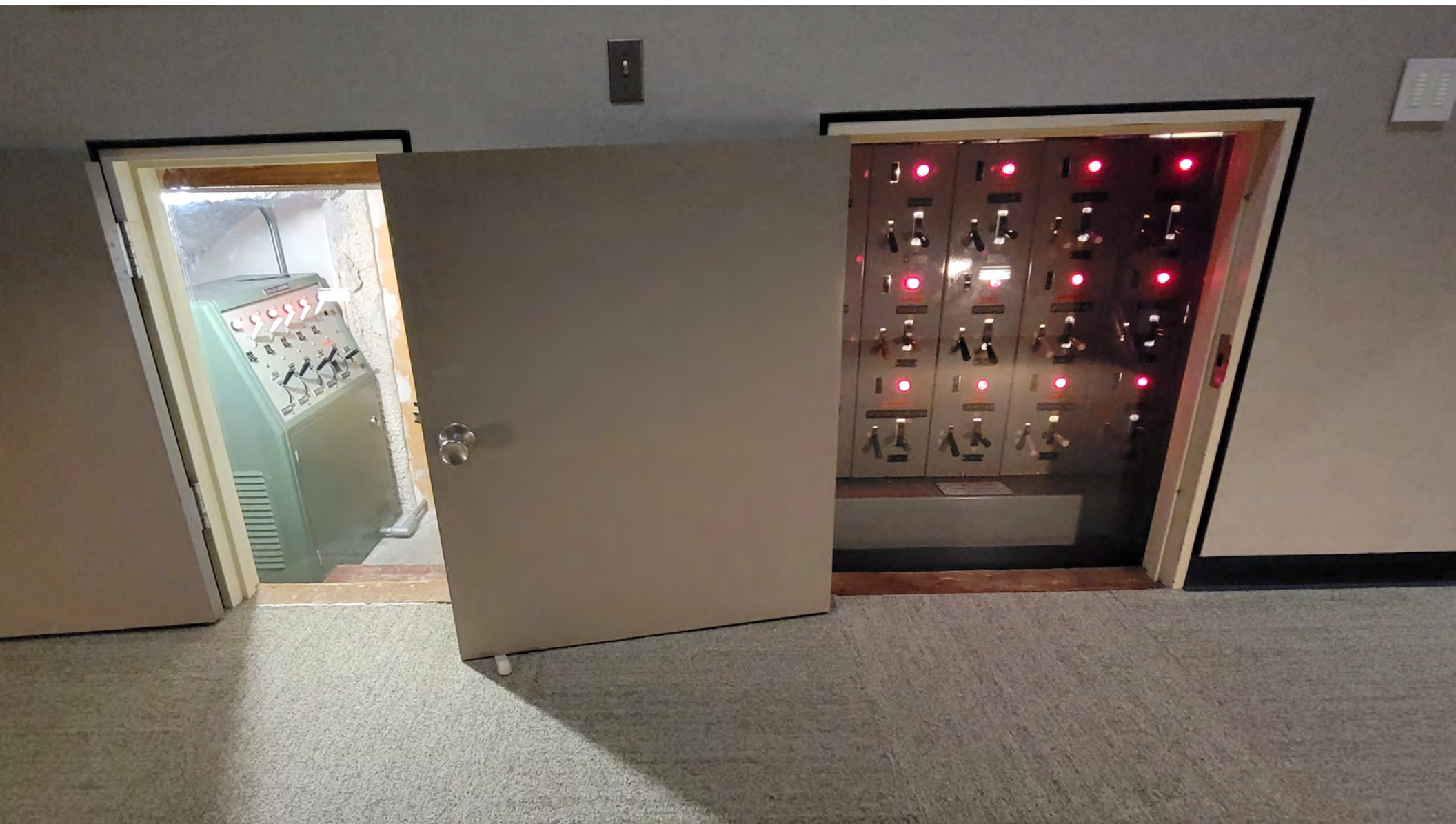


Telephone Booths

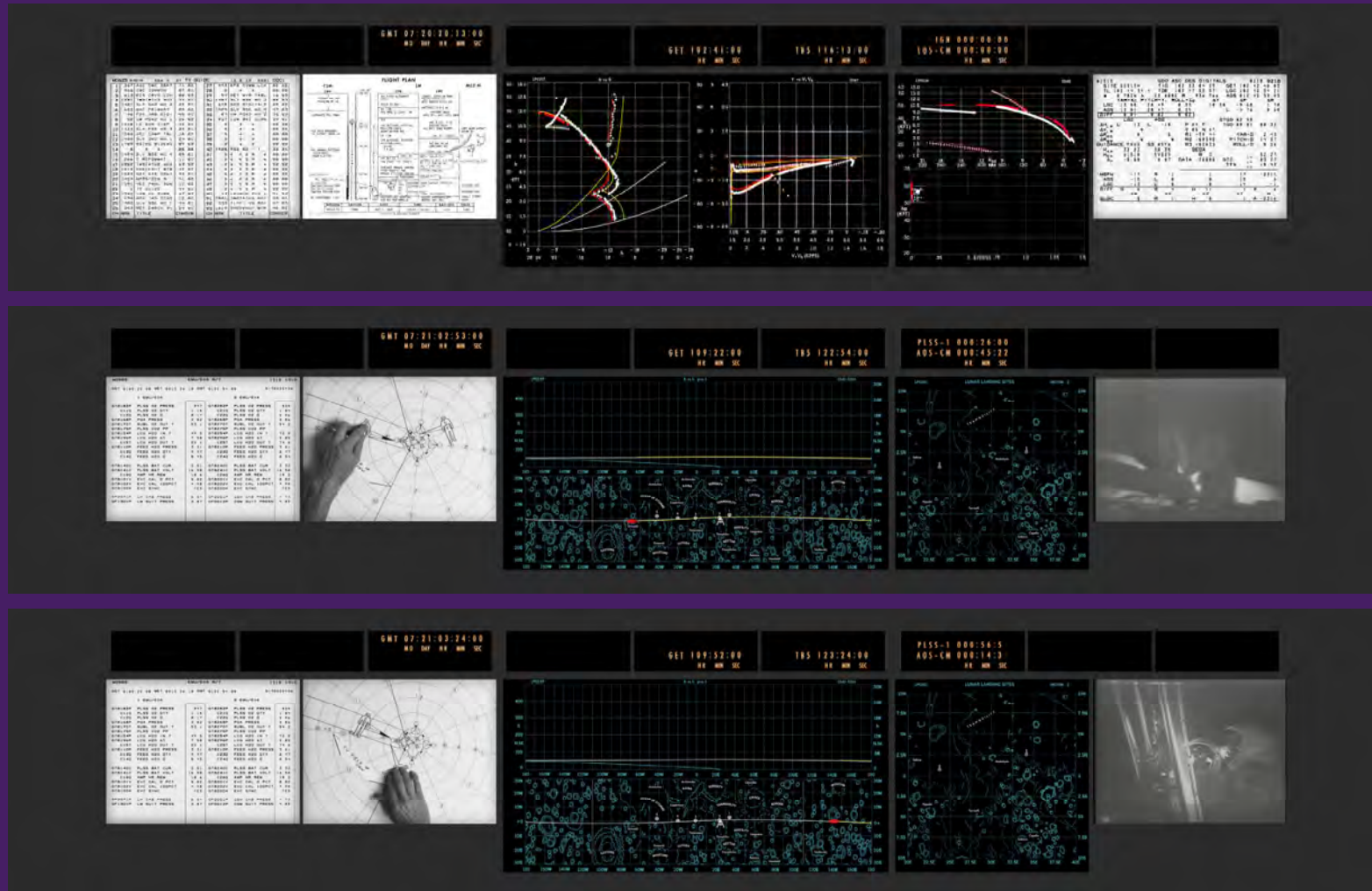


Communications Booths

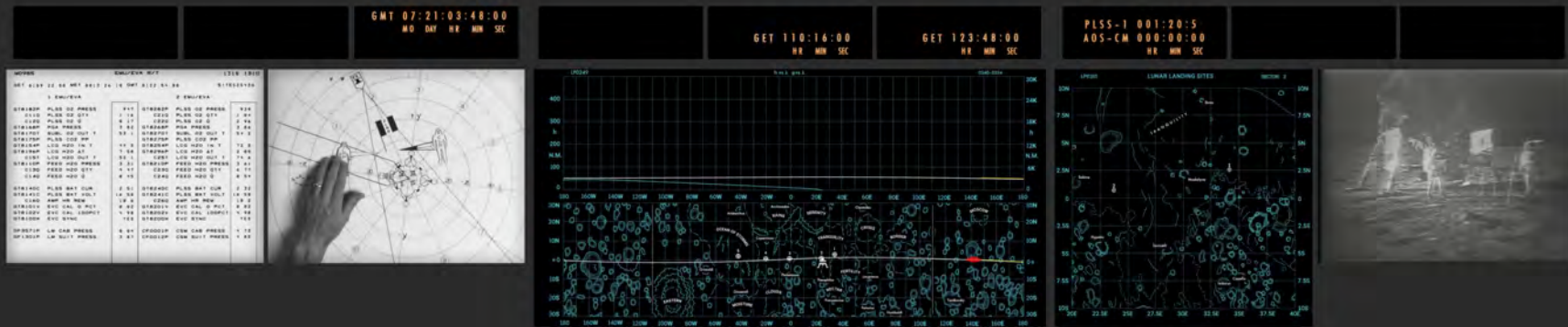




Visitor Experience

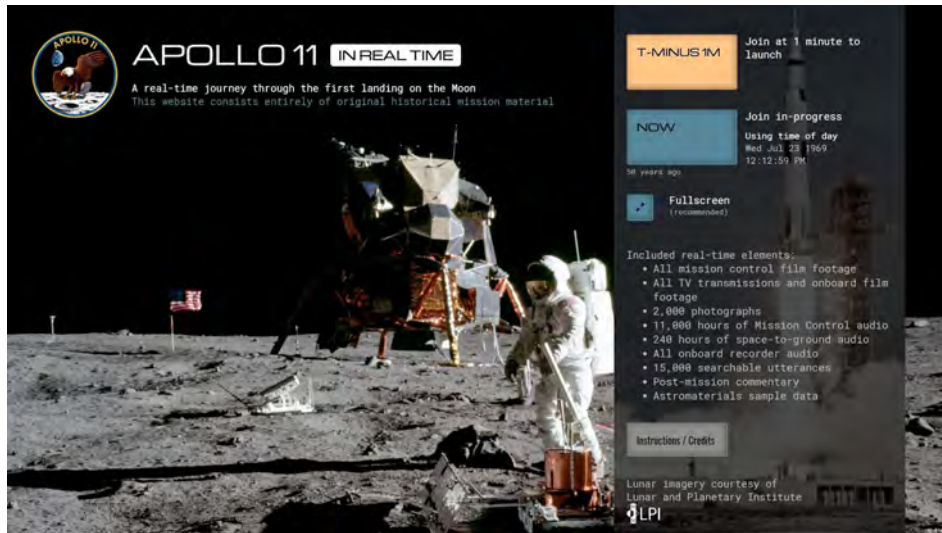


Visitor Experience





Mr.
Hands



Audio



Visitor Experience







Happy Customers!

White Flight Gene Kranz



Apollo 11 Commander Michael Collins



50 Years Later

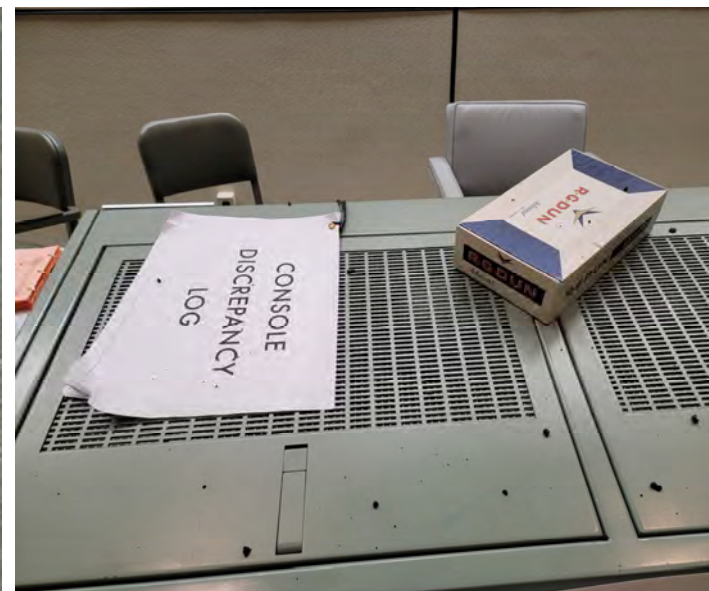




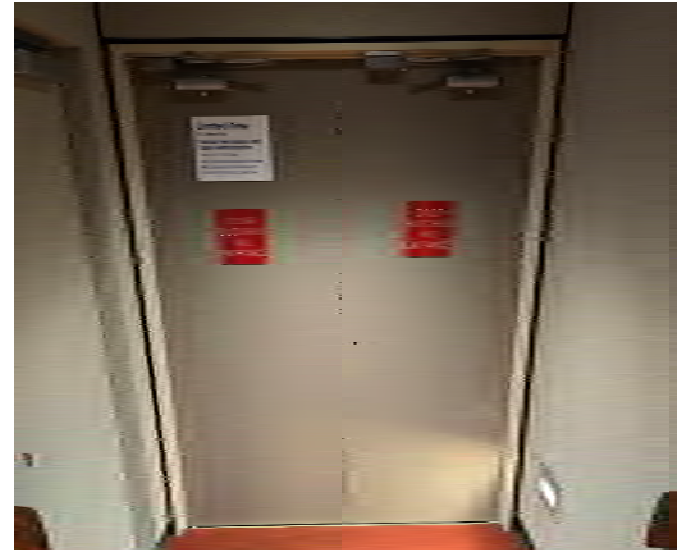
Landing Team - July 20, 2019















Questions?