Mission Operations Voice Enhancement

(MOVE)

PRE-SOLICITATION CONFERENCE

NASA/GODDARD SPACE FLIGHT CENTER
June 29, 2005

Opening Presentation

Agenda

- 8:00 – 8:30 Sign-in
- 8:30 – 9:00 Welcome / Team Introduction — Dan Duffy
  Conference Process — Nipa Shah
- 9:00 – 10:00 The MOVE Project — Al Wylie
  - » System Requirements Highlights and Changes
  - » Statement of Work Highlights and Changes
  - » Schedule
- 10:00 – 10:15 Break
- 10:15 – 12:00 Site Presentations
- 12:00 – 1:00 Lunch
- 1:00 – 2:15 Site Presentations continued
- 2:15 – 3:00 Procurement — Nipa Shah
- 3:00 – 3:15 Break
- 3:15 – 6:00 Open Dialogue/Questions & Answers — Team

Agenda – Site Presentations

- Concepts Common to All MOVE Sites — Al Wylie
- Basic Requirement Sites and Satellites
  - Goddard Space Flight Center (GSFC) — Katie Poole
    - Merritt Island Launch Area (MILA) — Katie Poole
    - White Sands Complex STGT and WSGT — Jon Walker
    - Guam Remote Ground Terminal (GRGT) — Jon Walker
    - Wallops Flight Facility (WFF) — Rock Hilmoe
  - Marshall Space Flight Center (MSFC) — Doug Fooshee
  - Johnson Space Center (JSC) — Al Wylie
    - Mission Control Center Moscow (MCC-M)

Agenda – Site Presentations

- Site Options
  - Jet Propulsion Laboratory (JPL) — Gerhard Stiebel
    - Deep Space Communications Complex (DSCC)
      - Goldstone (GDSCC)
      - Madrid (MDSCC)
      - Canberra (CDSCC)
  - Dryden Flight Research Center (DFRC) — Al Wylie
  - Hangar AE (HAE) — Tuan Doan
    - Vandenberg Air Force Base (VAFB)
  - Kennedy Space Center (KSC) — Tim Springstroh
    - Dryden Shuttle Processing Annex (DSPA)

Welcome

- Admin
- Conference Goals
  - Provide information and clarifications of the following:
    - Draft RFP for MOVE
    - MOVE Procurement
    - Planned MOVE site architectures & Ops concepts
      - Practical alternative to site visits, given the Return to Flight activities
  - Maximize the potential for Offerors to prepare and submit a successful proposal
- Questions during the Conference
  - Vendor questions to be submitted in writing
  - Cards and dropbox available

Key Team Members

SEB Chair:	Gerard Daelemans – GSFC
Contracting Officer:	Nipa Shah – GSFC
COTR/Project Mgr:	Dan Duffy – GSFC
Deputy PM:	Doug Fooshee - MSFC
MOVE Lead Engineer:	William “Al” Wylie - JSC
Presenters:	Katie Poole - GSFC
	Rock Hilmoe - WFF
	Gerhard Stiebel - JPL
	Tim Springstroh - KSC
	Tuan Doan - HAE
	Jon Walker - GSFC

Disclaimer

In the event of any inconsistency between data provided in these charts and the final RFP, the language in the the final RFP, including any amendments, will govern.

The MOVE Project

Al Wylie

Overview

- NASA requires a commercial product provider that can fully perform ALL of the following:
  - Produce the equipment that meets the requirements of the System Requirements Document (SRD)
  - Comply with the requirements of the Statement of Work (SOW)
  - Provide development effort for required modifications to COTS hardware and software
  - Support large, multi-center deliveries according to NASA's implementation schedule
  - Provide ongoing support for maintenance, expansion, and technology insertion
  - Provide logistics support for depot-level sparing of Line Replaceable Units (to the extent required to meet LRU turnaround requirements)

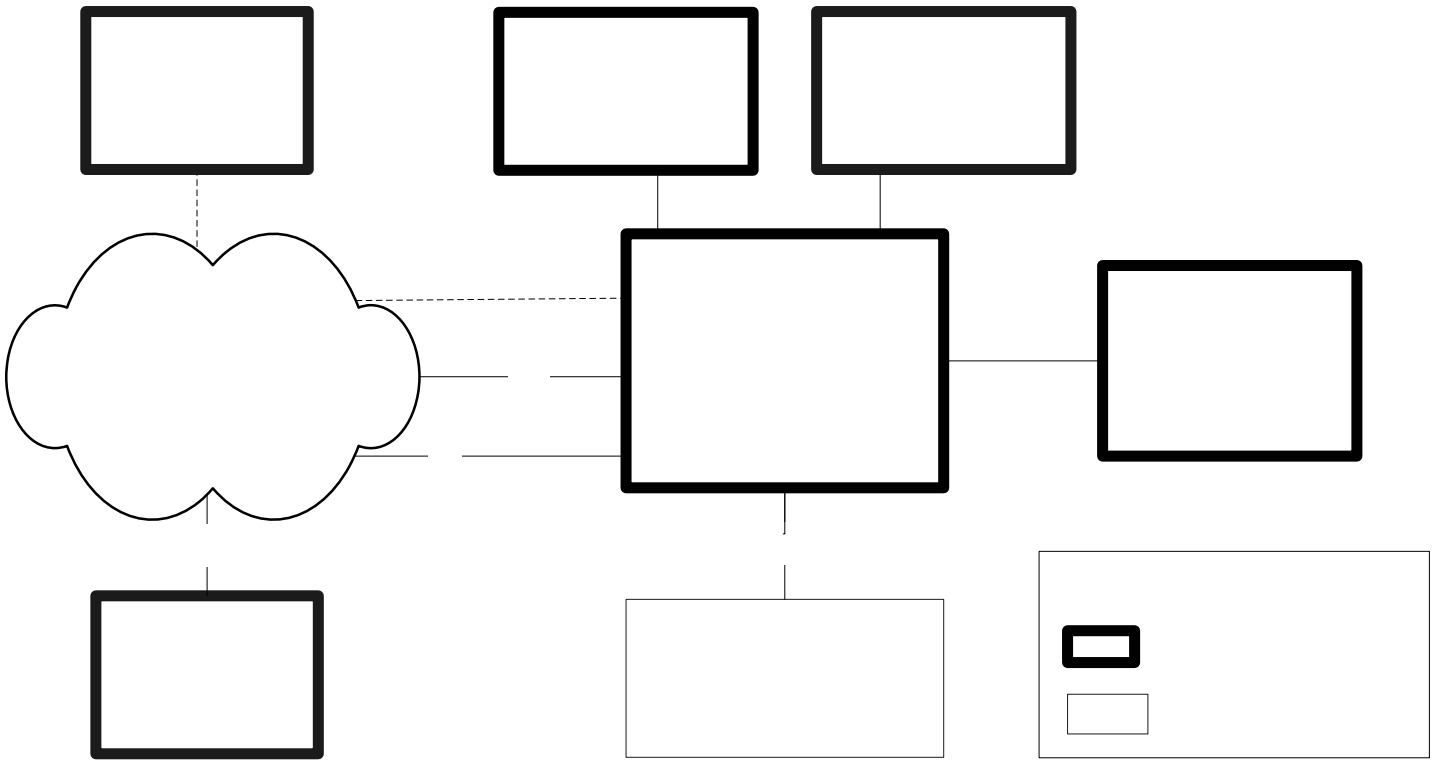
System Requirements & Changes

- NASA requires voice processing through a voice switch architecture as described in the SRD to meet critical requirements for human spaceflight.
- Mission Voice has a significant processing requirement.
  - Up to 1600 simultaneous conferences with no degradation
  - Many conferences have hundreds of participants
- Mission Voice requires exceptional Reliability and Availability.
  - Downtime Intolerant - *"Failure is not an Option"*
  - Fault string must be independent of other mission systems

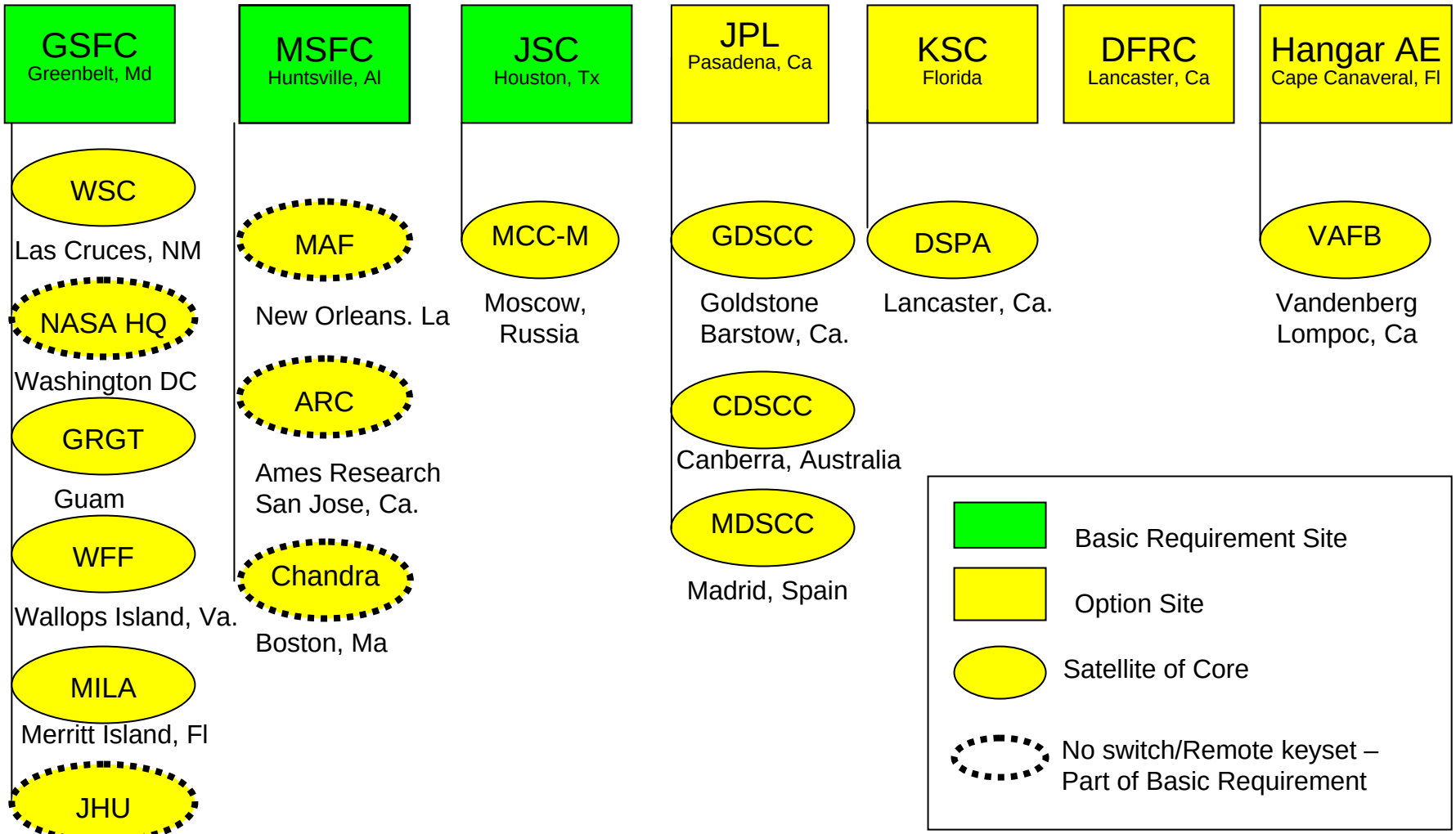
System Requirements & Changes

- Mission Voice requires exceptional audio quality
  - The audio quality of MOVE equipment is defined by specified DRT and DAM scores
  - Certain components, specifically T1 ports and at least one version of a Type D keyset, will require DRT and DAM testing for acceptance
- Mission Voice is subject to stringent security requirements.
  - Security requirements have been expanded to assure the Government that MOVE systems will allow user compliance with NASA security guidelines and regulations

Generic Site Architecture



MOVE Locations



- Satellite locations have management and/or a funding relationship with Core sites

System Requirements & Changes

- Some locations have been consolidated as remotes
  - All of the MSFC satellite locations
  - NASA HQ and JHU satellites of GSFC
- Switch –
  - Analog interfaces to the switch have been removed
  - Phantom power requirements have been deleted
  - Drive distance to keysets reduced from 3km to 2km
  - Delay criteria
  - AGC added
- LSA Consoles –
  - Deleted virtual console requirement
  - RMA requirement added
  - Deleted *simultaneous* support of multiple switches

System Requirements & Changes

- Keysets –
  - Had been as many as 10 and as few as 4
  - RMA requirement added
  - Now 5 keyset types; only 3 needed for basic requirement
    - The Antenna MJB, unique to JPL, has been removed from the MOVE requirements
    - Type A is an outdoor keyset, used only by KSC, and will be required only if KSC exercises its contract option
    - Type B is a hazardous environment (Class 1 Div 2) keyset, used only by KSC, and will be required only if KSC exercises its contract option
    - Type C is a virtual keyset; will only require VoIP
    - Type D keysets remain the “workhorse” keyset; The requirement for multiple switch interfaces has been simplified
    - The Type E replaces the “Type D 2U” keyset; requirements have not changed
    - Deleted *simultaneous* requirement from dual-home function
- Safety
  - Safety requirements have been added
- Security
  - Security requirements have been expanded

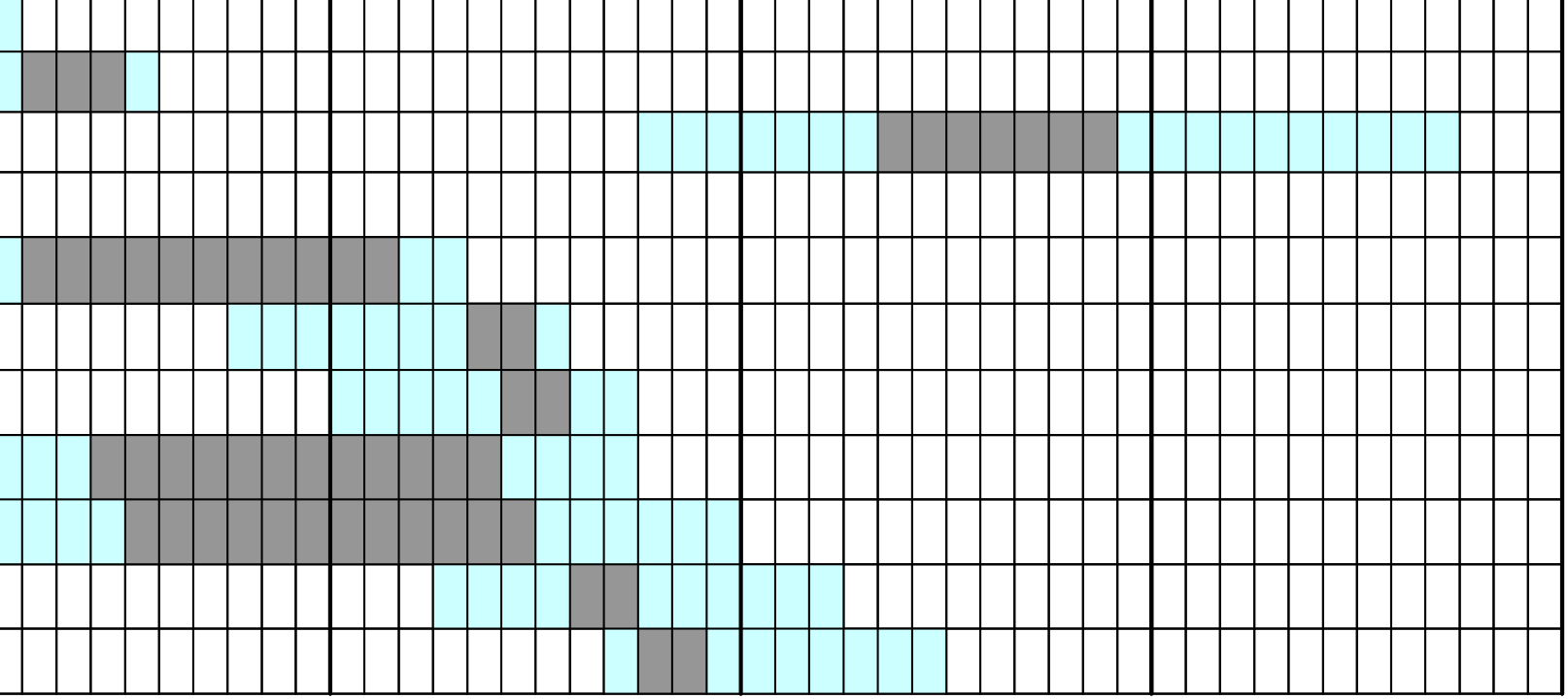
SOW Highlights and Changes

- The Statement of Work includes in its scope
  - Production and delivery of voice switches, Local Site Administrator (LSA) consoles and keysets
  - Switch and LSA console installation
  - Engineering Support
    - Four skill levels of support have been identified
  - Development support for COTS modifications to meet requirements
  - Maintenance
  - Sparing
    - The local spares, originally to be ordered by each site in accordance with Offeror recommendations, will be provided by the successful MOVE Offeror
  - Training
    - NASA'a intent for user training includes a "train the trainer" concept
    - Provisions for supporting this concept for user training was added to the User Training definition

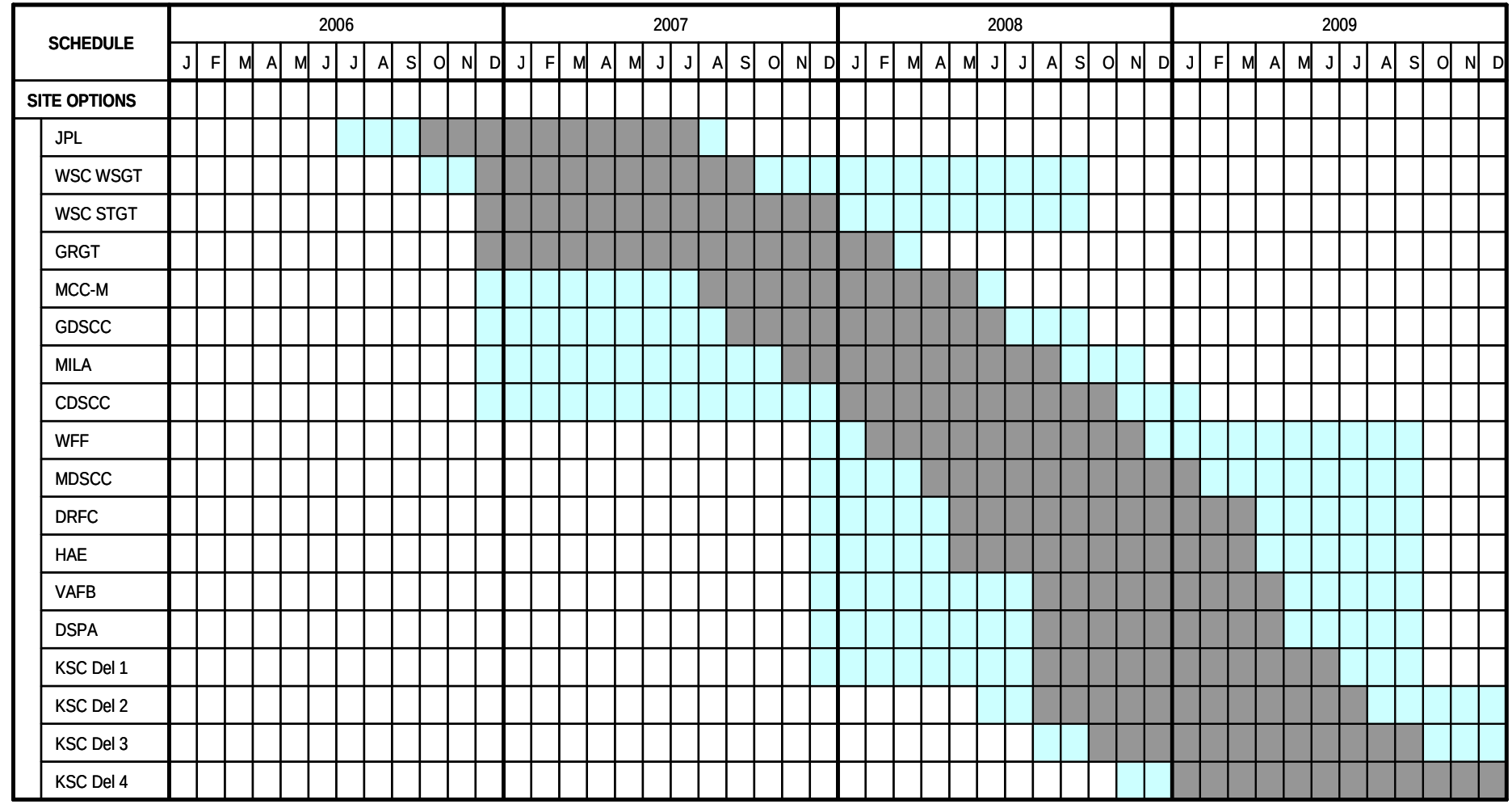
Schedule Highlights

- The schedule reflects NASA's current intent and schedule constraints
- The No-Earlier-Than and No-Later-Than dates are hard constraints
  - Funding and resource availability factor into the NET dates
  - Critical Need is the primary determinant for the NLT dates
- The target dates are considered optimal but allow flexibility to resolve production and delivery issues
- The schedule is aggressive
  - All Basic Requirement sites must be completed in less than 24 months
  - All installations must be completed within five years

Project and Basic Schedule



Site Options Schedule



Basic Requirement Presentations

Al Wylie

Site Presentations

- The following presentations describe specific details about each MOVE location
  - Ops Concept
  - Architecture
  - Installation information
  - Site photos
- Quantities listed in the presentations are for reference only. All “official” quantities for system sizing are contained in the SRD and RFP Deliverables tables
- Information common to all MOVE locations will be presented ahead of the site-specific information

Site Presentations

- The presentations are ordered by logical grouping, and not by contract or delivery schedule

– Overview	Al Wylie
– Goddard Space Flight Center (GSFC)	Katie Poole
• White Sands Complex (WSGT, STGT)	Jon Walker
• Guam Remote Ground Terminal (GRGT)	Jon Walker
• Wallops Flight Facility (WFF)	Rock Hilmoe
• Merritt Island Launch Annex (MILA)	Katie Poole
– Marshall Space Flight Center (MSFC)	Doug Fooshee
– Johnson space Center (JSC)	Al Wylie
• MCC-Moscow	
– Jet Propulsion Laboratory (JPL)	Gerhard Stiebel
• Goldstone DSCC	
• Madrid DSCC	
• Canberra DSCC	
– Dryden	Al Wylie
– Hangar AE	Tuan Doan
– Vandenberg Air Force Base (VAFB)	Tuan Doan
– Kennedy Space Center (KSC)	Tim Springstroh
• Dryden Shuttle Processing Area	

MOVE Site Overview

- Interfaces
  - Analog interfaces to the MOVE systems will be converted to T1 using NASA-provided channel banks
- LSA Connectivity
  - All MOVE locations will use multiple LSA consoles to manage one or more switch subsystems
- LSA Operations
  - Establish voice conferences
  - Add/remove users, control user privileges
  - Configure keysets for conference appearances, as permitted by access lists
  - Assign user login names and passwords
  - Maintain all system databases
  - Resolve System resource conflicts
  - Resolve System alarms
  - LSA operator will make occasional real time additions to existing conferences to satisfy “I need it right now” requests
- Keyset Connectivity
  - All keysets will utilize pre-defined user profiles, identified by user login, to provide the keyset configuration and user privileges
  - Certain keysets will be remotely logged in by LSAs
- Availability
  - All MOVE systems will be in continuous operation 24 hours/day, 7 days/week, 52 weeks/year with the exception of scheduled outages

MOVE Installation Information

- Power installed by Site Facilities
- Cable access
  - External interfaces under floor or from the top, as specified for each site
  - Routed through cable trays
  - Inter-cabinet system cabling is permitted where necessary, if cabinets are bolted together without side panels
- Floor tile cutouts
  - Done by Site Facilities
- Installation details
  - Floorspace required, power connectors, cutout dimensions, air handling or other facility requirements need to be provided by System Architecture Review (SAR)

Special Considerations

Restricted Talk Conferences (RTC)

- Provides support for conferences that require “two-tier” control for talk access
  - Examples: Controlled talk access for Shuttle Air-to-Ground and Station Space-to-Ground conferences for communication to/from Shuttle and Station crew members
- Tier One
  - Keyset user access to any RTC is defined by user profile privilege (i.e., must have RTC access defined in their user profile)
  - T1 DS0 connection to an RTC must be done by privileged LSA (i.e., LSA profile includes RTC access)
- Tier Two
  - Privileged LSA must manually enable any user or T1 DS0 for talk access on a RTC
    - Inhibited keyset user selecting T/L for RTC will remain inhibited until LSA enables the user for RTC T/L access
    - Only a privileged LSA can enable a keyset user or connect & enable a T1 DS0 port for T/L access on an RTC
    - Keyset user login with RTC access is always initiated in talk inhibited mode

Restricted Talk Conferences (cont'd)

- Only privileged LSA has access to RTC status:
  - List of logged in users with RTC access and T1 DS0s connected to any RTC
  - Enabled/Inhibited talk status for each RTC user and T1 DS0 port
  - Push-To-Talk (PTT) status for active RTC users
- User log out and/or T1 DS0 disconnect from RTC results in resetting talk access to inhibited (i.e., requires manual LSA enable for subsequent access)

Keyset Monitoring

- Provide the capability to route all audio from a specific keyset to a different switch port (T1 DS0 level) which is then connected to a voice recorder input DS0 port. (ref. SRD, Keyset Monitoring Function)
- LSA has capability to define up to 150 Keyset Record definitions: specific keysets (physical keyset ID) and an associated output switch port (T1 DS0)
  - All audio at the keyset (incoming & outgoing) is multiplexed and distributed out on the associated switch port for recording purposes
  - Volume adjustments made at keyset are automatically carried through to the output port
- LSA status displays all keyset monitor definitions and activity status

Alarm Interfaces

- Critical Audible Alarm
  - MSFC HOSC/POIC MOVE Enhancement
  - May be utilized at other MOVE locations
    - Currently Mission Workstations provide the users with an audible and visual indicator via the workstation only.
    - Type D Keysets are required to have an external audio input jack.
    - The Input Jack will connect directly to the Mission Workstations Audio Out of the Sound Boards.
    - This will extend the Audible Critical Alarm directly to the users headset.

Special Considerations (cont'd)

Alarm Interfaces

- Serial Audible Alarm
  - Required at JSC for compatibility with current audible alarm capability
  - May be utilized at other MOVE locations
    - Utilizes a hardwired, custom interface using RS-232 protocol to command the keyset, via an OPS workstation, to generate an audible alarm to the headsets/handsets and/or speakers
    - Specific interface is defined in JSC-13365, ICD provided in the RFP
  - Plans are to replace this interface (after initial MOVE implementation) with strictly an audio interface from the OPS workstation to the MOVE keyset (i.e., Critical Audible Alarm)

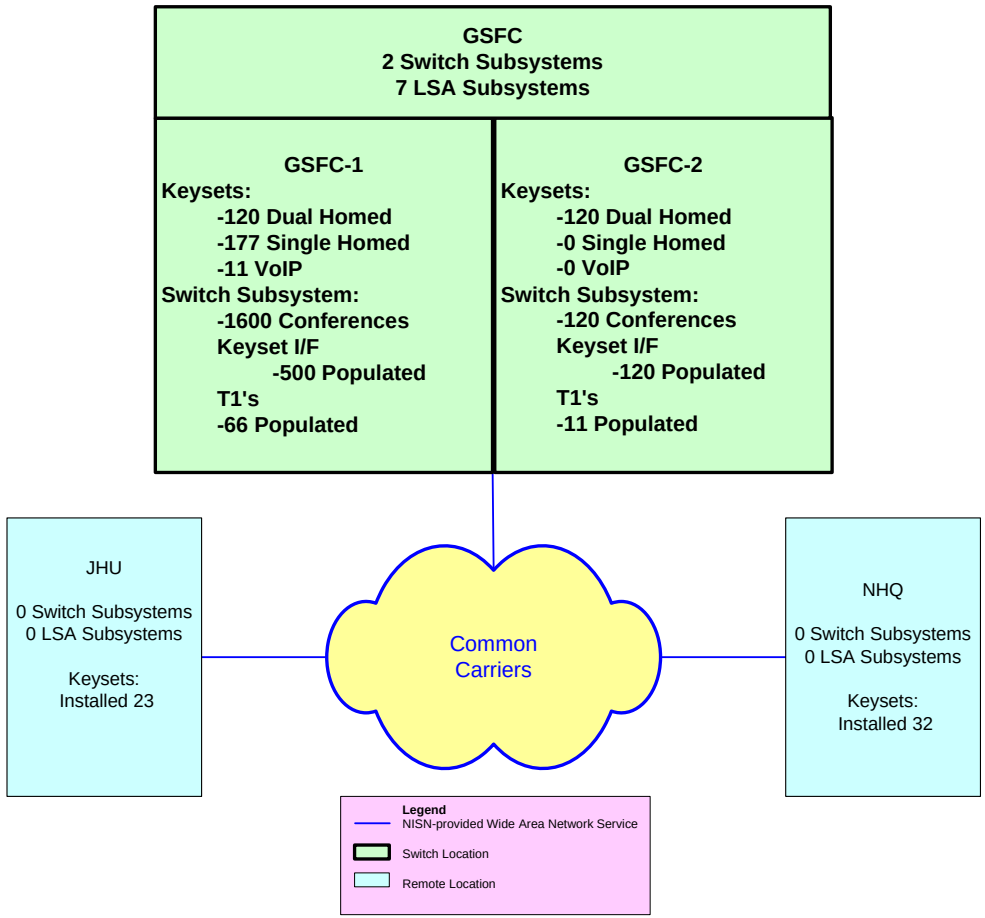
Goddard Space Flight Center (GSFC)

Katie Poole

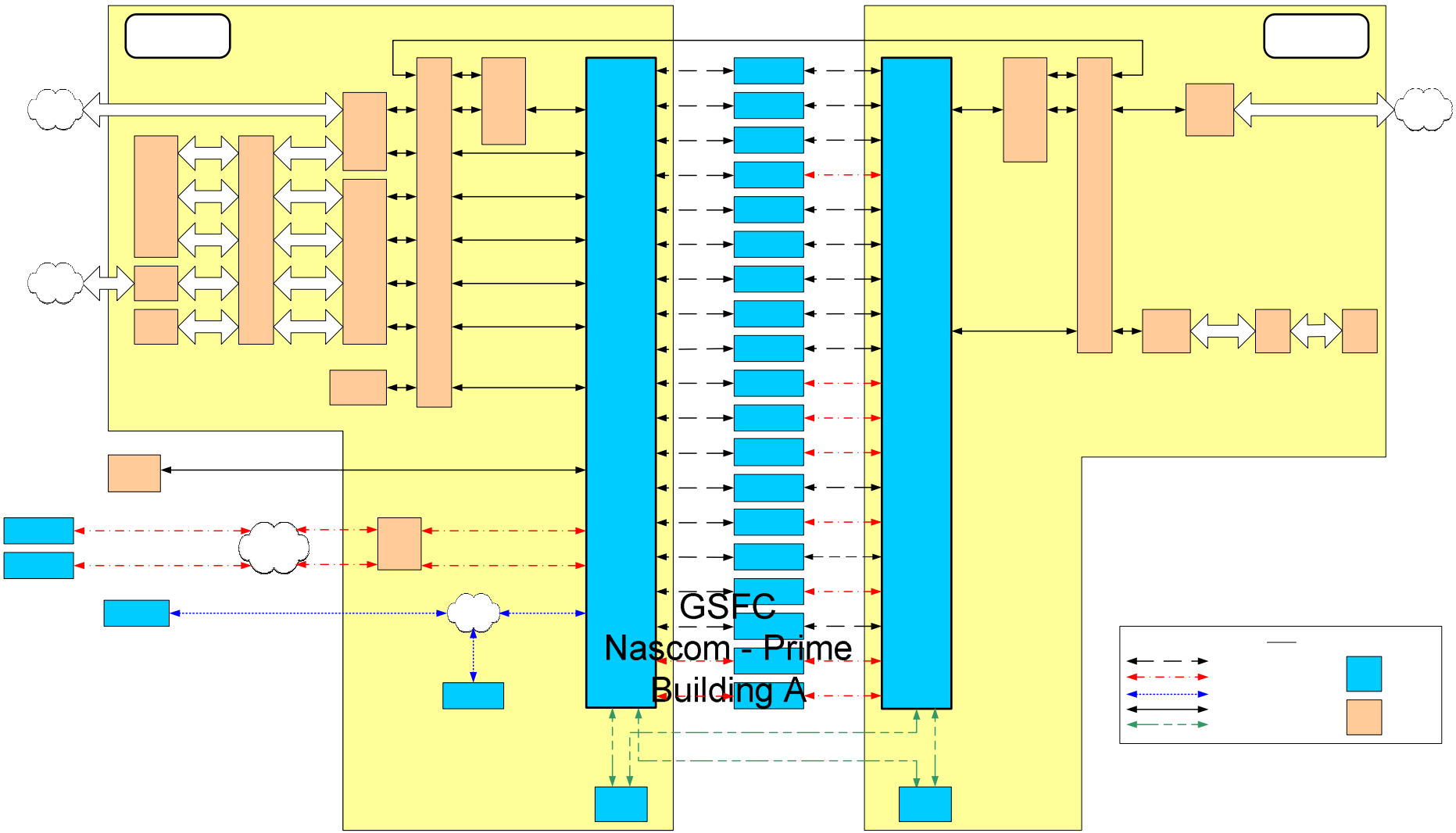
GSFC Overview

- Goddard provides communications support for all of NASA's Space and Earth missions, Shuttle payloads and various other manned and unmanned missions.

MOVE-GSFC Architecture

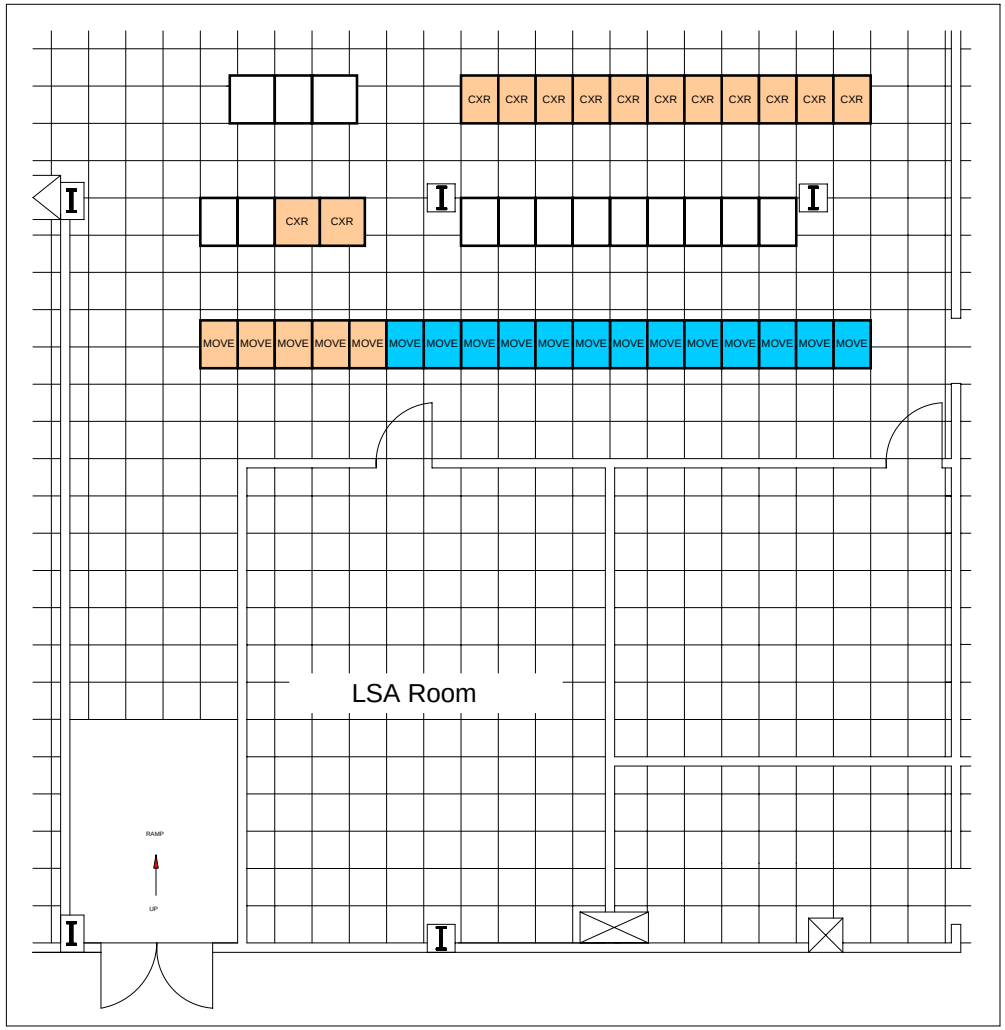


MOVE-GSFC Architecture

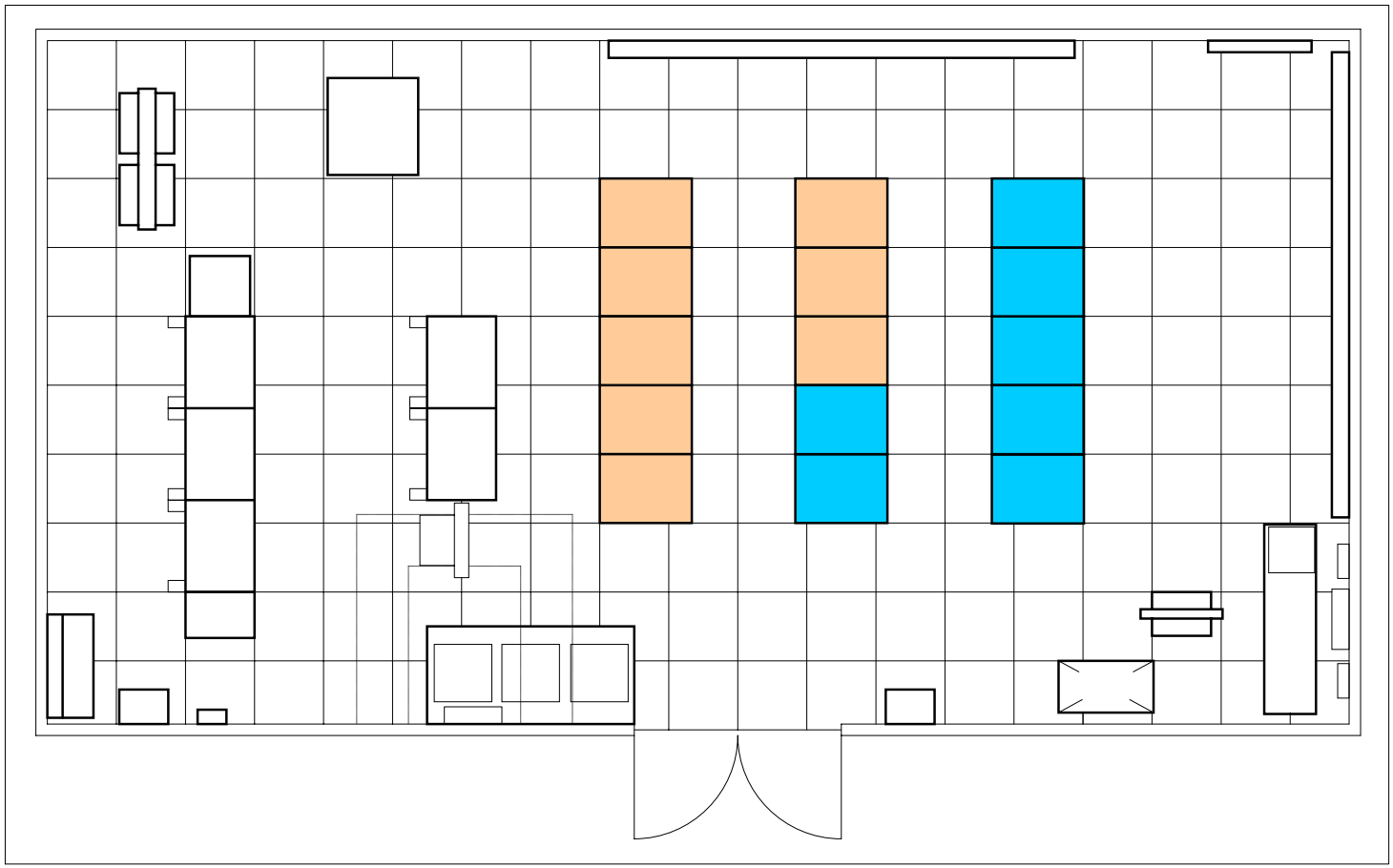


GSFC-1 Floor Plan

- External interfaces traverse under floor, routed through cable trays
- Inter-cabinet system cabling is permitted where necessary, if cabinets are bolted together without side panels



GSFC-2 Floor Plan



•External interfaces traverse under floor

GSFC Rackmount

GSFC Rackmount in Desktop Enclosure

GSFC Desktop Style 1

GSFC Desktop Style 2

White Sands Complex

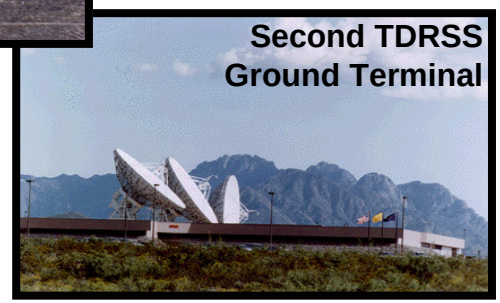
White Sands Ground Terminal (WSGT)
and
Second TDRSS Ground Terminal (STGT)

Jon Walker

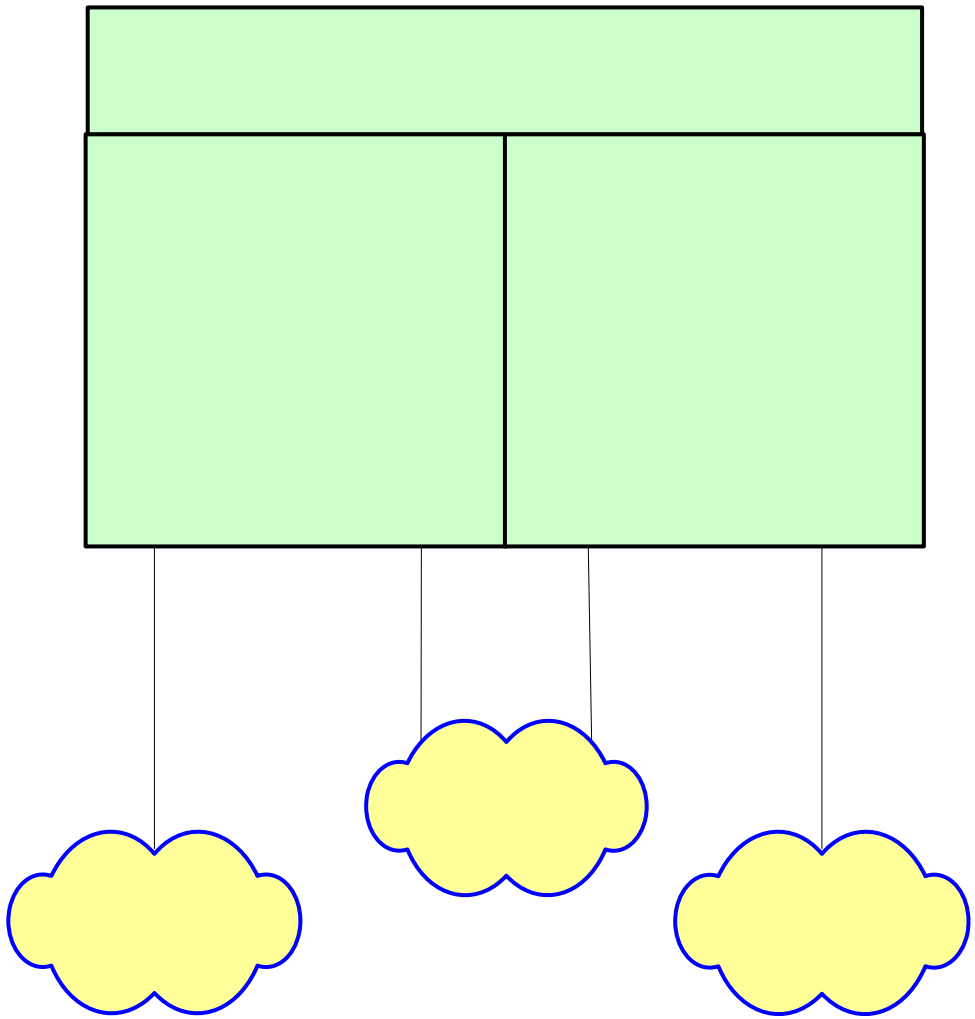
Space and Ground Segment Overview

- The Space Network is comprised of a Space Segment and a Ground Segment
  - The Space Segment
    - 5 operational TDRS spacecraft
    - 3 in storage
    - 1 residual (dedicated to the National Science Foundation)
  - The Ground Segment
    - White Sands Complex (WSC), NM
      - White Sands Ground Terminal
        - » 2 Space to Ground Link Terminals (SGLTs)
      - Second TDRSS Ground Terminal
        - » 3 SGLTs
      - Data Services Management Center
        - » Scheduling
        - » Monitor & Control
    - Guam Remote Ground Terminal
      - 1 SGLT

Tracking and Data Relay Satellite (TDRS)



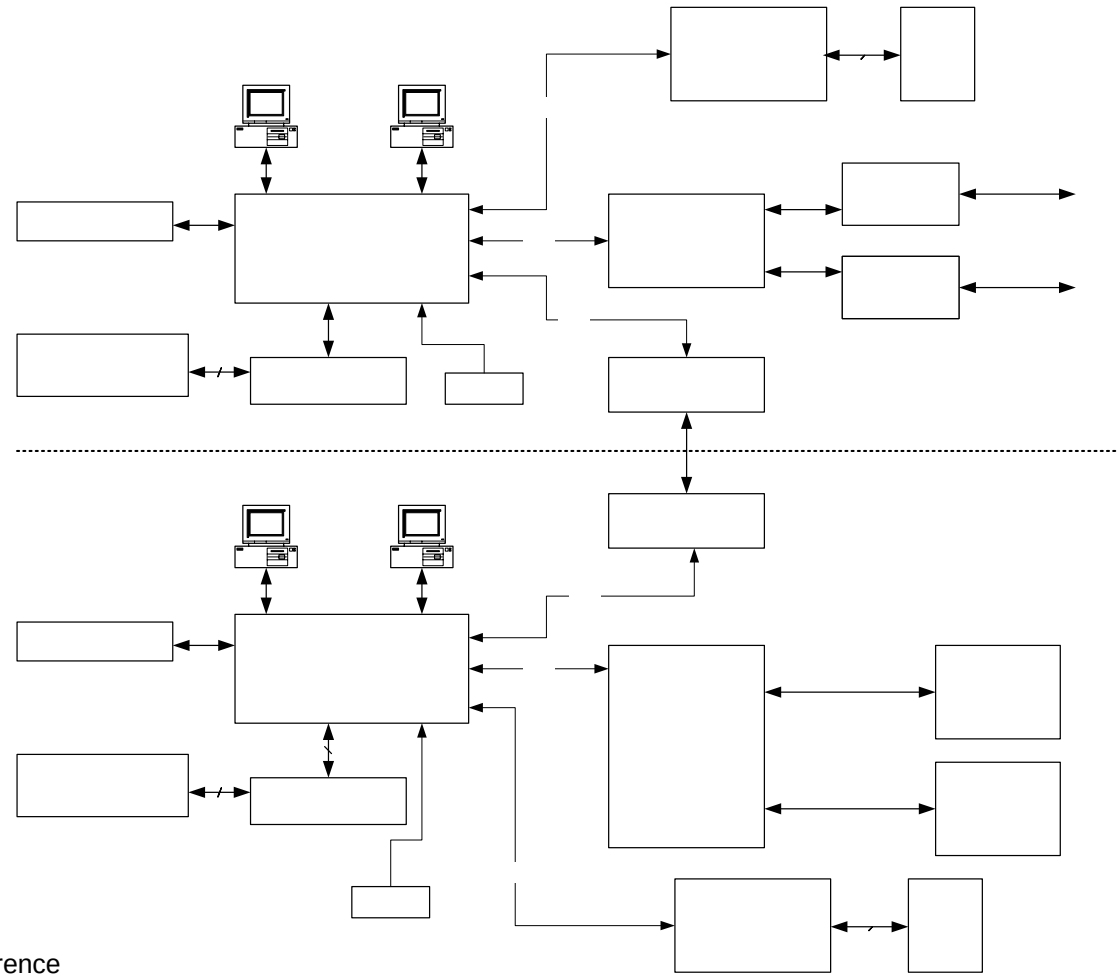
WSC Architecture



WSC Architecture

STGT LSA configures only STGT switch.

WSGT LSA configures only WSGT Switch



STGT/WSGT Floorplan

WSC 40 Channel Desktop Keyset

WSC 40 Channel Rackmount Keyset

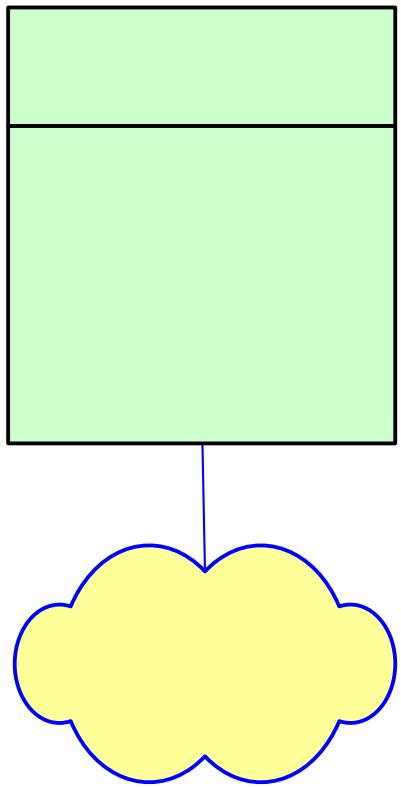
WSC 3 Channel Rackmount Keyset

WSC 8 Channel Rackmount Keyset

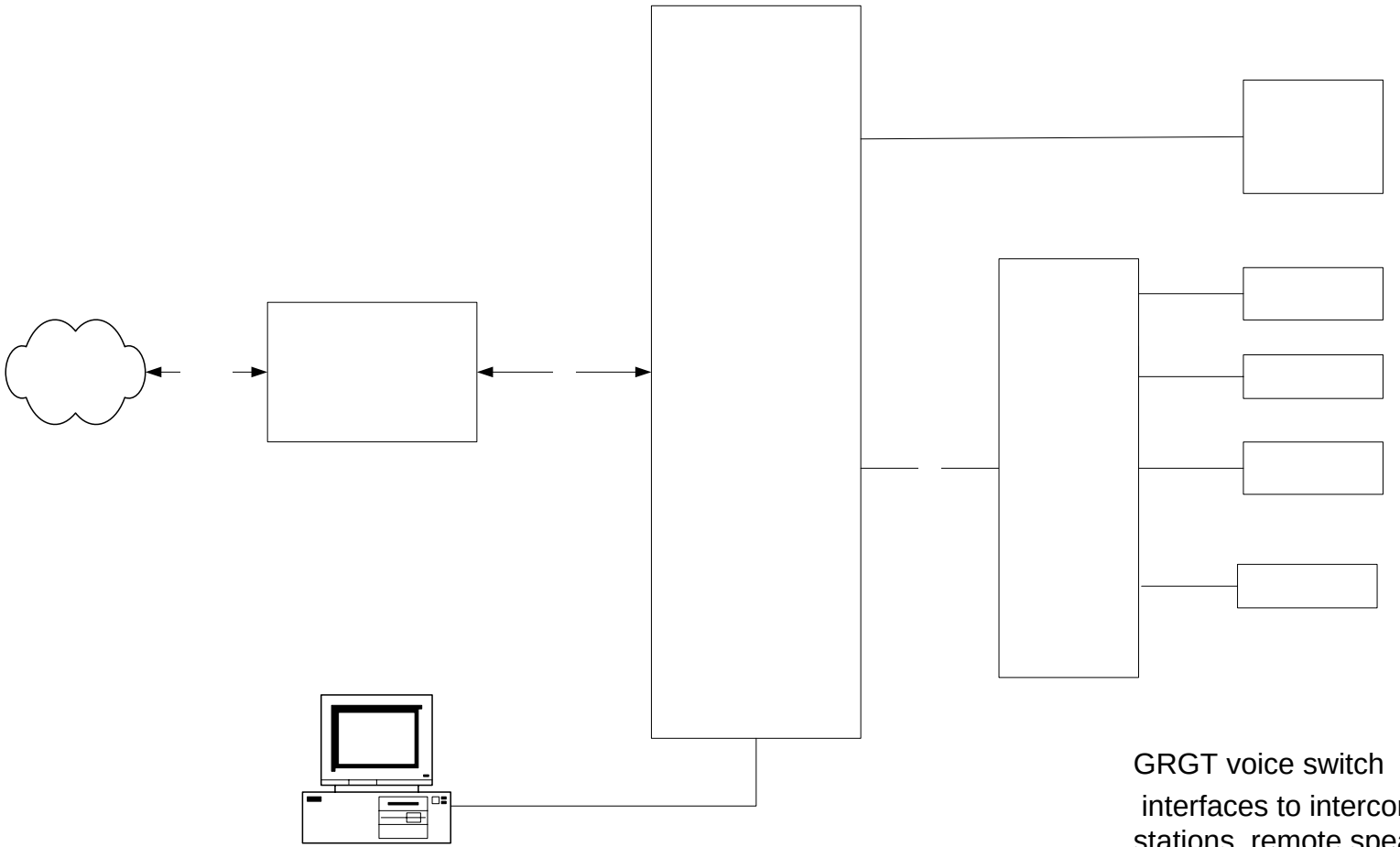
Guam Remote Ground Terminal (GRGT)

Jon Walker

GRGT Architecture



GRGT Architecture



GRGT voice switch

interfaces to intercom stations, remote speakers, paging system and carrier interface via channel bank

GRGT Operations Concept

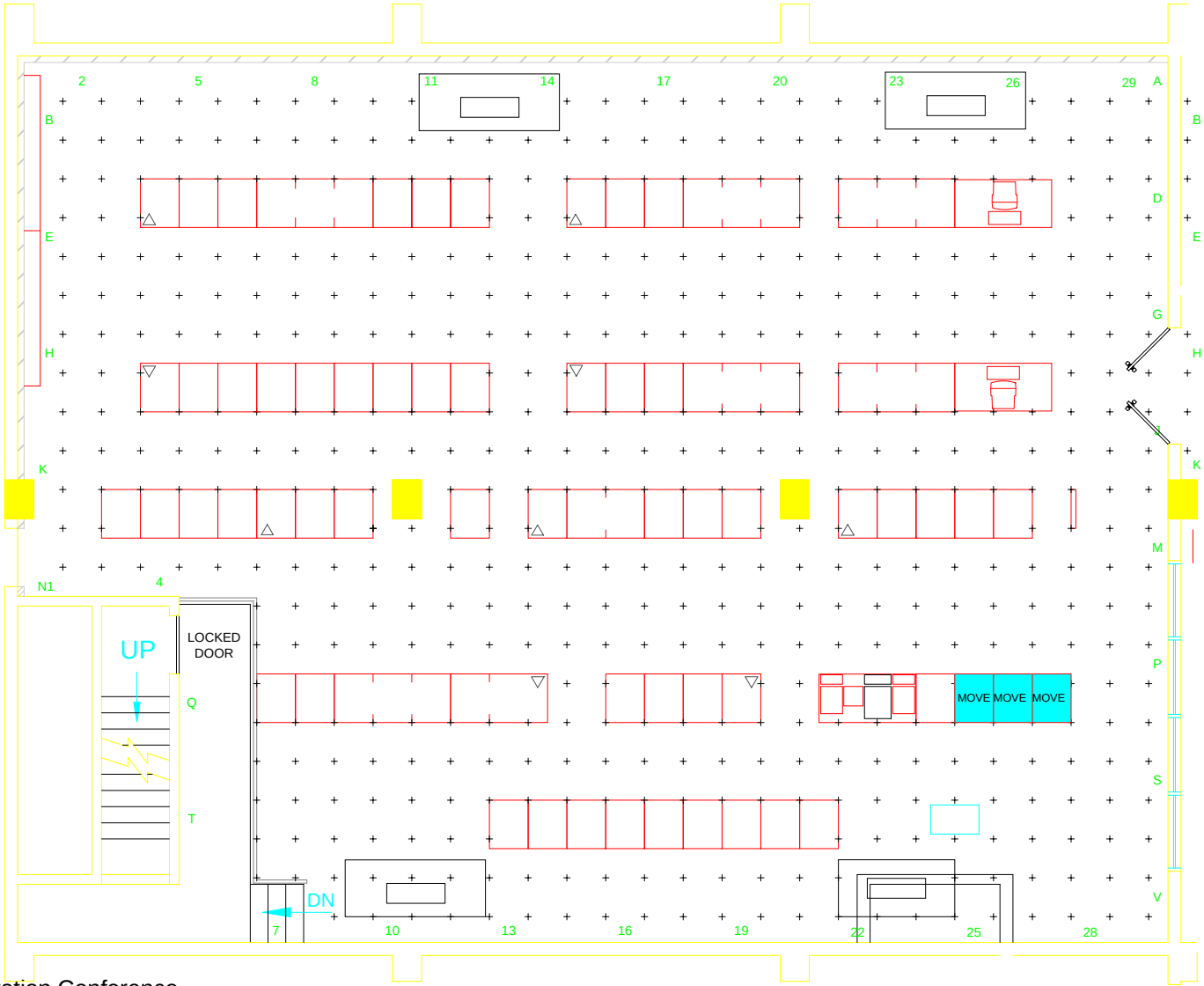
Operations Concept

- GRGT voice switch interfaces to intercom stations, remote speakers, paging system and carrier interface via channel bank
- Utilize upgraded 4-wire analog circuits to GRGT.

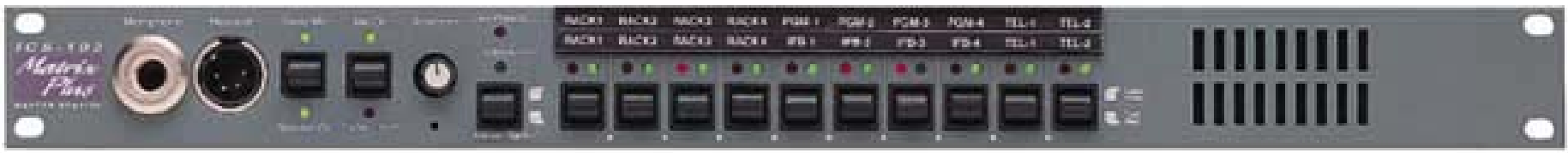
Special Considerations

- All cabling to the switches will be from the bottom of the racks
- Seismic boltdowns required for the racks; to be performed by site facilities

GRGT Floor Plan



GRGT 10 Channel Rackmount Keyset



GRGT 2 Channel Keysets

Wallops Flight Facility (WFF)

Rock Hilmoe

Wallops Overview

- Wallops is NASA's principal facility and national resource for providing low-cost integration, launch and operation of suborbital and small orbital payloads that support space-based research focused on Earth and its environments.

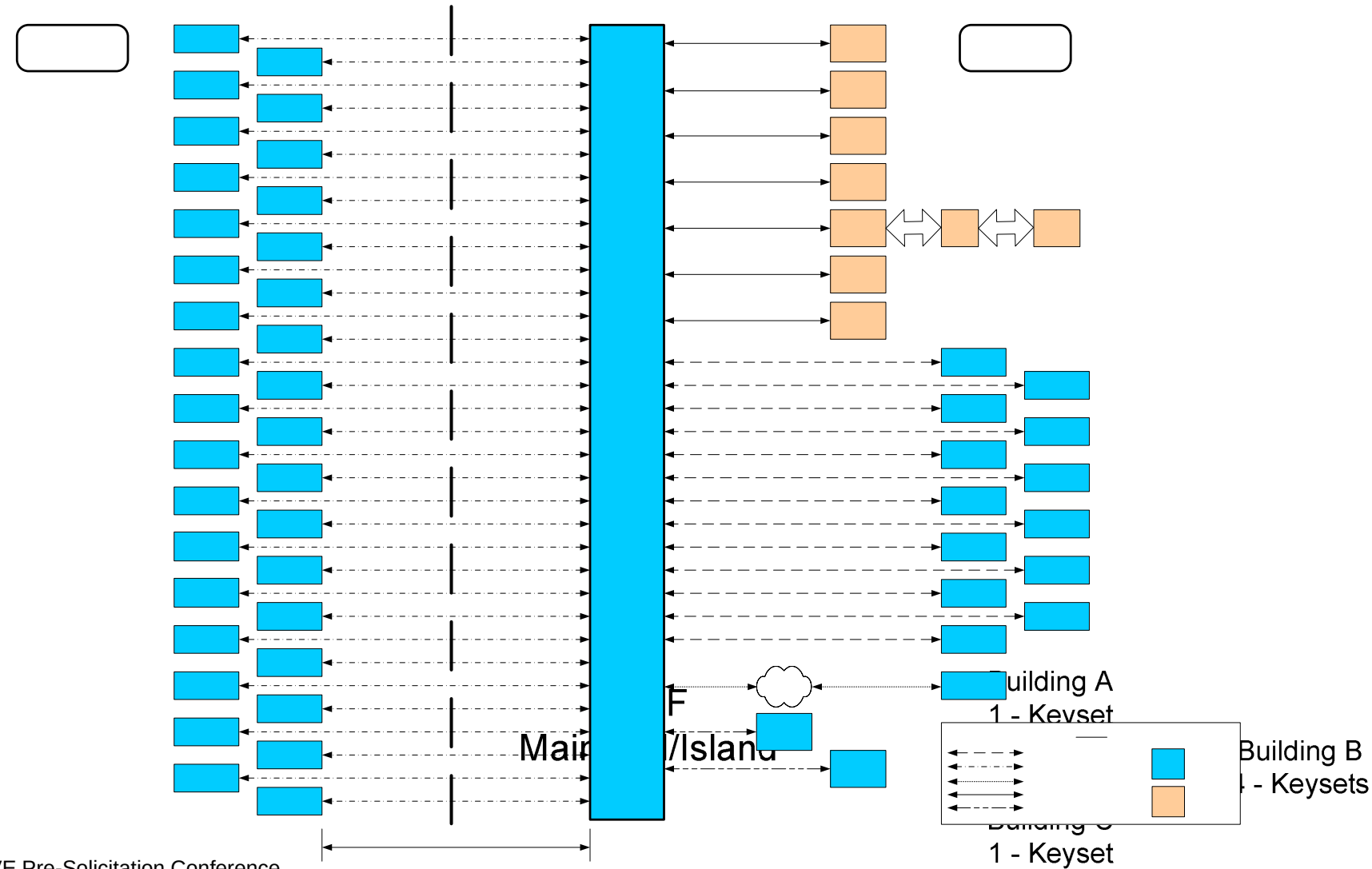
WFF Installation

- MOVE Switch location
  - Not a Raised Floor area
  - Cable ingress/egress from top of cabinets
- Island and Mainland keysets are remote interfaces to MOVE switch
  - Minimize cable plant utilization and the need for renovation

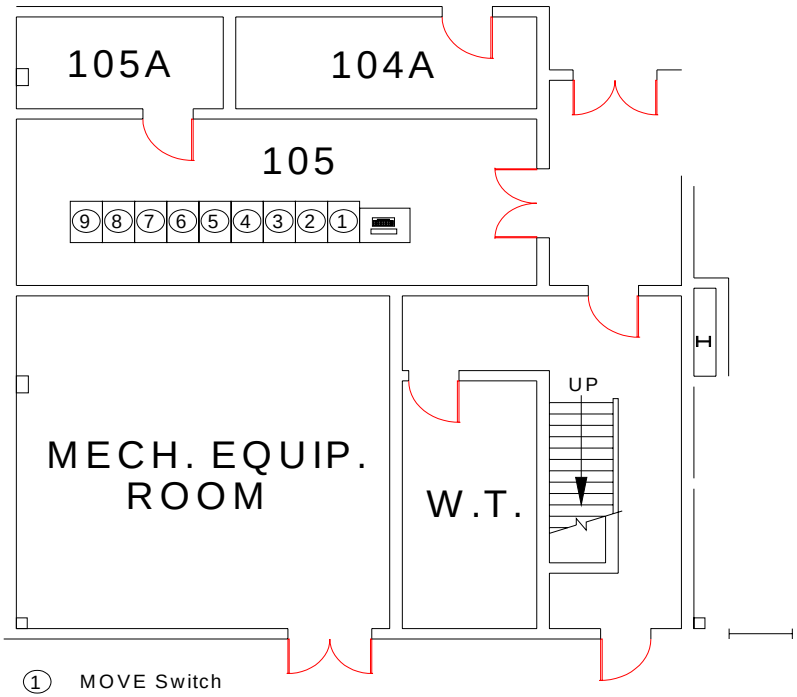
WFF Ops Concept

- LSA consoles
  - One at MOVE switch location
    - Normal operations and administration
  - One in OTS
    - Orbital operation and administration
  - One in Nascom
    - Range operations and administration
  - Reconfiguration are minimal: Typically with configuration changes/new mission only

WFF Architecture

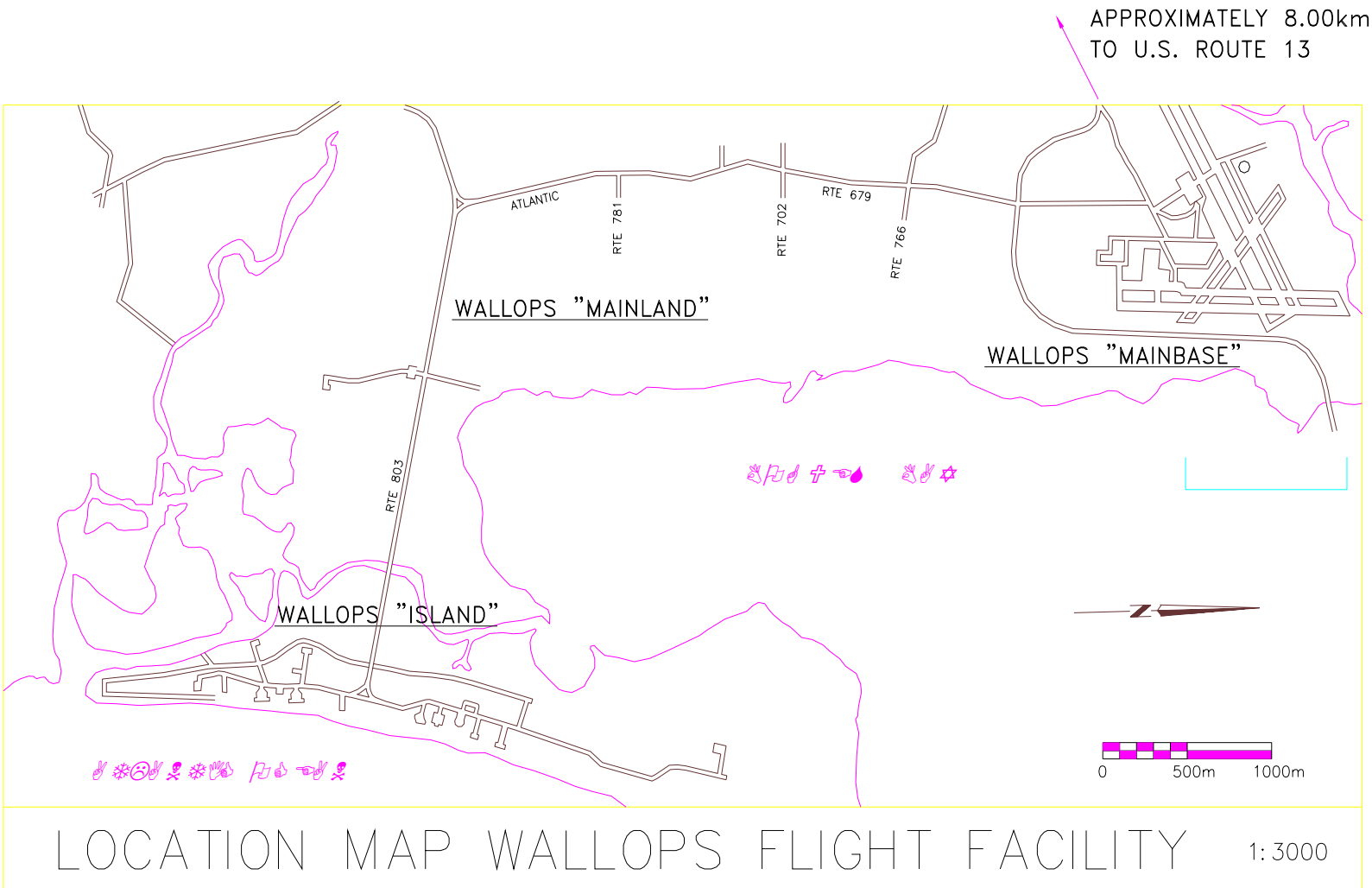


WFF Floor Layout



1. MOVE Switch
2. MOVE Switch
3. Channel Banks
4. P/P's, amps, bridges, etc
5. Cross-connect Frame/Lightning arresting
6. Cross-connect Frame
7. Cross-connect Frame
8. Cross-connect Frame
8. Cross-connect Frame

Wallops Flight Facility

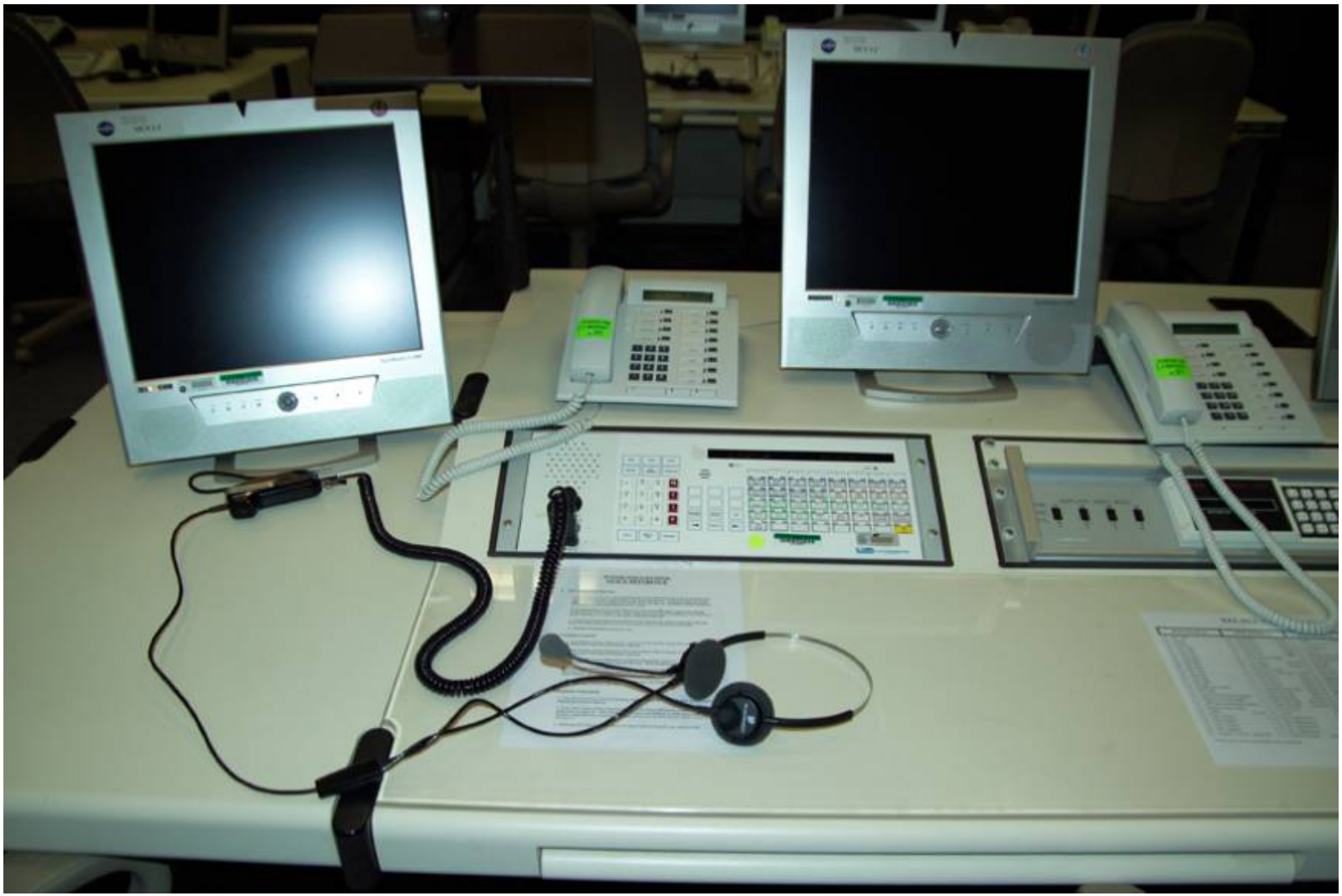


WFF Mainbase Aerial

WFF Island Aerial

WFF Range Control Center (RCC)

WFF RCC Keyset, 40 Channel



WFF Typical RCC Console

WFF 12 Channel Keyset

WFF 12 Channel Rack Mount Unit

WFF 12 Channel Desk Top

WFF 2 Channel Unit

WFF 5 Channel Unit

Mobile Camera, 5 Channel

Merritt Island Launch Area (MILA)

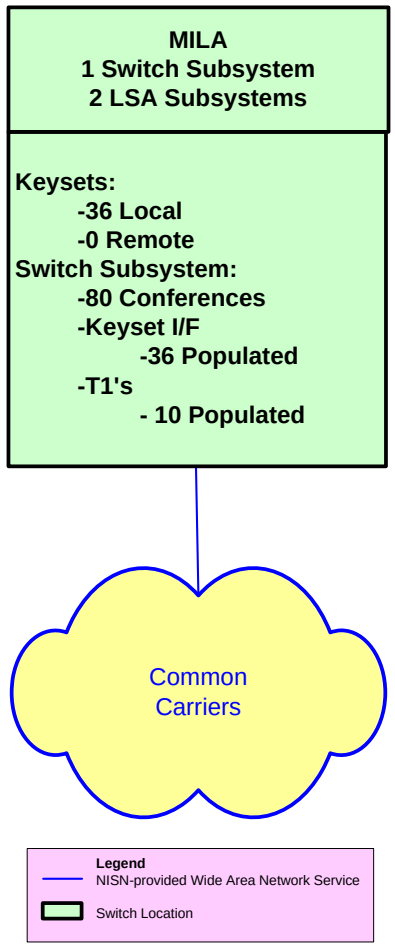
Katie Poole

MILA Overview

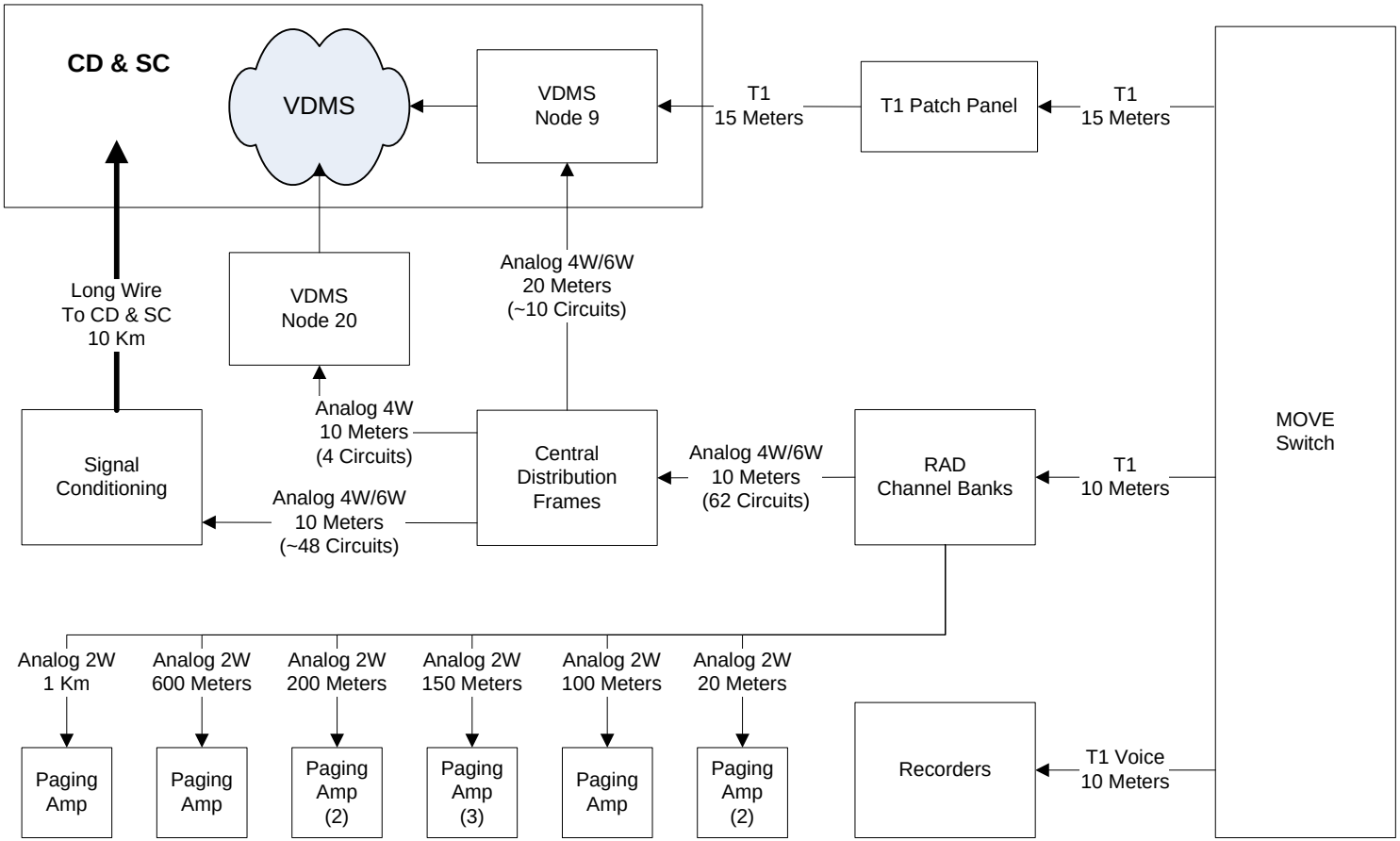
- MILA contains thirteen antennas and equipment to provide communications between a space vehicle (like the Shuttle Orbiter) and its control center. Antennas at MILA track or point directly at the radio frequency signals transmitted from a moving space vehicle.

MILA Site Photo

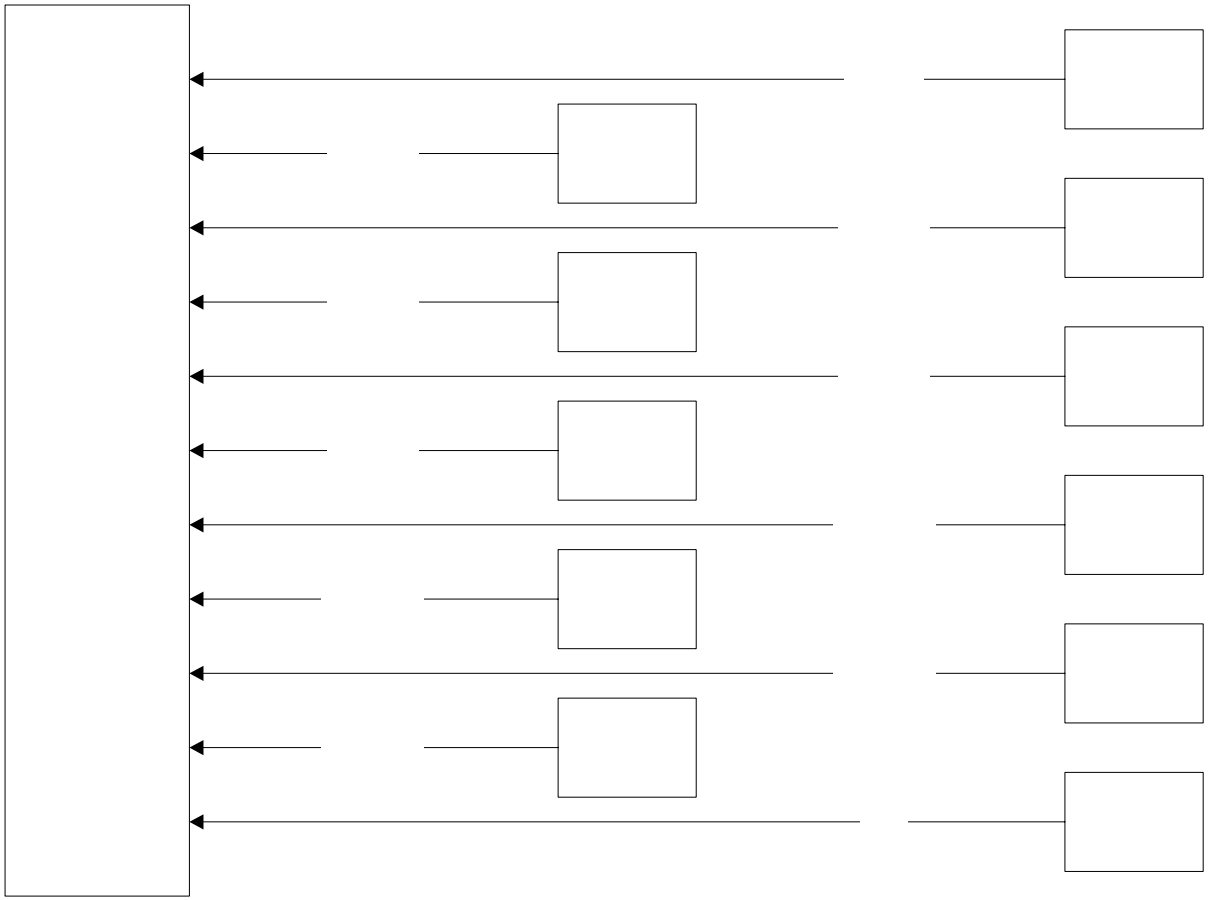
MILA Architecture



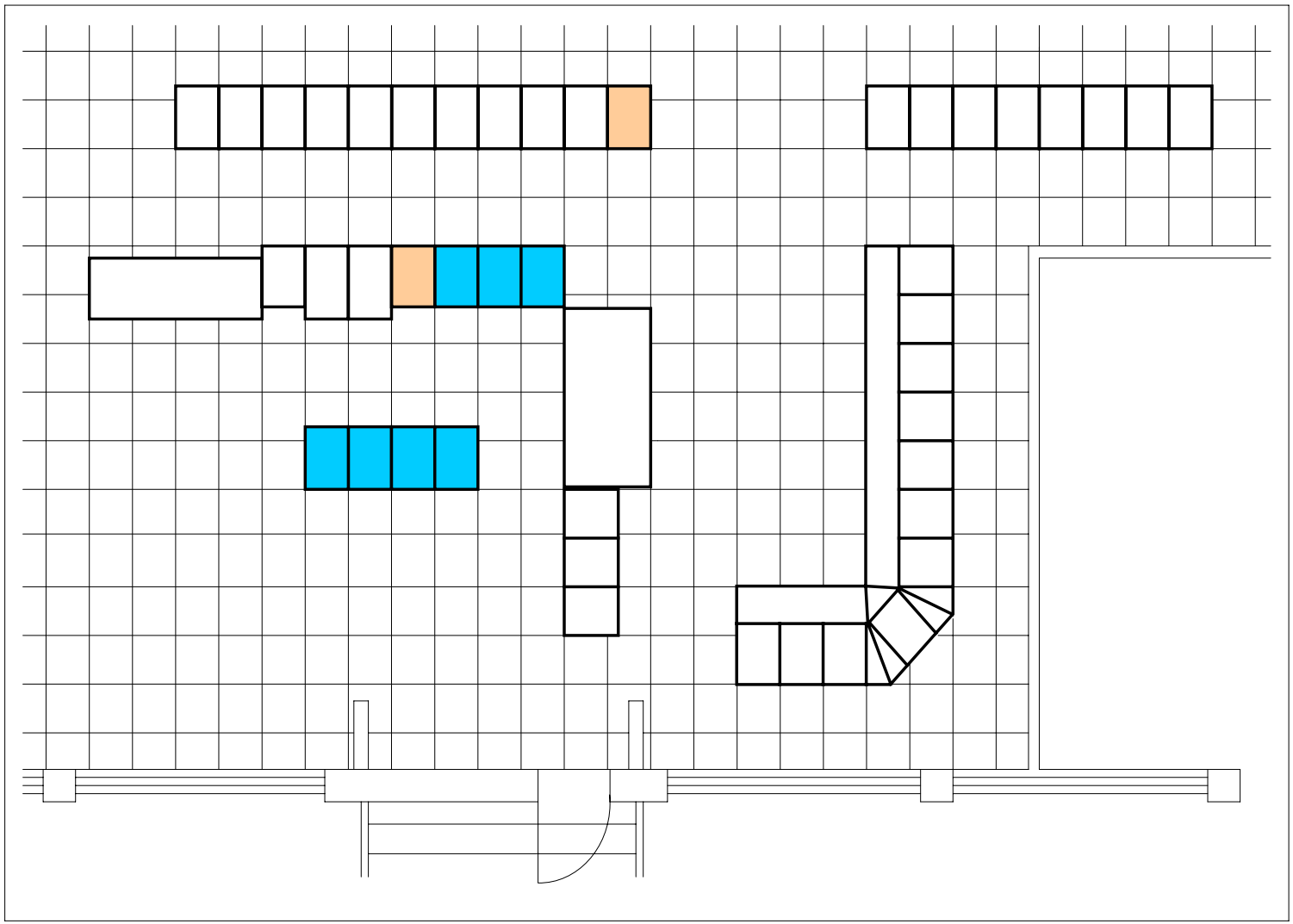
MILA External Interface Detail



MILA Local Keyset Interface



MILA Floor plan



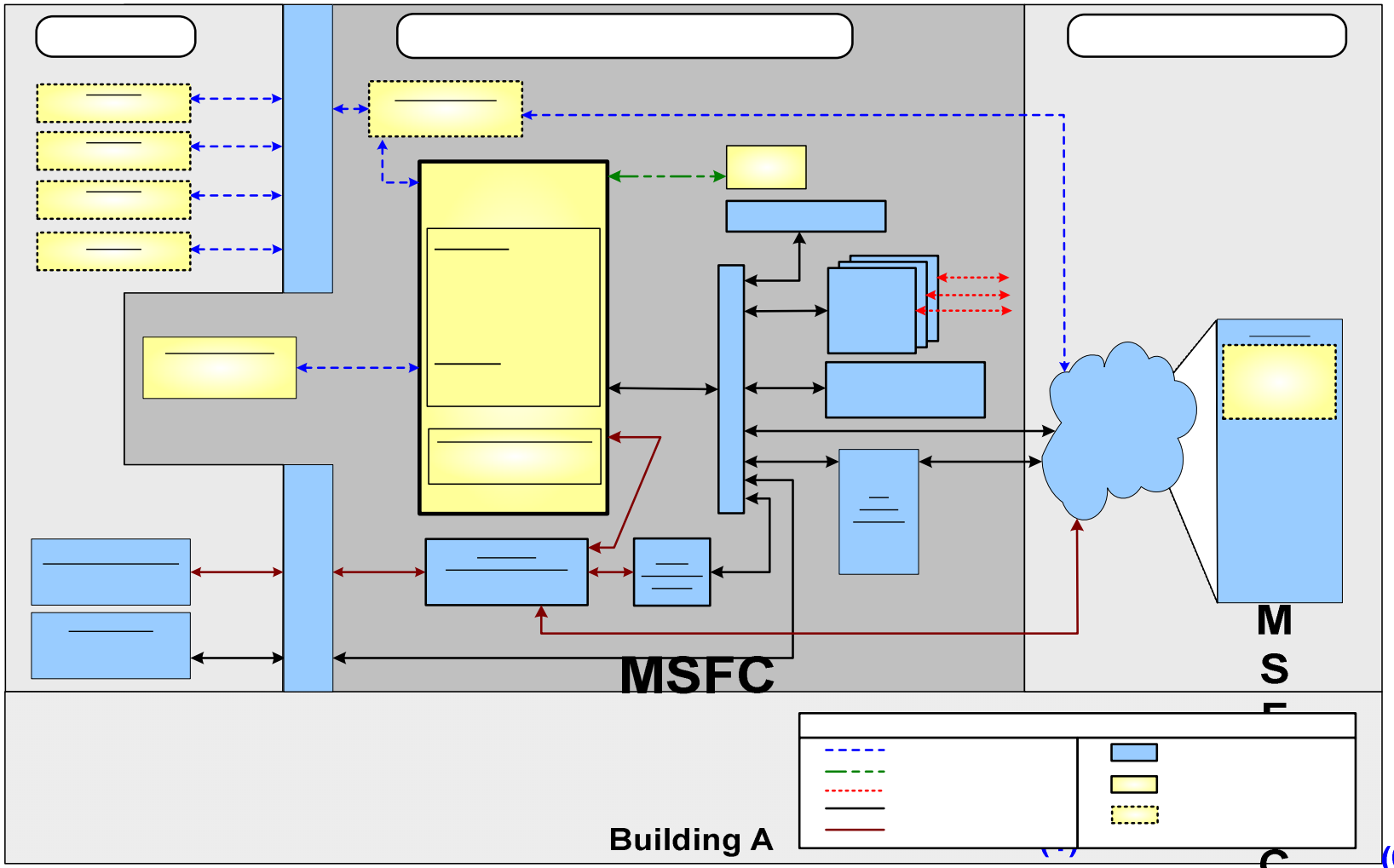
Marshall Space Flight Center (MSFC)

Doug Fooshee

MSFC Overview

- MSFC provides operations support for the Space Shuttle Program (SSP) and the International Space Station (ISS) Program, Payload Operations and Integration support.
- For MSFC, One core switch supports all local and remote users:
  - MSFC POIC/HOSC
    - Enhanced Voice Distribution System (EVoDS)
    - Internet Voice Distribution System (IVoDS)
  - Remote Users
    - On Center (EVoDS and IVoDS)
    - Off Center (EVoDS and IVoDS)
- The MOVE location will be in the same facility as the existing EVoDS
  - One (1) in HOSC/POIC

MSFC Architecture



MSFC Architecture

Systems Summary

- The one (1) MOVE system to be installed at MSFC HOSC/POIC is shown in the MSFC Architecture diagram
- The sizing/capacities of the switch subsystems are identified in the HOSC/POIC area of drawing on previous page.
  - Keyset (KS) interfaces identify the total number of keyset connections to the switch, identified by Local, Remote, and VoIP
  - T1 interfaces identifies the total number of external connects to other voice data equipment, systems or locations (e.g., recorders, channel banks, EVoDS for Transition, and PABX)
  - LSA interfaces identifies the total number of LSA subsystems that will be connected to the switch
  - Conferences identifies the minimum number of simultaneously active conferences the switch must support
  - User Profiles identifies the minimum number of total user profiles the system must support (i.e., user definitions, not necessarily the number of active users simultaneously)

MSFC Architecture

Systems Summary (cont.)

- A total of five (5) LSA subsystems will be installed in Huntsville
  - All five (5) will be within the HOSC/POIC
- MOVE T1 Interfaces will support:
  - Directly connected interfaces to carrier equipment for conference exchange between other NASA locations/centers.
  - NASA-provided Channel Bank equipment for use to convert the T1 digital output from the switch to analog balanced signals.
    - **All analog service end user points are within the MSFC site**
- Keyset connections within the HOSC/POIC are within 1200 feet of the switch.
- Some keyset connections outside of the POIC/HOSC exceed 2 km and will be connected as remote keysets

MSFC Architecture

Special Considerations

- All switch equipment will be installed on raised floors with cabling to and from the cabinets through the bottom
- All MOVE equipment (switch, LSA, keysets) will be connected to site-provided power: 120 VAC 60 Hz
- Current floor plan assumes a total of 2-4 cabinets for the MSFC switch.
  - Assumed cabinet footprint no larger than 25” x 36”

Johnson Space Center (JSC)

Al Wylie

JSC Overview

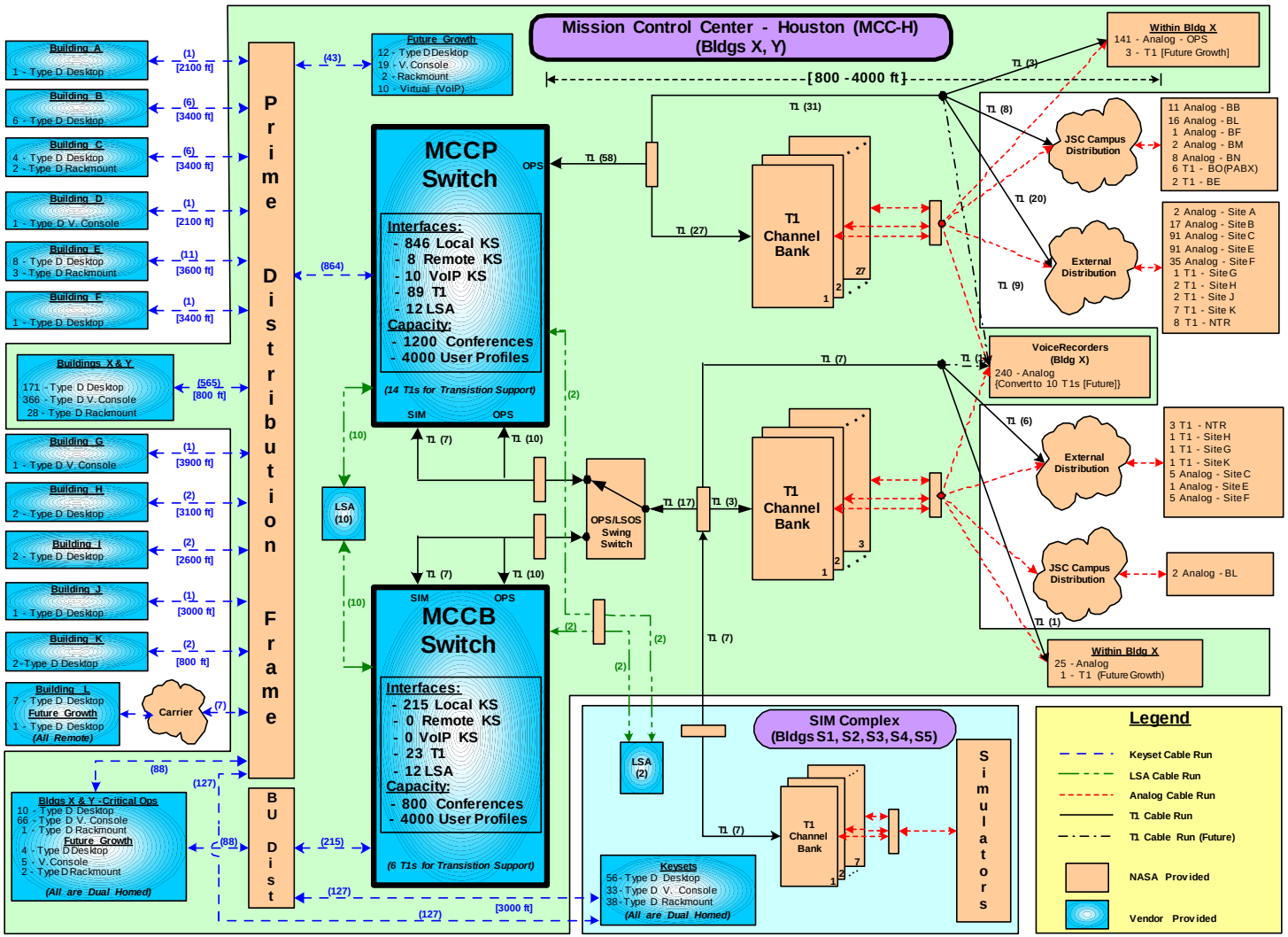
- The Johnson Space Center (JSC) provides operations support for the Space Shuttle Program (SSP) and the International Space Station (ISS) Program, including Training/Simulations support.

- For JSC, there are two (2) locations for MOVE systems:
  - JSC Mission Control Center - Houston (MCC-H) – Houston, Texas
  - Mission Control Center - Moscow (MCC-M) – Moscow, Russia

- These two (2) locations will include a total of three (3) MOVE switch systems
  - Two (2) in Houston
    - MCCP – MCC Prime
    - MCCB – MCC Backup
  - One (1) in Moscow
    - MCC-M

Note: The MCCB system is sized for limited support only, which includes Limited Station Operations Support (LSOS) for the ISS and limited Simulation (SIM) area support; Shuttle (SSP) support is not provided.

JSC MCC-H Architecture



JSC MCC-H Architecture

Systems Summary

- The two (2) MOVE systems to be installed at MCC-H are shown in the MCC-H Architecture diagram

- The sizing/capacities of the switch subsystems are identified in the MCCP and MCCB boxes
  - Keyset (KS) Interfaces identify the total number of keyset connections to the switch, identified by Local, Remote, and VoIP
  - T1 Interfaces identify the total number of external connects to other voice data equipment, systems or locations (e.g., recorders, channel banks for analog conversion, JSC-internal connections, JSC-external connections)
  - LSA Interfaces identify the total number of LSA subsystems that will be connected to each switch
  - Conferences identify the minimum number of unique simultaneously active conferences the switch must support
  - User Profiles identify the minimum number of total user profiles the system must support (i.e., user definitions, not necessarily the number of active users simultaneously)

JSC MCC-H Architecture

Systems Summary (cont.)

- A total of twelve (12) LSA subsystems will be installed in Houston
  - Ten (10) will be within the MCC (Bldg X)
  - Two (2) will be installed in SIM Complex (~3000 ft from switches)
  - All 12 LSA subsystems will be connected to both MCCP and MCCB

- NASA-provided Channel Bank equipment will be used to convert the T1 digital output from the switch to analog
  - Required to support existing JSC legacy interfaces (both on JSC campus and via carrier equipment to external locations)

- A number of external interfaces will be shared between the MCCP and MCCB switch subsystems
  - External line interfaces to both systems will be accomplished via NASA-provided T1 “A/B” switching equipment
  - Approximate cable-run distances are shown for the T1 connections out of the switch subsystems

JSC MCC-H Architecture

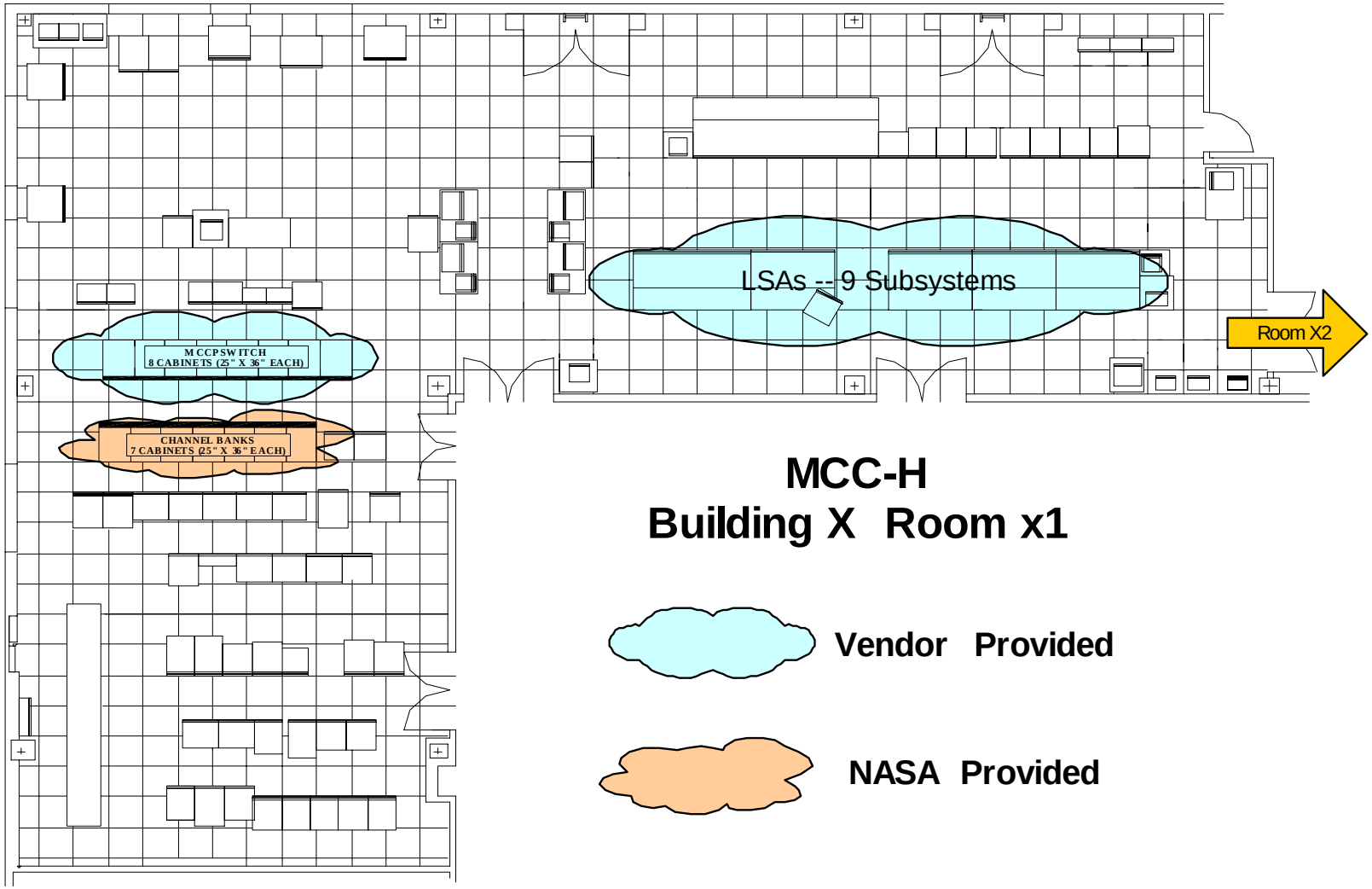
Systems Summary (cont.)

- Most keysets will be locally connected to the switch (copper)
- Seven (7) keysets will be remotely connected, with NASA-provided carrier support to the off-campus location(s)
- Approximately 215 keysets will be dual connected (“shared”) between the MCCP and MCCB switch subsystems
  - Keyset connectivity to both systems will be accomplished via the Vendor-provided dual-homed capability for Type D keysets
  - Approximate cable-run distances are shown for the keyset connections out of the switch subsystems
- The majority of the connectivity supports MCC operations, however a major subset of the connectivity supports Simulation operations (i.e., SIM Complex)
  - Connectivity to the SIM Complex includes two (2) LSA subsystems for SIM system status and as Ops contingency status & control
  - All keysets in the SIM Complex are dual-homed for connectivity to both the MCCP and MCCB systems

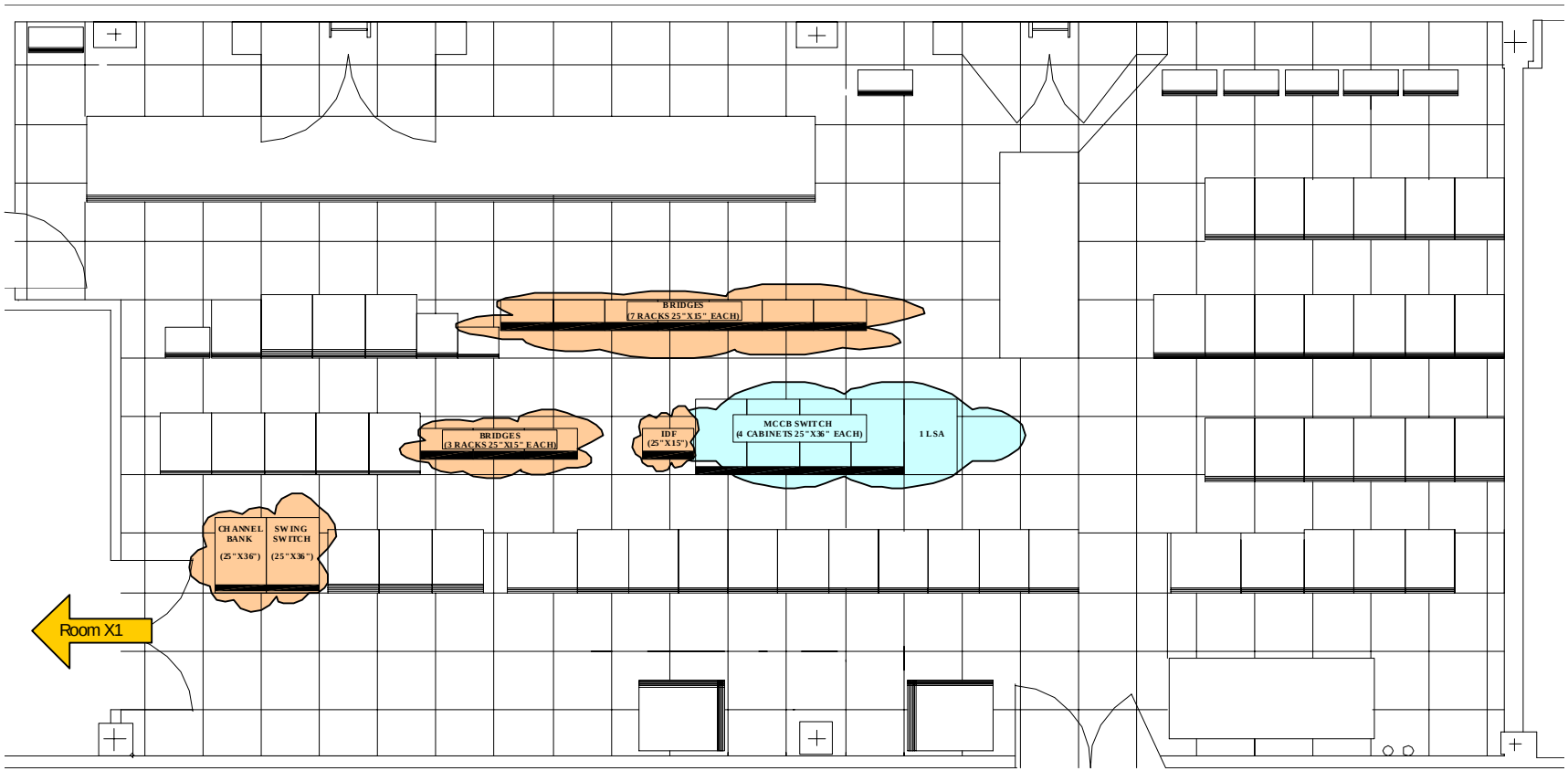
JSC MCC-H Architecture

- All switch equipment will be installed on raised floors with cabling to and from the cabinets through the bottom
- All MOVE equipment (switch, LSA, keysets) will be connected to site-provided power: 120 VAC 60 Hz
- Based on RFI feedback, current MCC-H floor plan estimates assume a total of eight (8) cabinets for the MCCP switch and a total of four (4) cabinets for the MCCB switch
  - Assumed cabinet footprint no larger than 25” x 36”
  - Projected floor plan layout information is provided on subsequent pages
- All Type D keysets will be capable of dual connections, however only the 215 identified as dual-homed will be connected to both switch systems

JSC MCC-H Floor Plan



JSC MCC-H Floor Plan



MCC-H
Building X Room x2

Vendor Provided

NASA Provided

JSC MCC-H OPS Concepts

System Availability

- Both the MCCP and MCCB systems will be operated 24 hours/day, 7 days/week, 52 weeks/year
  - Generally the MCCP will be the operational system – supporting ongoing operations (OPS) as well as simulations (SIM)
  - The MCCB will be utilized as the operational system under the following conditions:
    - A scheduled facility outage affects availability of the MCCP system (e.g., power work, system upgrades, work requiring system down, etc.)
    - Failure of the MCCP system to be able to support operations
- Only one (1) of the switch systems will be used as the “active” operational system (OPS & SIM support) at any one point in time
- Database sizing/content is assumed to be consistent between both systems to allow for ease in keeping both the MCCP and MCCB in sync

JSC MCC-H OPS Concepts

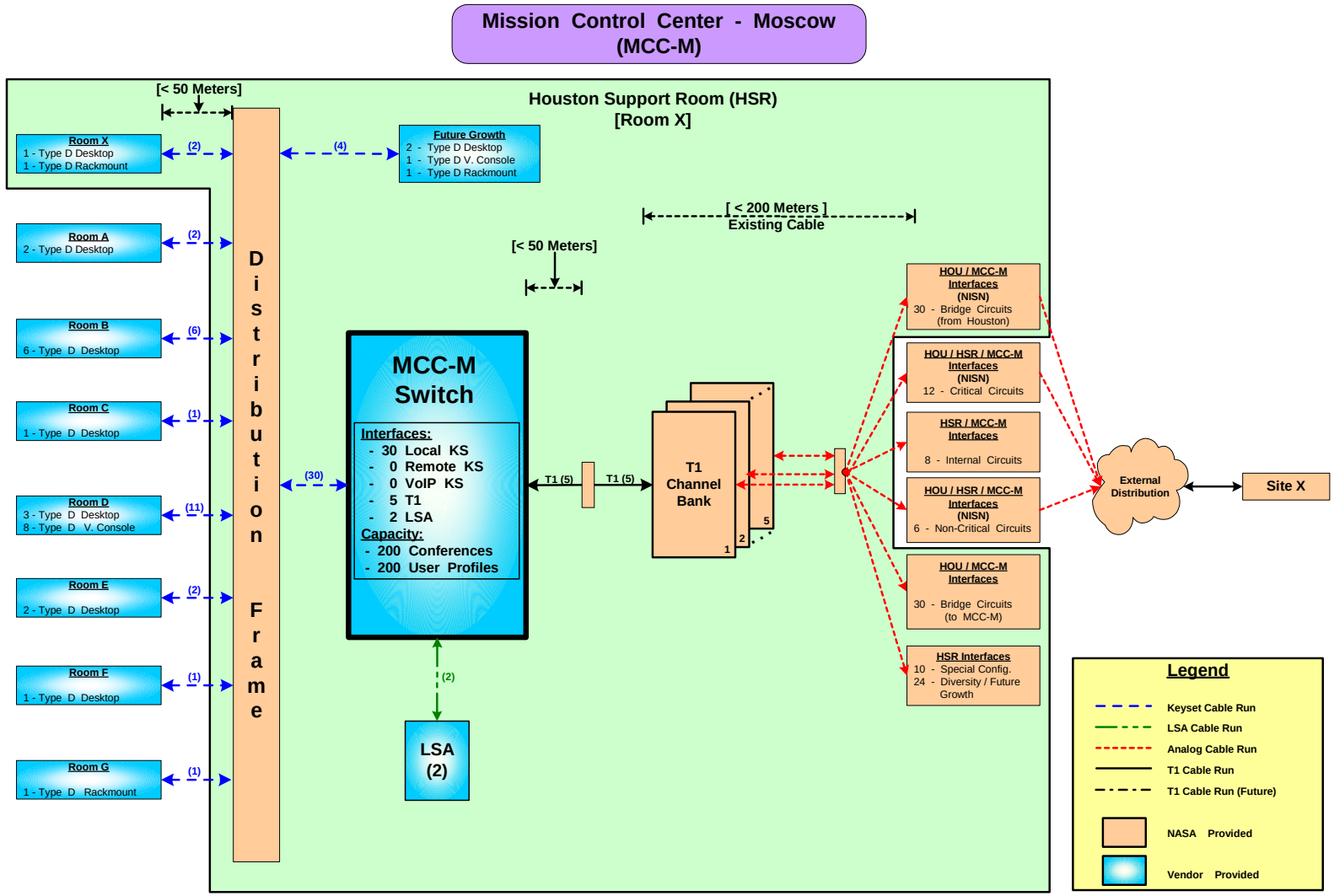
LSA Connectivity

- The LSA can monitor and control either the MCCP or MCCB from any of the 12 LSA subsystems
- Multiple LSA subsystems will be accessing a single system simultaneously
- Even though the MCCB system may not be the “active” system, LSA connections will be used for ongoing status of the “backup” system
- The SIM Complex serves also, in a limited capacity, as a first-level contingency area in case the switch equipment in the MCC is operational, but personnel must be evacuated from the facility
  - MCCP or MCCB monitor and control can be done from either of the two (2) LSA subsystems in the SIM Complex

Keyset Connectivity

- Users at locations with dual-homed connected keysets will only login to one switch system at a time (i.e., the current “active” system)

JSC MCC-M Architecture



JSC MCC-M Architecture

System Summary

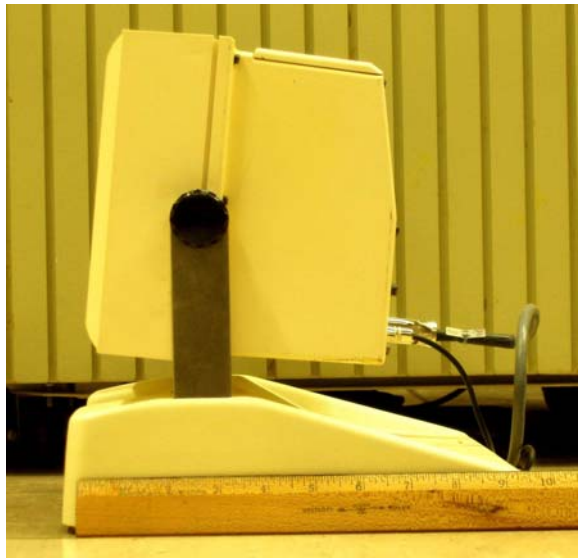
- The MCC-M MOVE system to be installed in the Houston Support Room (HSR) in the MCC-M in Moscow, Russia is shown in the MCC-M Architecture diagram
- The sizing/capacities of the switch subsystem are identified in the MCC-M box (same terminology as in MCC-H Architecture)
- A total of two (2) LSA subsystems will be installed for monitor and control of the MCC-M voice system
- NASA-provided Channel Bank equipment will be used to convert the T1 digital output from the switch to analog
  - Required to support existing legacy interfaces (both within the MCC-M and via carrier equipment to external locations)
- Approximate cable-run distances are shown for the T1 and keyset connections out of the switch subsystem
- All keysets will be locally connected to the switch (copper)

JSC MCC-M Architecture

Special Considerations

- All switch equipment will be installed on raised floors with cabling to and from the cabinets through the bottom
- All MOVE equipment (switch, LSA, keysets) will be connected to site-provided power: 200-240 VAC 50 Hz
- All switch sizing/capacity information includes “populated” size, i.e., information provided does not include sizing for the “wired for” requirement
- All “official” quantities for system sizing are contained in the SRD and RFP Deliverables tables
- Current floor plan estimates assume a total of two (2) cabinets for the MCC-M switch
  - Assumed cabinet footprint no larger than 25” x 36”
  - Projected floor plan layout information is not currently available for the MCC-M

JSC Keyset Photos



Clockwise from Top Left: Vertical Console, Desktop (either a local or remote configuration), Desktop side view, Horizontal Rackmount. All are package variations of the same keyset.

Site Option Presentations

Jet Propulsion Laboratory (JPL)

Goldstone Deep Space Communications Complex (GDSCC)
Madrid Deep Space Communications Complex (MDSCC)
Canberra Deep Space Communications Complex (CDSCC)

Gerhard Stiebel

JPL Overview

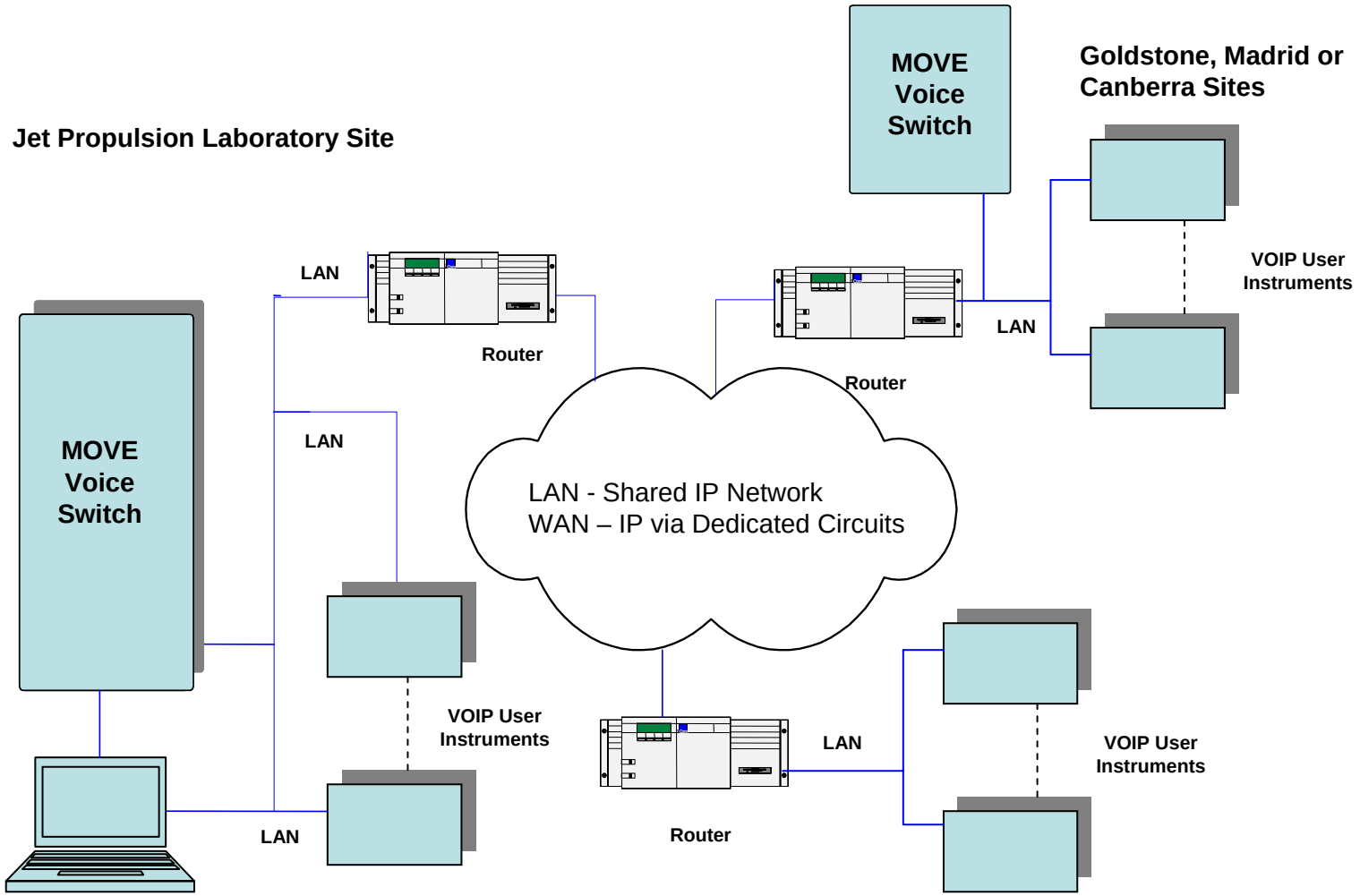
- As part of the NASA team, JPL enables the nation to investigate space for the benefit of humankind by exploring our own and neighboring planetary systems.
- The NASA Deep Space Network - or DSN - is an international network of antennas that supports interplanetary spacecraft missions and radio and radar astronomy observations for the exploration of the Earth, the solar system, and the universe.
- The network is managed from the Network Operations Control Center (NOCC) located at JPL.

JPL Overview

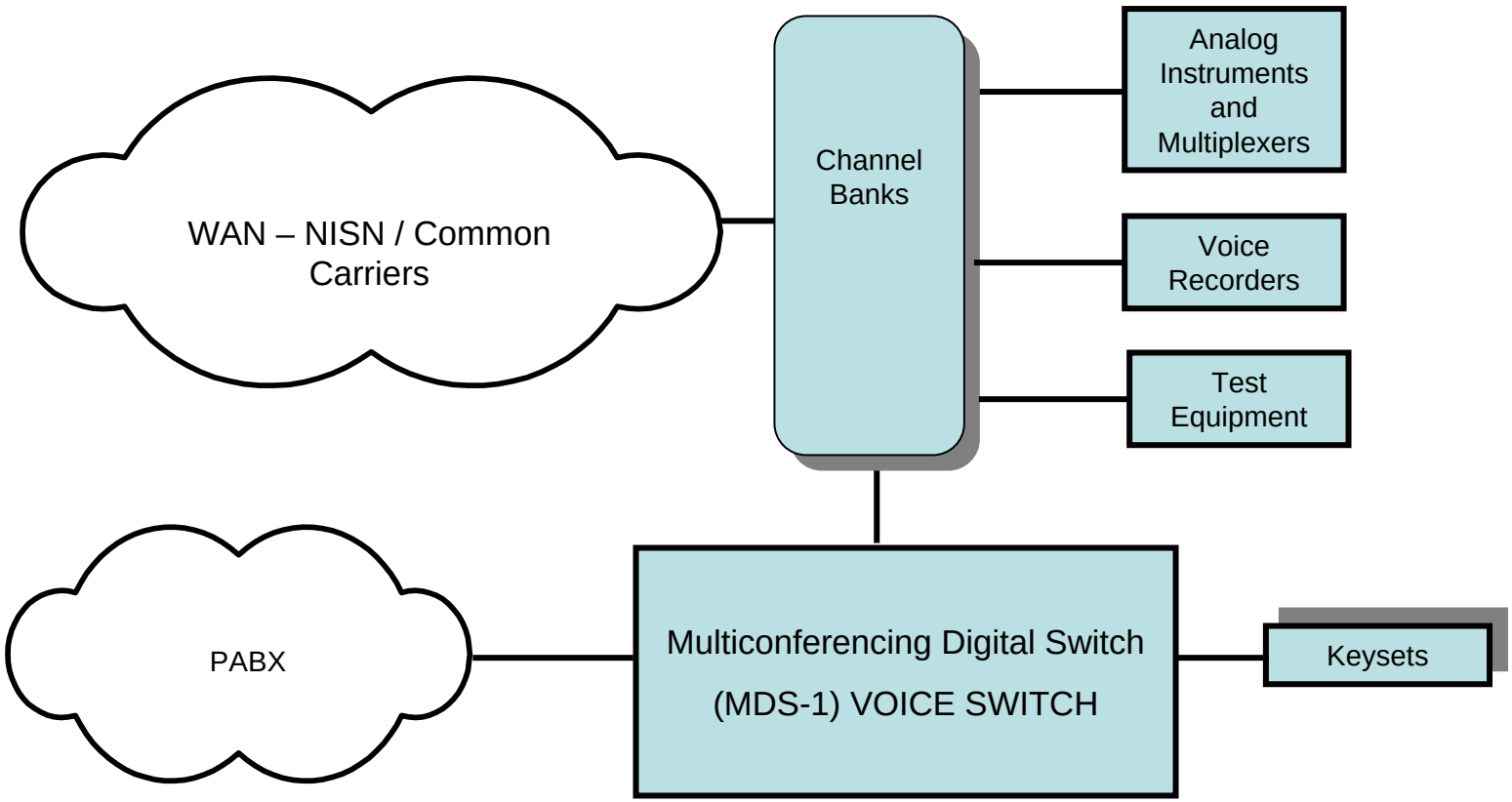
- The DSN currently consists of four locations:
  - The Network Operations Control Center at JPL (NOCC)
  - Goldstone Deep Space Communications Complex (GDSCC)
  - Madrid Deep Space Communications Complex (MDSCC)
  - Canberra Deep Space Communications Complex (CDSCC)

- Four MOVE switch systems will be deployed in the DSN, one at each of the above locations.

JPL / DSN MOVE Architecture

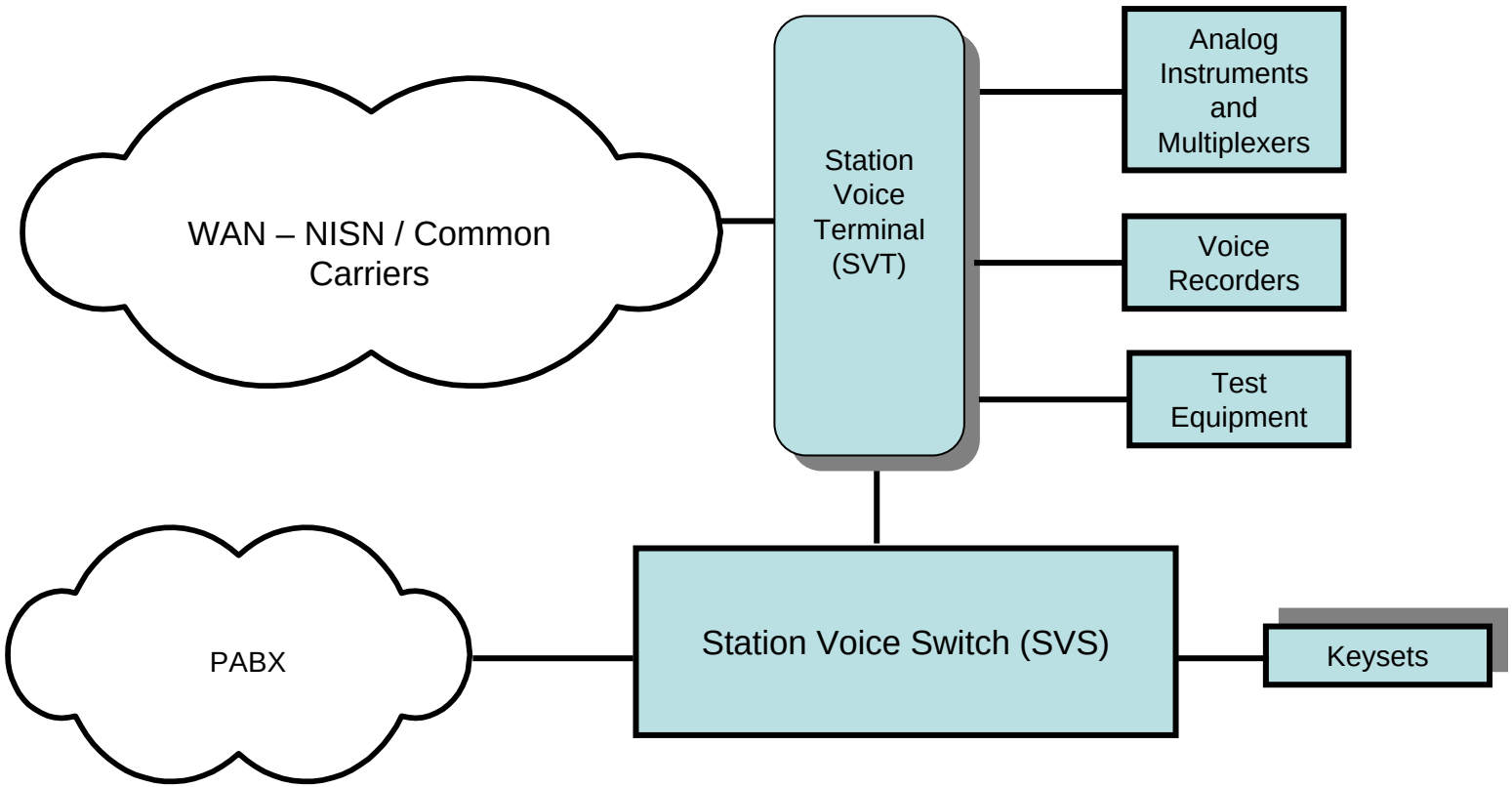


JPL Current Voice System



Block Diagram
JPL Operational Voice

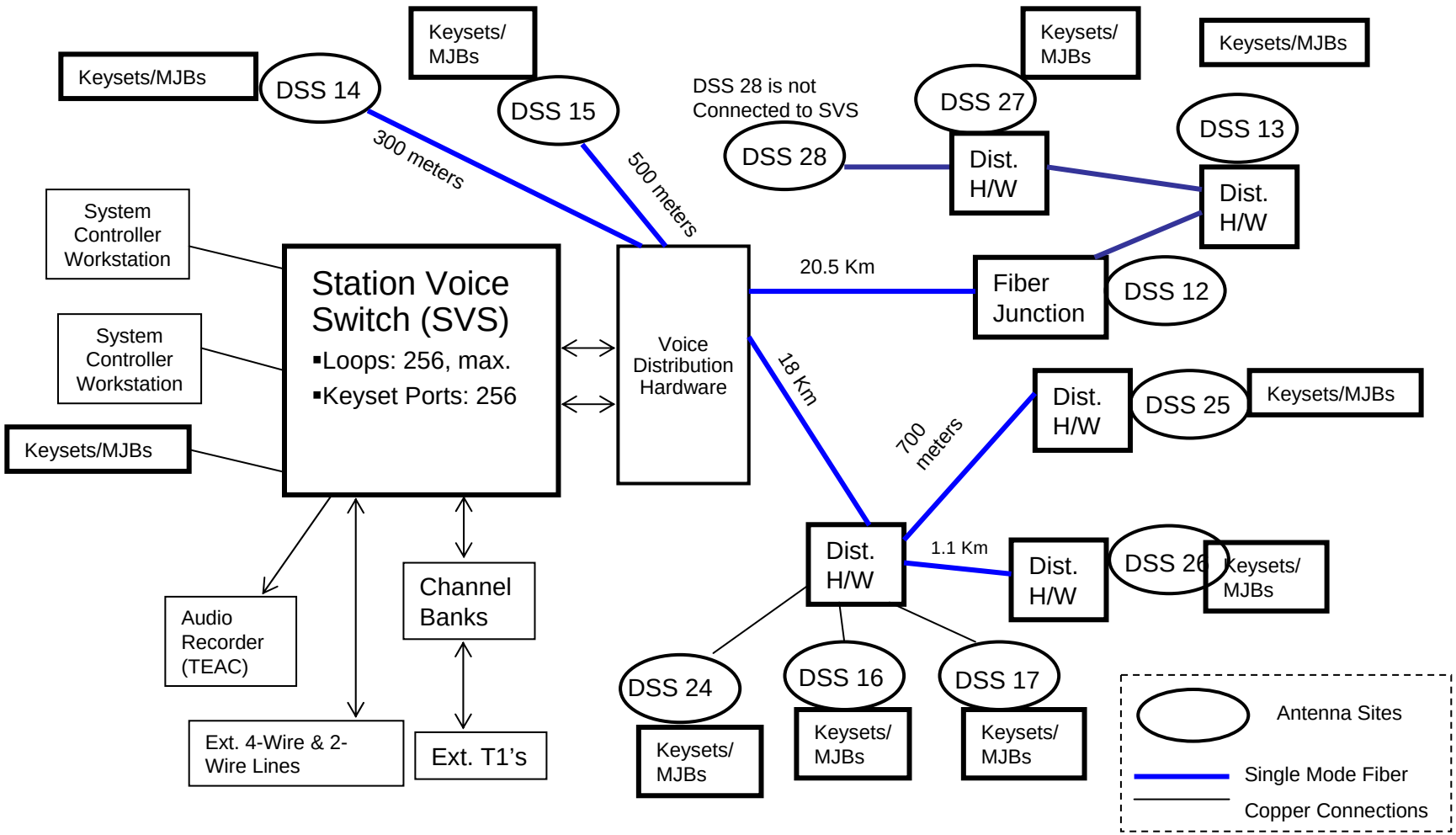
DSCC Current Voice System



Block Diagram
Goldstone, Madrid & Canberra Operational Voice

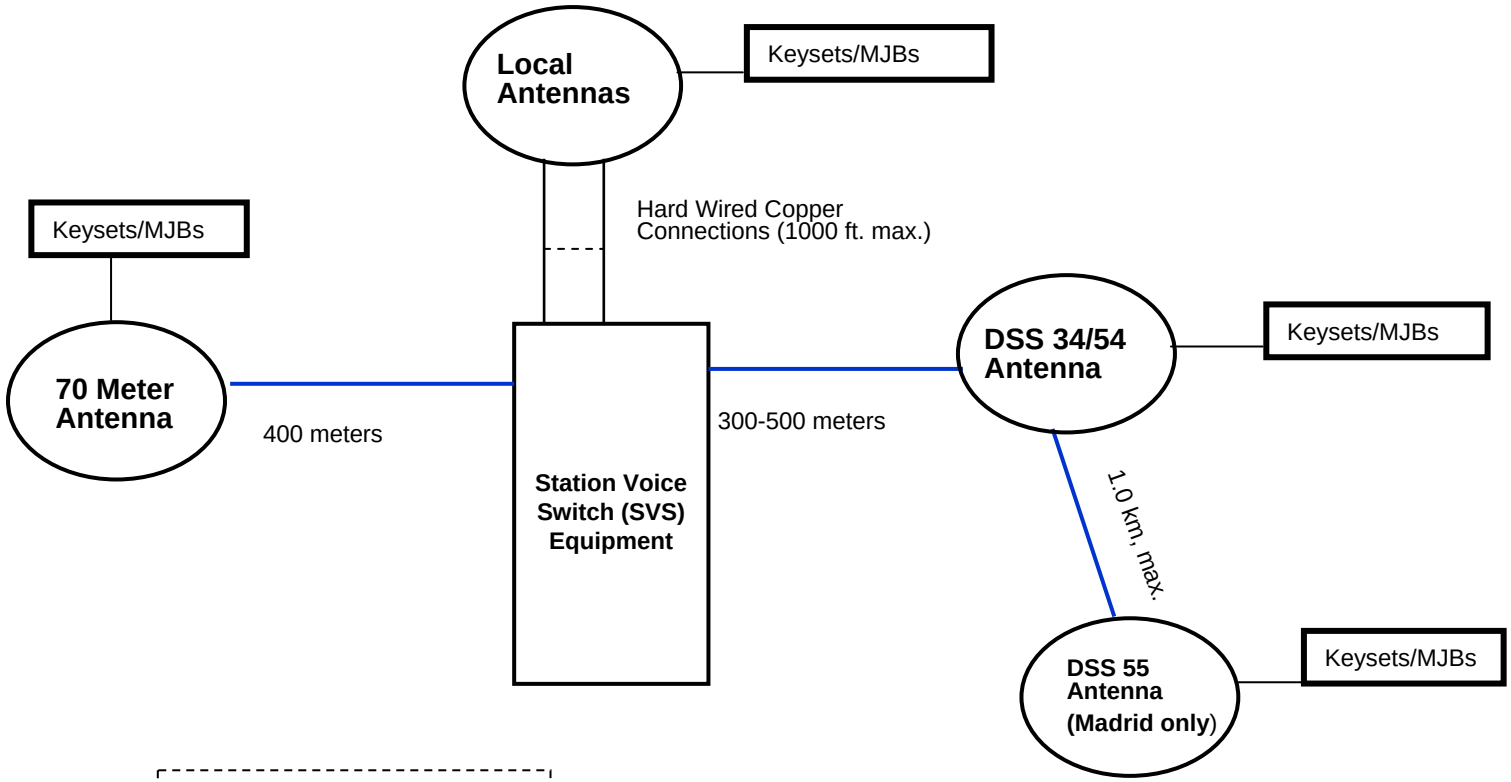
DSCC Current Architecture

Goldstone Station Voice Switch Signal Distribution



DSCC Current Architecture

Existing Voice Distribution Nodes at Madrid & Canberra Sites



JPL / DSN Architecture

Systems Summary

- The MOVE systems to be installed at JPL and the other sites are shown in the JPL / DSN MOVE Architecture diagram

- Keyset to switch interface for keysets will use Voice Over IP (VoIP) via ethernet. JPL's desire is to utilize the existing shared (converged) IP Networks.

- The Maintenance Jack Boxes (MJB) as shown in the Goldstone, Madrid & Canberra current architecture diagrams will not be acquired under the MOVE contract
  - The requirements for the MJBs are provided in Exhibit 11 of the Draft RFP package.
  - JPL may issue a separate procurement for these MJBs.

JPL / DSN Architecture

Systems Summary (cont.)

- JPL has an Emergency Control Center (ECC) at the Goldstone DSCC.
  - Controls network via dedicated links to the other DSCCs and remote Mission Support Areas

- A number of external interfaces will be shared between the JPL and the Goldstone, Madrid & Canberra MOVE Switch subsystems

- External line interfaces between systems will be accomplished via NASA-provided T1 connections

JPL/DSN Architecture

Systems Summary (cont.)

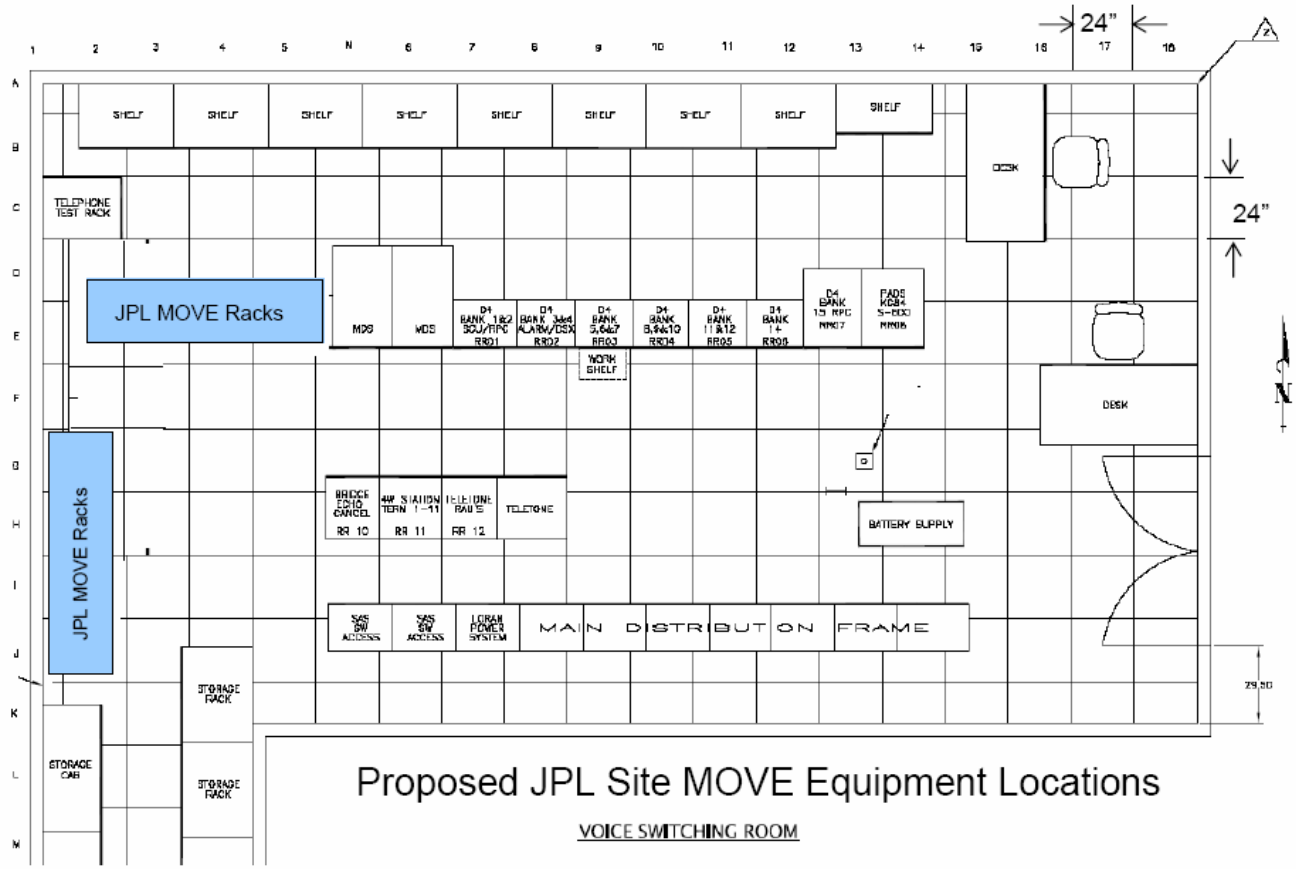
- A total of eight (8) LSA subsystems will be installed for JPL.
  - Two (2) will be at JPL. One LSA will be within 100 ft. of the MOVE Switch; the second will be about 300 ft. from the MOVE Switch.
  - Two (2) will be installed at Goldstone, 2 at Madrid and 2 at Canberra locations. Each LSA at these locations will be within 500 ft. of the MOVE Switch.
  - LSAs from JPL or Goldstone or Madrid or Canberra sites will be used to control any of the MOVE switches deployed at JPL or Goldstone or Madrid or Canberra sites.
- LSAs will configure mute groups

JPL / DSN Architecture

Special Considerations

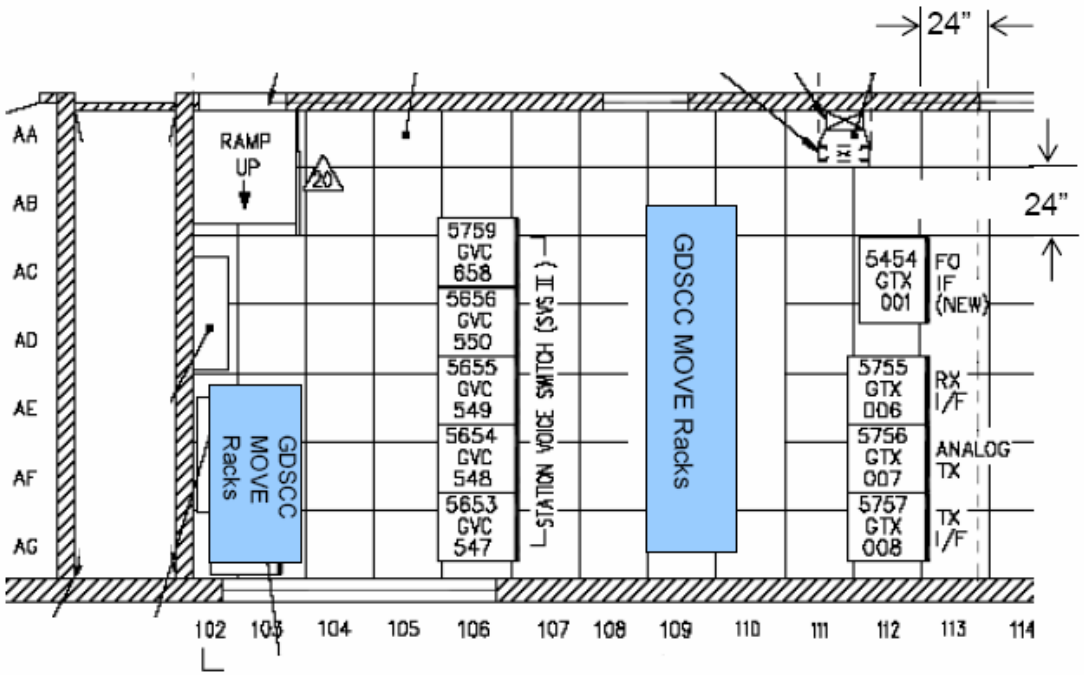
- Switch equipment will be installed on raised floors
- Power cabling will be from the raised floor through the bottom of the cabinets (except at remote antenna locations).
  - At all remote antenna locations, all cabling will be through the top of the cabinets
- All other cabling to and from the cabinets will be through the top of the cabinets
- All MOVE equipment (including the overseas DSCCs) will be connected to site-provided power, nominally 120 VAC, 60 Hz, Single Phase.
- Floor plans show currently available space that JPL intends to reutilize if practical.

JPL / DSN Architecture



Notes: 1. Proposed location has raised computer floor, approx. 12 inches.
2. All cables except AC power are routed via overhead cable trays.

JPL / DSN Architecture



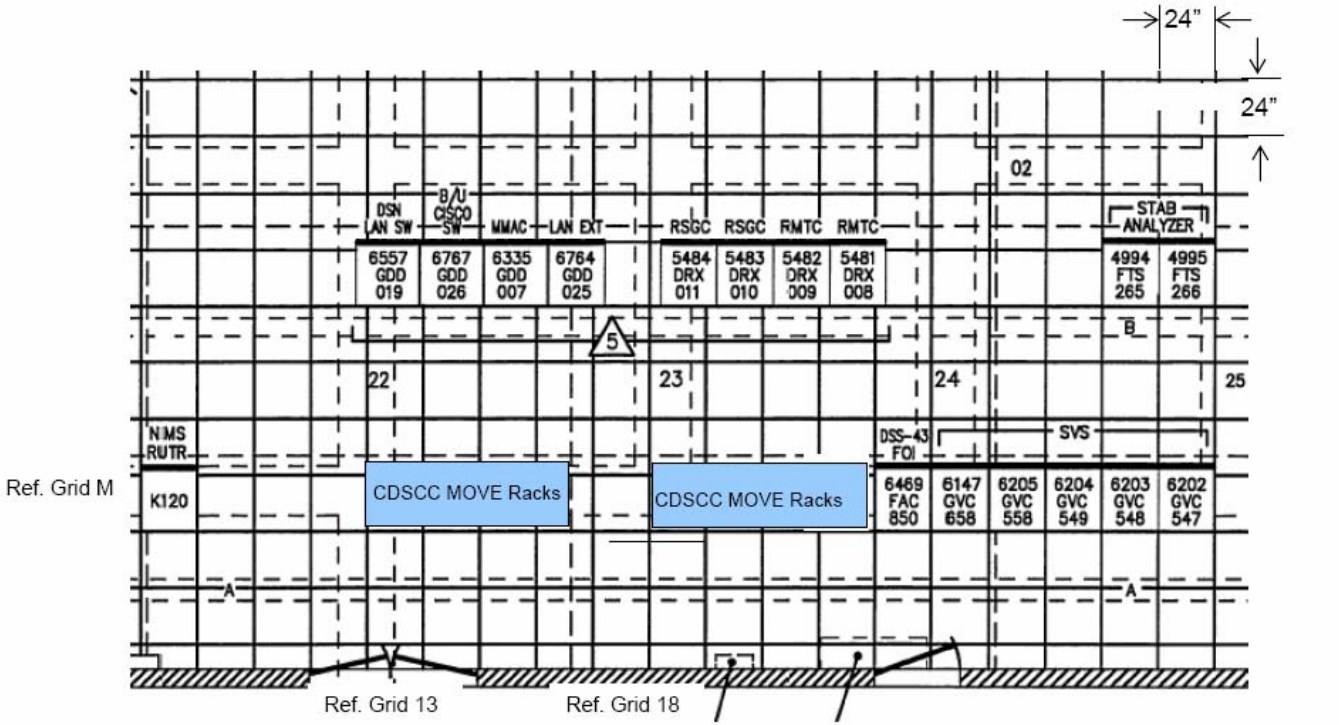
Proposed Goldstone Site MOVE Equipment Locations

Proposed location of Goldstone MOVE Racks

Existing Goldstone Equipment Racks

Notes: 1. Proposed location has raised computer floor, 10 inches.
2. All cables except AC power are routed via overhead cable trays.
3. Local keysets are located with 150 ft. of existing voice equipment racks.

JPL / DSN Architecture



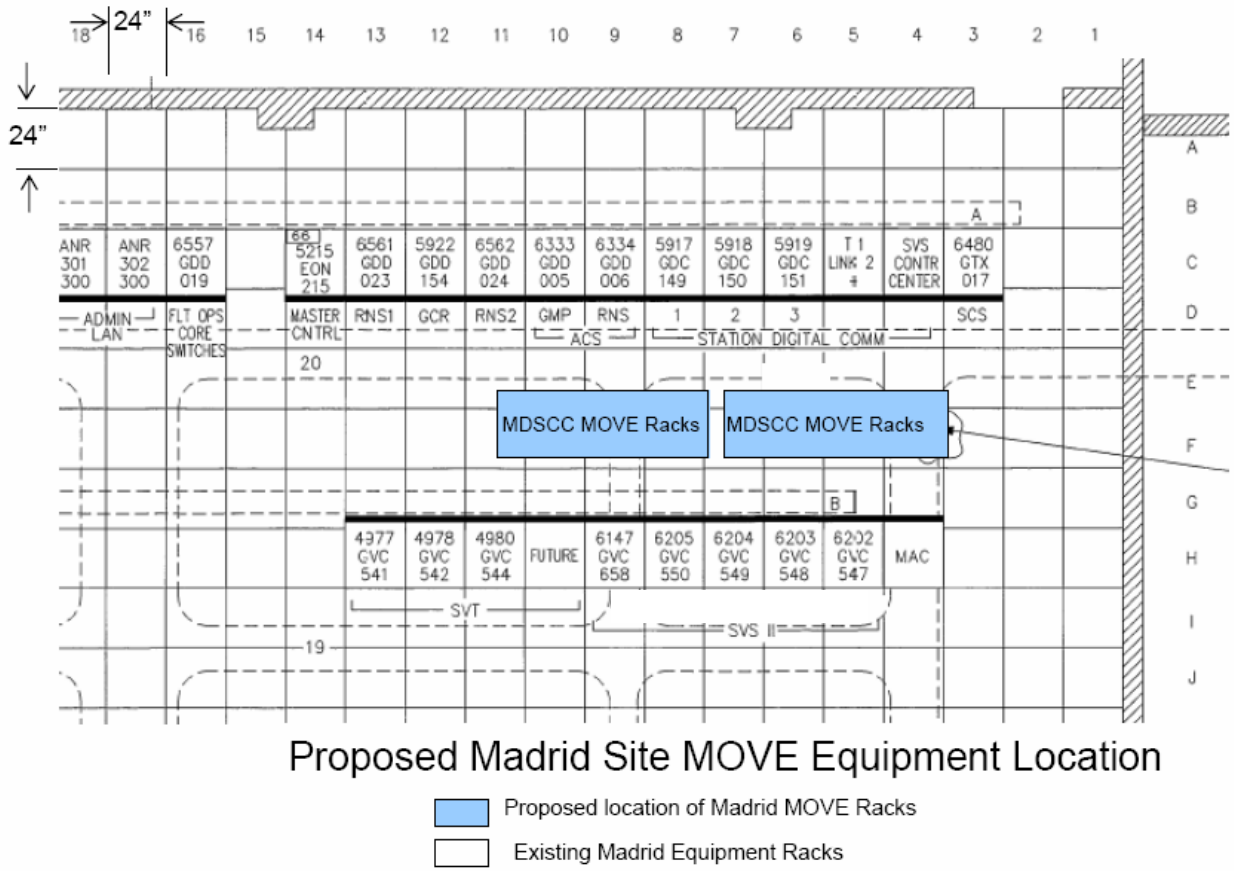
Proposed Canberra Site MOVE Equipment Locations

Proposed location of Canberra MOVE Racks

Existing Canberra Equipment Racks

Notes: 1. Proposed location has raised computer floor, approx.12 inches.
2. All cables are routed via raised computer floor.
3. Local keysets are located with 150 ft. of existing voice equipment racks.

JPL / DSN Architecture



Proposed Madrid Site MOVE Equipment Location

Proposed location of Madrid MOVE Racks

Existing Madrid Equipment Racks

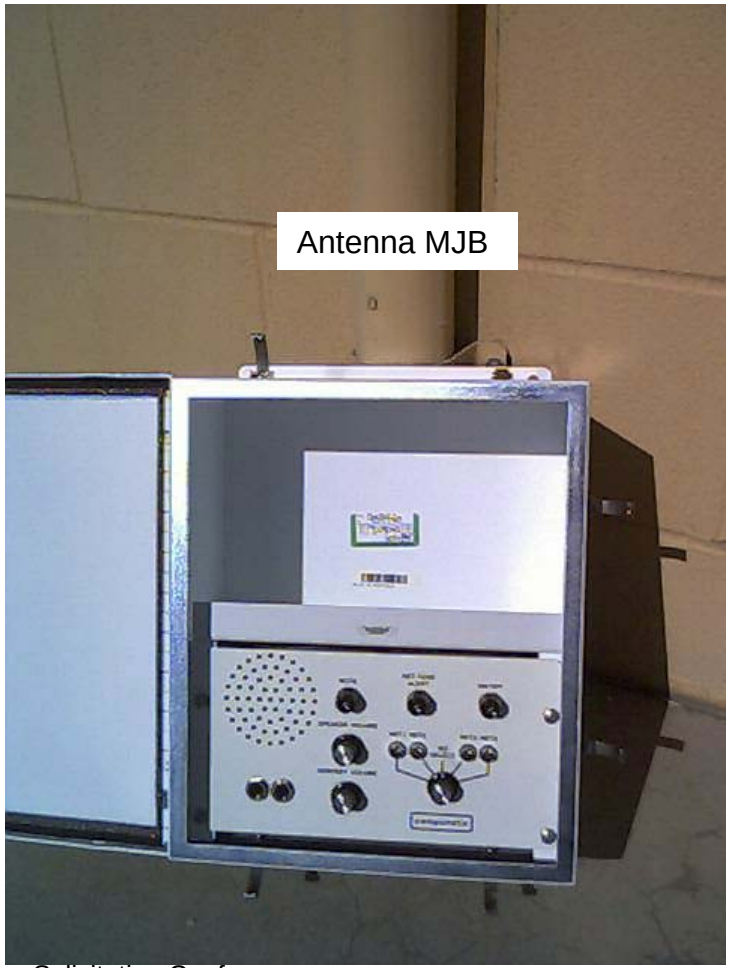
Notes: 1. Proposed location has raised computer floor, approx.12 inches.
2. All cables are routed via raised computer floor.
3. Local keysets are located with 150 ft. of existing voice equipment racks.

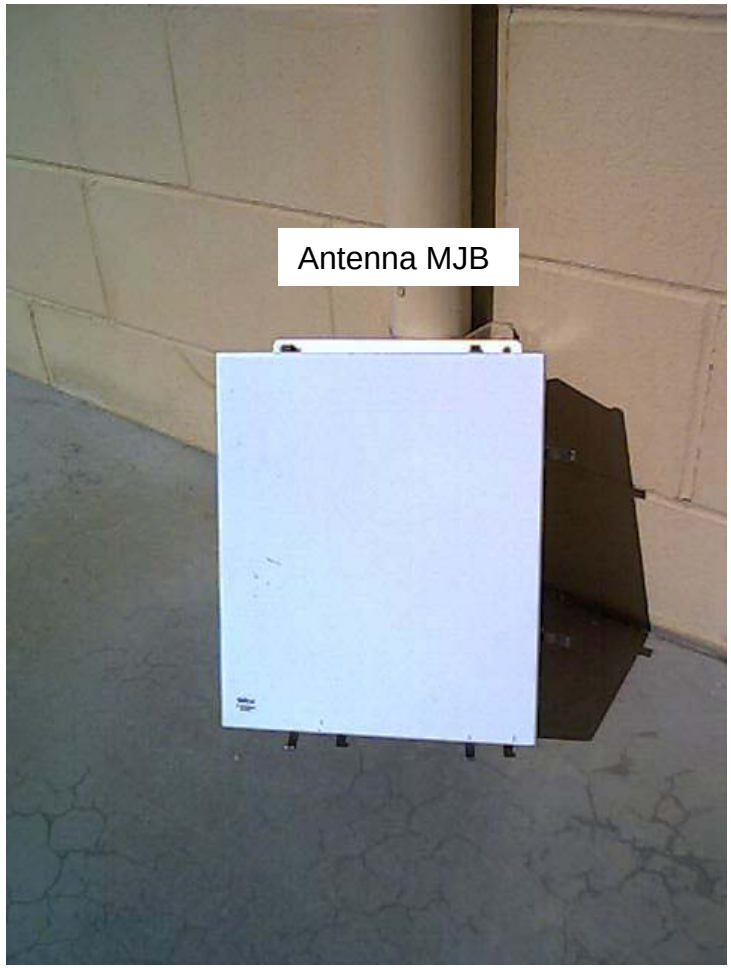
JPL Keysets

JPL “IST” Instrument (Modified)

Station Voice Switch Desktop (w/ Boom Mic) Keypanel

JPL Antenna MJBs





Dryden Flight Research Center (DFRC)

Al Wylie

DFRC Ops Concept

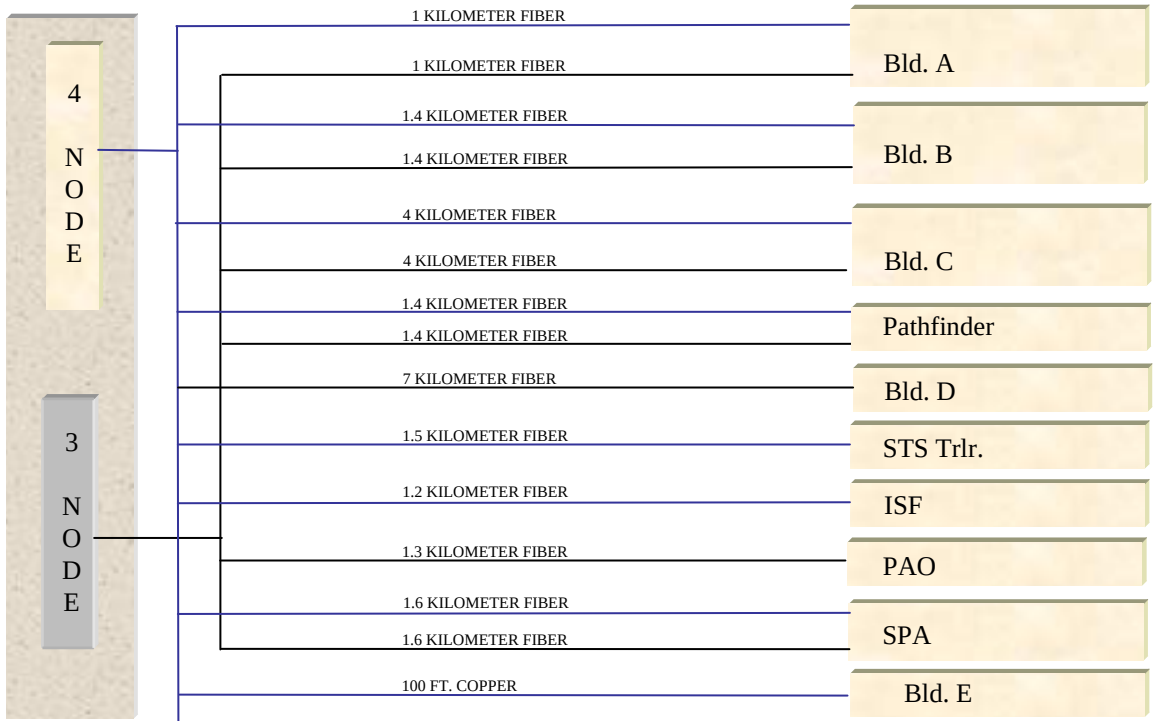
- The current voice communications system at Dryden is used to link the DFRC mission control rooms with research aircraft and to provide ground communications including inter-center links.
- Voice circuits are shared between Nodes using T1 Multiplexers & all critical circuits are hard wire bridged for complete redundancy.
- The System Administrator is able to make real time configuration changes such as DS0 level conferencing and exercise configuration control of keysets.
- Users can access Voice nets, RF circuits, Telephone and Public Address.

DFRC Ops Concept

- T1 distance limitations are overcome by using Fiber Optic Multiplexers to remote locations where a combination of keysets & Channel Banks are installed.
  - Intent is to reuse the fiber cable plant if practical, using media converters
- Off site & Long Line circuits (NASCOM) are interfaced using Channel Banks to provide Patch Field access for troubleshooting & line level checks.
- All critical voice circuits are recorded 24/7 on redundant 72 channel Digital Recorders.
- The voice switch will be powered from site-provided 48VDC.

DFRC

DFRC WATR COMMUNICATIONS STATIONS INFRASTRUCTURE



Hangar AE
VAFB

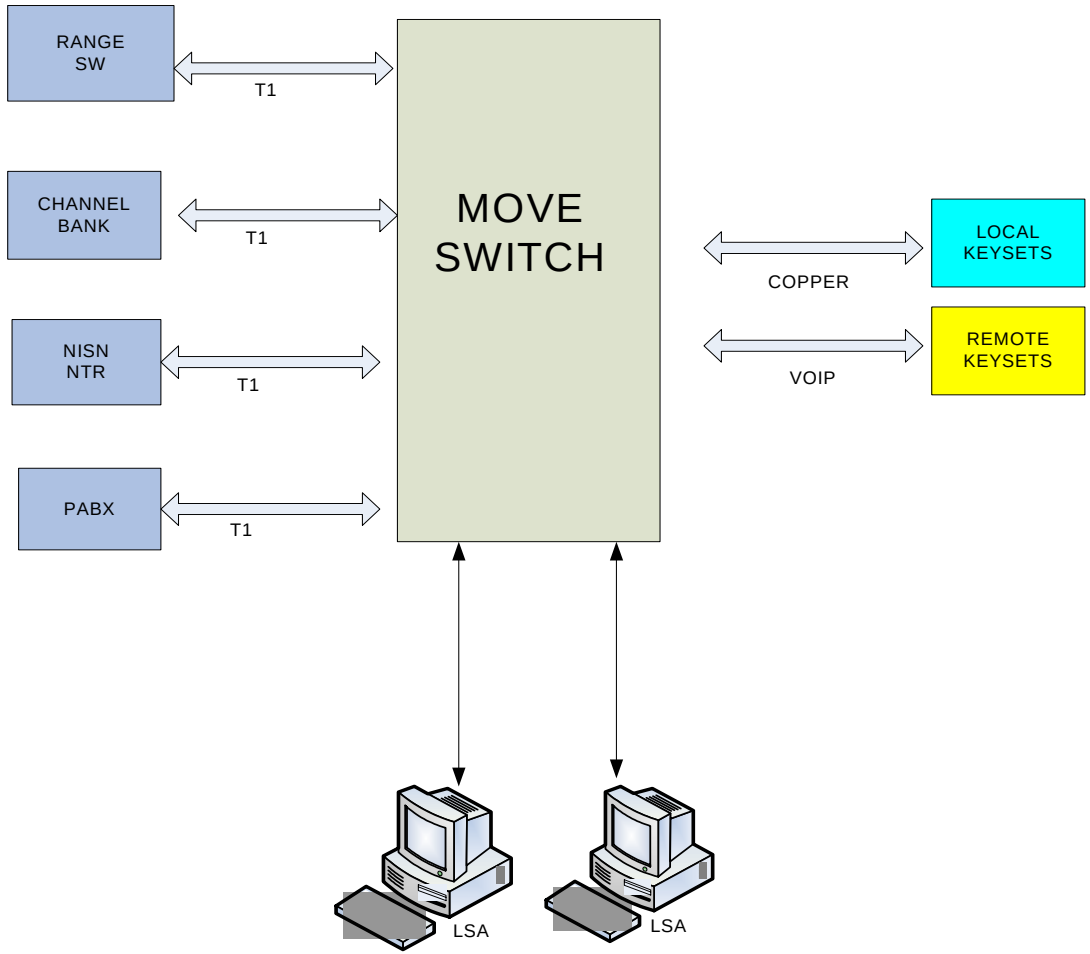
Tuan Doan

HAE / VAFB

- Hangar AE and VAFB provides Mission Operations Communications Support for Launch Services Program including NASA and Commercial payloads on Delta, Atlas, Pegasus launch vehicles.

- There are two (2) locations for MOVE systems
  - Hangar AE at CCAFS, Florida
  - NASA Communications Facility at VAFB, California

AE / VAFB
SWITCH ARCHITECTURE



HAE / VAFB

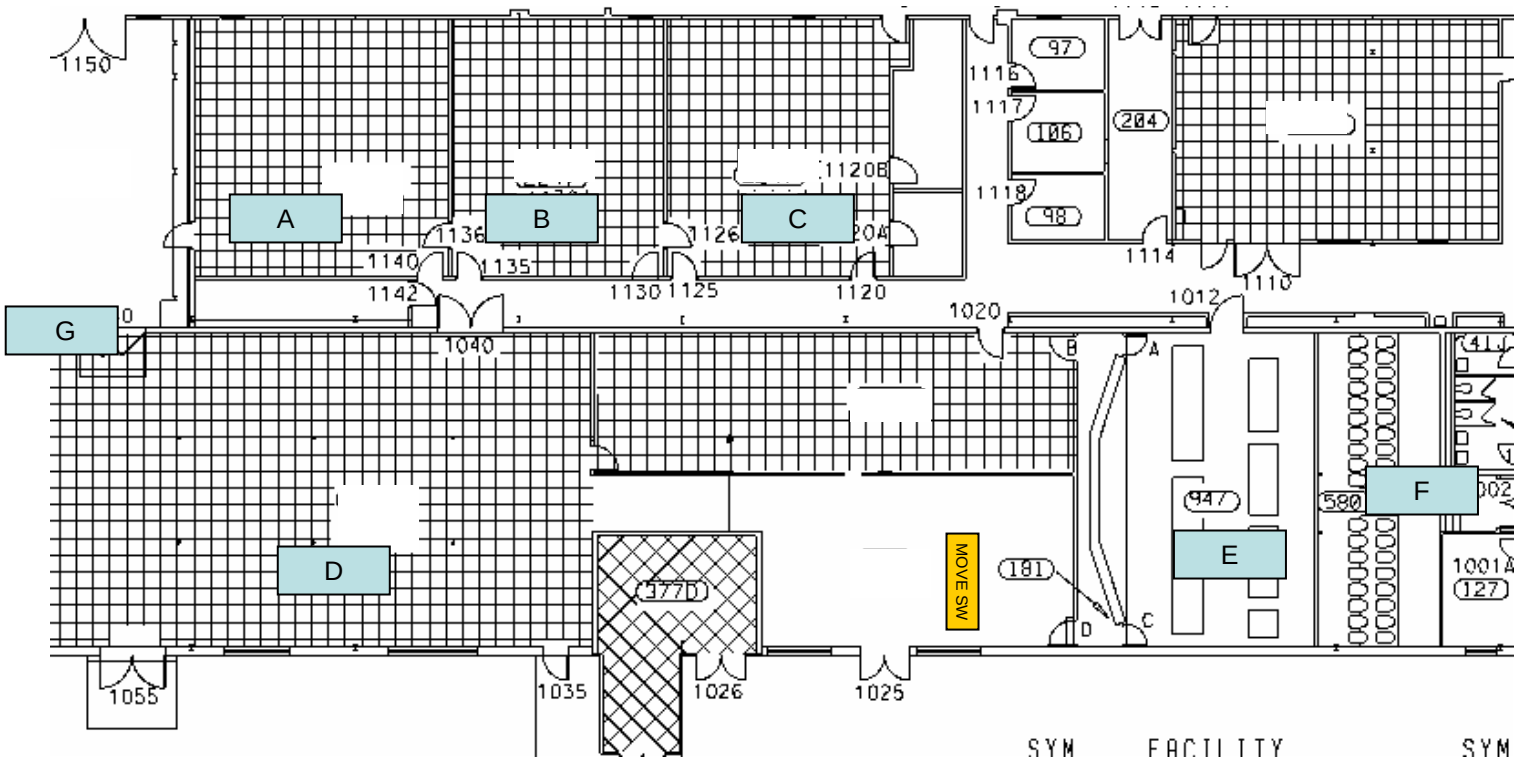
LSA Connectivity

- LSA subsystems will be accessing the MOVE Switch at VAFB and HAE for monitor and control

Special considerations

- Hangar AE
  - All switch equipment will be installed on raised floors with cabling to and from the cabinets through the *bottom and top* racks
- VAFB
  - All switch equipment will be installed on raised floors with cabling to and from the cabinets through the *top racks only*.

Hangar AE



ESTIMATED DISTANCE:

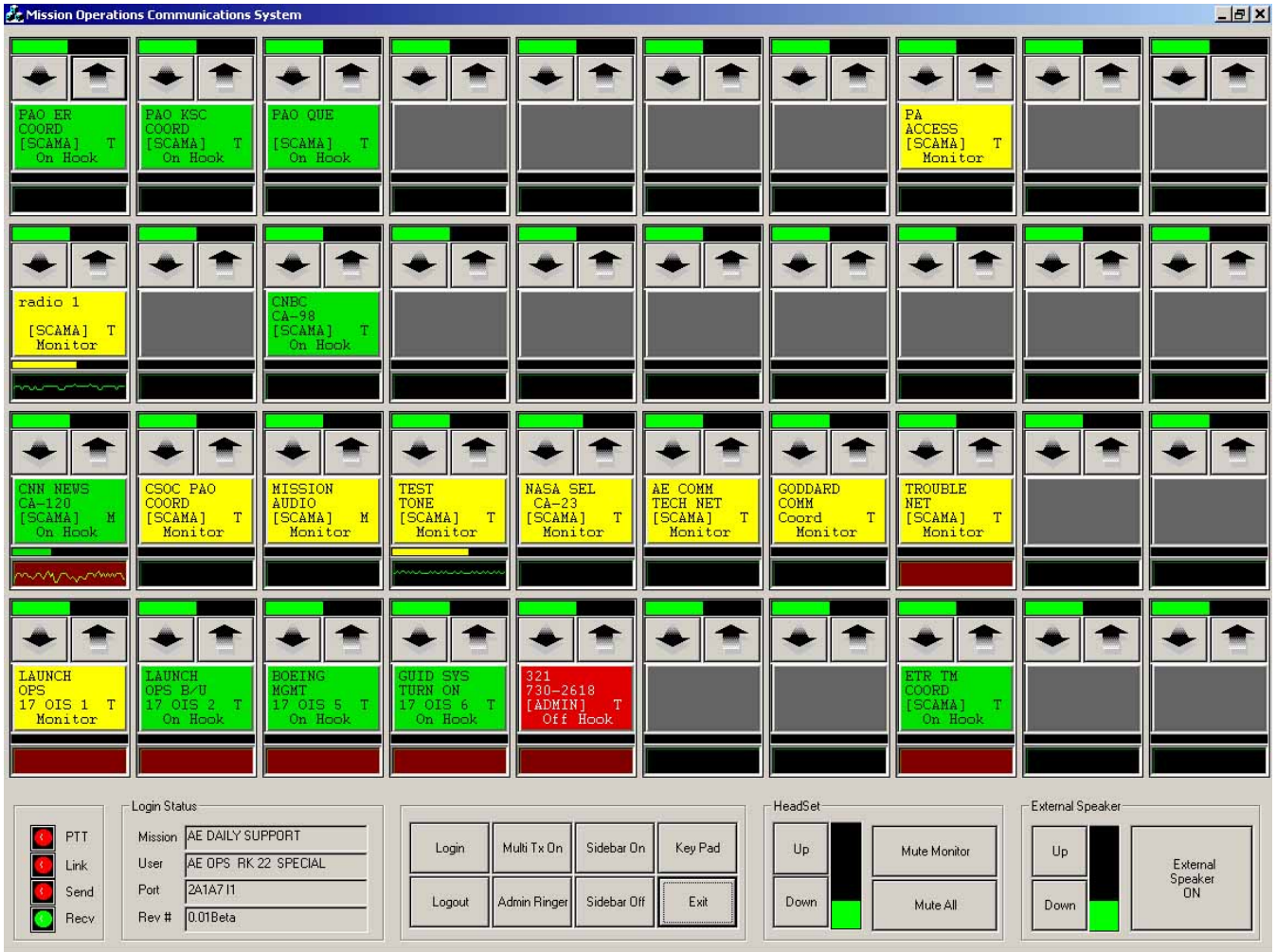
MOVE SW - C = 89 FT
MOVE SW - B = 118 FT
MOVE SW - A = 137 FT
MOVE SW – G = 165 FT

MOVE SW – E = 30 FT
MOVE SW – F= 47 FT
MOVE SW – D = 100 FT

Hangar AE / VAFB Keysets

Hangar AE / VAFB Keysets

Hangar AE / VAFB Keysets



Hangar AE / VAFB Keysets

Kennedy Space Center (KSC)

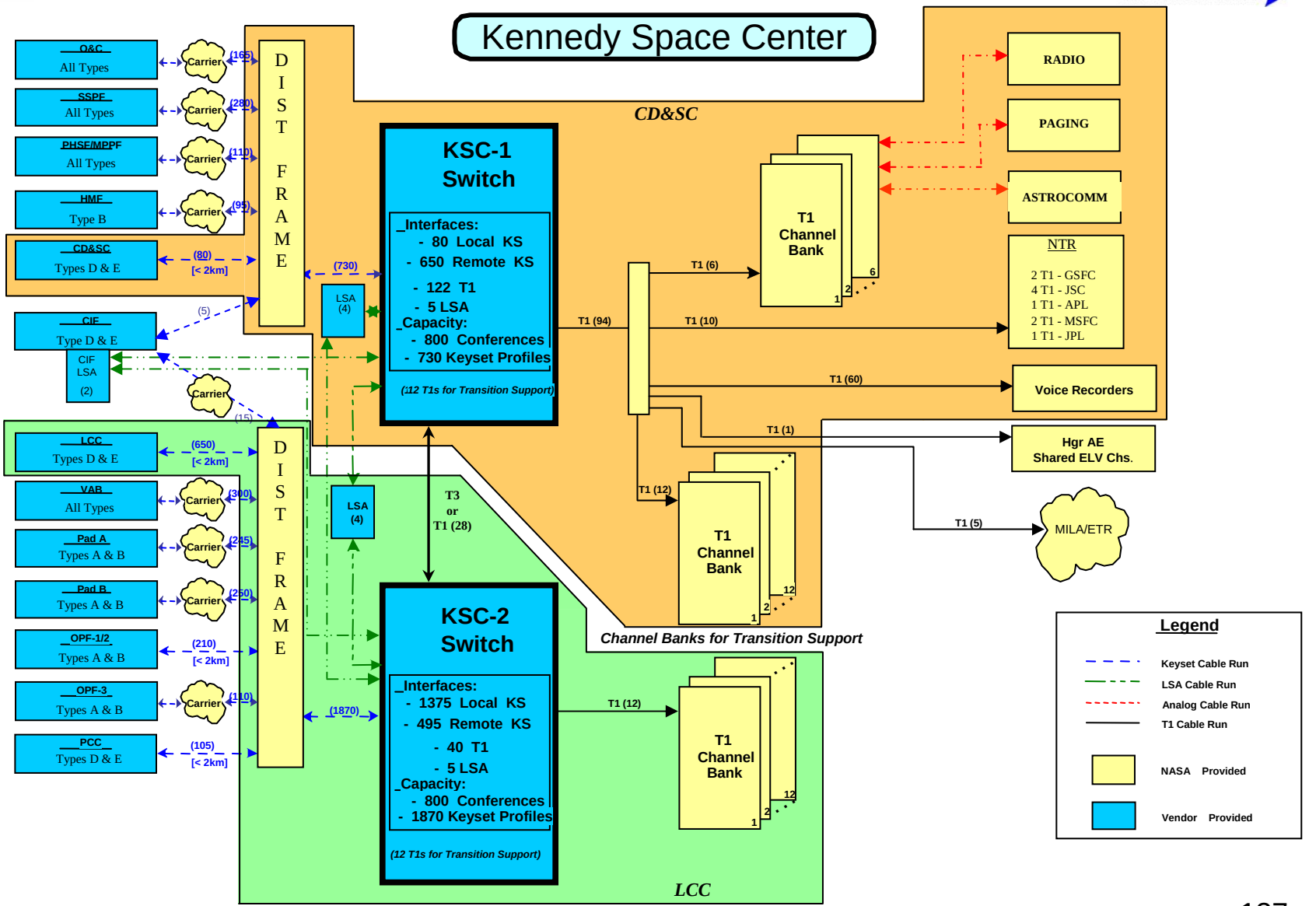
Tim Springstroh

KSC Overview

- The Kennedy Space Center (KSC) provides operations support for the Space Shuttle launch and landing, Shuttle and Expendable Launch Vehicle (ELV) payload processing and International Space Station processing.
- For KSC, there are two (2) planned locations for MOVE switches:
  - KSC Industrial Area (CD&SC)
  - KSC LC39 Area (LCC)

- Shuttle program is slated to end in the year 2010. Requirements for the next space vehicle have not been identified, resulting in programmatic uncertainties.

KSC 2-Switch Architecture



KSC Architecture

Systems Summary

- The two (2) MOVE systems to be installed at KSC are shown in the KSC Architecture drawing.
- The sizing/capacities of the switch subsystems are identified in the SRD and Draft RFP.
  - Keyset (KS) interfaces identify the total number of keyset connections to the switch.
  - T1 interfaces identifies the total number of external connects to other voice data equipment, systems or locations (e.g., NTR, recorders, channel banks for analog conversion for Radio Nets and Paging)
  - LSA interfaces identifies the total number of LSA subsystems that will be connected to each switch
  - Conference capacity identifies the minimum number of simultaneously active conferences the switch must support.

KSC Architecture

Systems Summary (cont.)

- A total of ten (10) LSA subsystems will be installed at KSC
  - These 10 LSAs will be capable of configuring/monitoring both switches.
- NASA-provided Channel Bank equipment will be used to convert the T1 digital output from the switch to analog as required to support existing KSC legacy interfaces.
- Keysets which have wiring distances of greater than 2km will be remotely connected with NASA-provided carrier hardware.
- KSC has already procured Dictaphone Freedom digital recorders which can accept a T1 connection.

KSC Architecture

Special Considerations

- All switch equipment will be installed on raised floors with cabling to and from the cabinets through the bottom.
- MOVE switches and keysets will be connected to site-provided power: 48VDC. The LSAs will use 120VAC.
- Floorspace for switch installation has not been allocated to date.

Mission Operations Voice Enhancement

(MOVE)

PRE-SOLICITATION CONFERENCE

NASA/GODDARD SPACE FLIGHT CENTER
June 29, 2005

MOVE Procurement

Nipa Shah

Contracting Officer

Disclaimer

In the event of any inconsistency between data provided in these charts and the final RFP, the language in the the final RFP, including any amendments, will govern.

Activities To Date

- First Request for Information (RFI) to Industry released May 21, 2004; Responses were due June 21, 2004 and three all-day sessions were held from July 7–9, 2004.
- Second RFI to Industry released November 10, 2004 after changes were made to the SOW and SRD; Additional responses were received December 3, 2004.
- MOVE Synopsis posted April 27, 2005
- MOVE Draft RFP posted June 17, 2005
- Pre-solicitation Conference on June 29, 2005

Web Sites

- All documents related to these procurements will be attainable through the GSFC Procurement Home Page at:

  http://procurement.nasa.gov/cgi-bin/EPS/bizops.cgi?gr=D&pin=51

  – RFP Number: NNG05096022J

  – Pre-solicitation charts and questions/answers will be posted on the web site

- The MOVE bidder's library is located at the following website:

  http://moveprocurement.gsfc.nasa.gov/index.html

- Check both Web sites periodically for updates

Key Procurement Information

The following applies to MOVE procurement:

- Small Business Set-Aside
  - NAICS code: 334210; 1000 employees
- Commercial Hybrid Firm Fixed Price with a Basic Requirement and an Indefinite Delivery/ Indefinite Quantity portion
- The Basic Requirement includes Goddard Space Flight Center, Marshall Space Flight Center and Johnson Space Center
- Fifteen Options for additional locations

Indefinite Delivery/Indefinite Quantity (IDIQ) Highlights

- Effective Ordering Period is fifteen years after award
- I.A.11, Task Ordering Procedure, and I.A.12, Supplemental Task Ordering Procedures
- Contracting Officers at core locations will issue orders
- IDIQ portion will be used predominantly for equipment; each piece of equipment ordered includes the ability to purchase maintenance on that item
- Four labor categories have also been included for the occasional need for technical services
- Items offered under the Miscellaneous category may be discussed in Attachment E, Contractor Enhancements.

Delivery Schedule

- Enclosure 1 to the Draft RFP provided Overall Schedule Constraints for key Project-Level and Basic Requirement Site-Level Milestones and Options
  - The Target dates are currently listed in error as “TBS” - *To be Supplied*
  - In Amendment Two to the Draft RFP, Enclosure 1 will be populated with Target Dates.
- The contract will reflect the proposed schedule of the successful offeror and be the basis for milestone payments.

Draft RFP Clause Change

I.A.26, PROGRAM DELAYS, will be revised for clarity:

When a Government caused delay occurs, the Contractor shall submit within 30 days of the end of the delay, its proposal, if any, for an increase in the firm fixed price and/or delivery schedule adjustment. Such proposal shall cite the specific Government caused delay and shall be submitted to the Contracting Officer. In the event that delivery schedules in this contract are affected by Government caused delays for a period of 30 days or less per incident, the Contractor agrees to continue performance under the contract without a corresponding adjustment to the contract value. Adjustments to the firm fixed price of the contract will be negotiated for any Government caused delays exceeding 30 days per incident.

Evaluation

- Conducted in accordance with FAR 15.3/NFS 1815.3 Source Selection Procedures
- Evaluation Factors
  - Mission Suitability (point scored)
  - Price
  - Past Performance (adjectival rating)
- Award on initial offers is anticipated, but the Government reserves the right to hold discussions with offerors.

Mission Suitability Factor

SUBFACTORS

SUBFACTOR A: UNDERSTANDING THE REQUIREMENTS/ TECHNICAL APPROACH	450
SUBFACTOR B: MANAGEMENT & CAPABILITIES	200
SUBFACTOR C: TECHNICAL/SCHEDULE RISK	300
SUBFACTOR D: SAFETY & HEALTH	50
TOTAL POINTS	1000

Relative Order of Importance of Evaluation Factors

- The Price Factor is significantly less important than the combined importance of the Mission Suitability Factor and the Past Performance Factor.
  - Mission Suitability + Past Performance > Price
  - As individual factors, the Price Factor is less important than the Mission Suitability Factor but more important than the Past Performance Factor.
    - Mission Suitability > Price > Past Performance

Price Evaluation Highlights

- The sum of the Basic Requirement firm fixed price, the firm fixed prices of Options 101 through 113, the Total IDIQ price and Life Cycle Cost, will be presented to the Source Selection Authority (SSA).
- The Government is considering deleting Life Cycle Cost from the Price Evaluation.
  - Life Cycle Cost Considerations will remain in the Mission Suitability evaluation.

IDIQ Price Evaluation Highlights

- Each Contract Line Item (CLIN) and CLIN grouping will be multiplied by estimated quantities. The sum of these extended prices will constitute the IDIQ price for Evaluation purposes.
  - During contract performance, IDIQ minimum and maximum prevail
- In order to promote an “apples to apples” comparison of IDIQ pricing, we have create functional CLIN groupings for switch expansion again for evaluation purposes.
  - Only the unit prices, not the group prices, will be retained in the contract.
  - Offerors must include all needed items and their associated quantities for each grouping in addition to unit prices.

Price Evaluation Highlights

- The proposed firm fixed prices for Option 114, Dryden Shuttle Processing Area, and Option 115, Kennedy Space Center, will not be included in the price presented to the SSA.

PROCUREMENT OVERVIEW

Schedule

- Draft RFP Release: June 17, 2005
- Final RFP Release: July 28, 2005
- Proposals Received: August 25, 2005
- Selection: December 21, 2005
- Effective Date of Award: January 6, 2006

Miscellaneous

- Check Web sites periodically for pertinent information
- Until release of the formal RFP, Offerors may continue to communicate with Government personnel
- Upon release of the formal RFP, all Government personnel associated with the acquisition shall refrain from communicating with prospective offerors and refer all inquiries to the contracting officer (Nipa Shah)