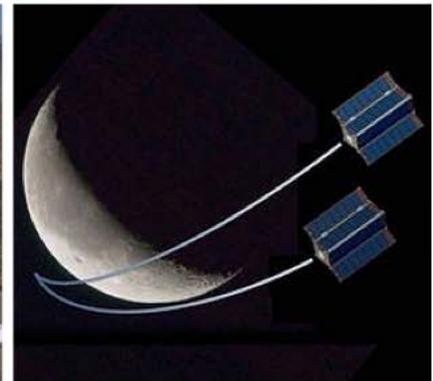
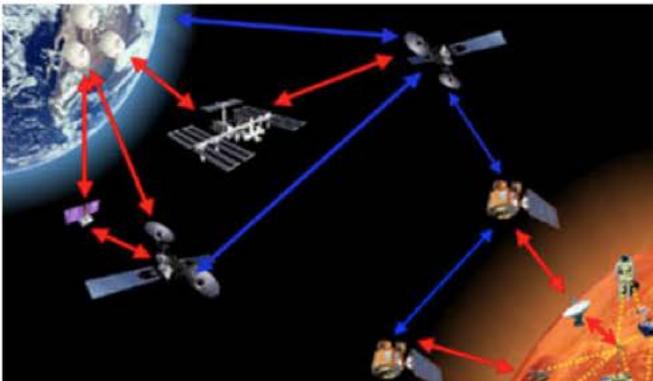
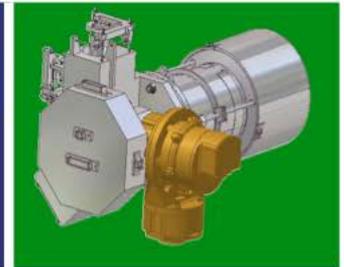
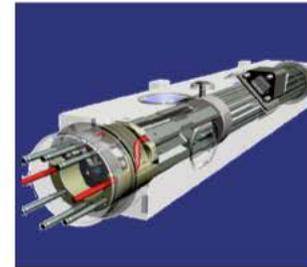
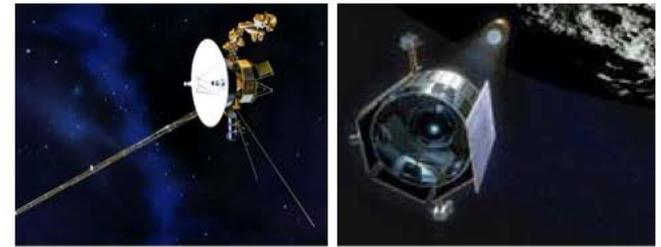


The Madrid Deep Space Communications Complex

Pablo Perez
MDSCC Director



50 YEARS 1963-2013





Jet Propulsion Laboratory
California Institute of Technology

MDSCC





MDSCC OVERVIEW



GENERAL DATA

Located about 55km west of Madrid

104 employees

124 acres

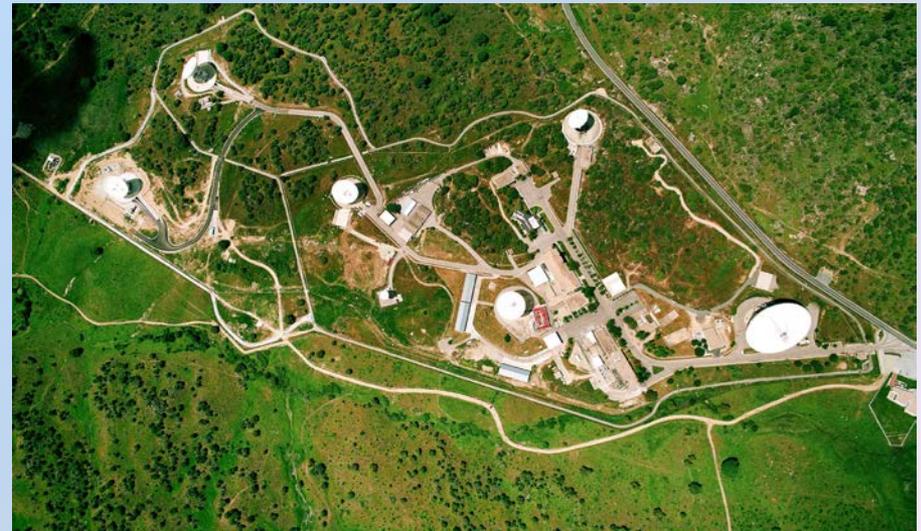
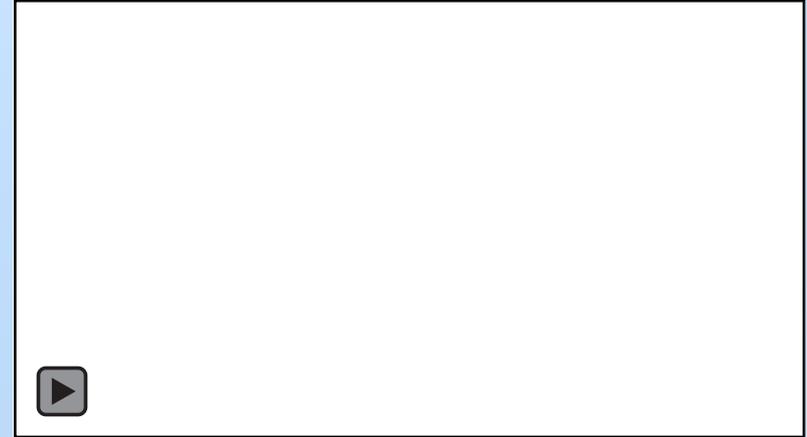
6 antennas: 4 operational

1 RA educational

26m decommitted Oct 08

29 buildings

Power Plant





MDSCC OVERVIEW



OPERATIONAL ANTENNAS



DSS-54 & 55: 34 mts – BWG type

DSS-65: 34 mts – HEF type

DSS-63: 70 mts

Station	S Band		X Band			Ka Band		Ka2	Q
					Acq				
DSS54	✓	✓	✓	✓	✓	✓	No	✓	✓
DSS55	No	No	✓	✓	No	✓	No	No	No
DSS63*	✓	✓	✓	✓	No	RA	No	No	No
DSS65	✓	✓	✓	✓	No	No	No	No	No

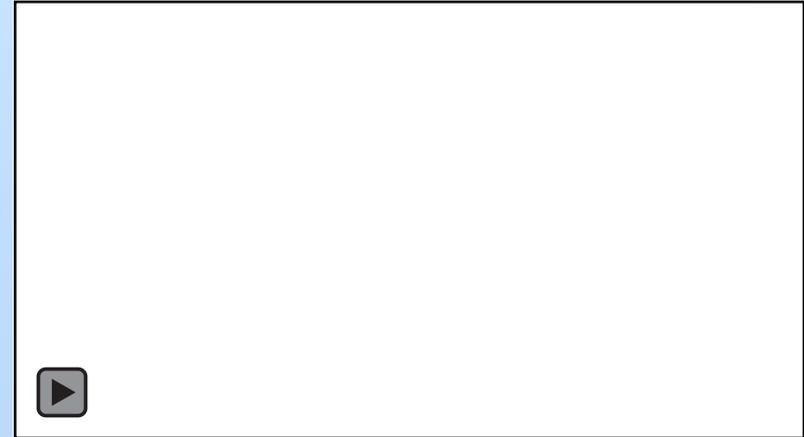


MDSCC OVERVIEW

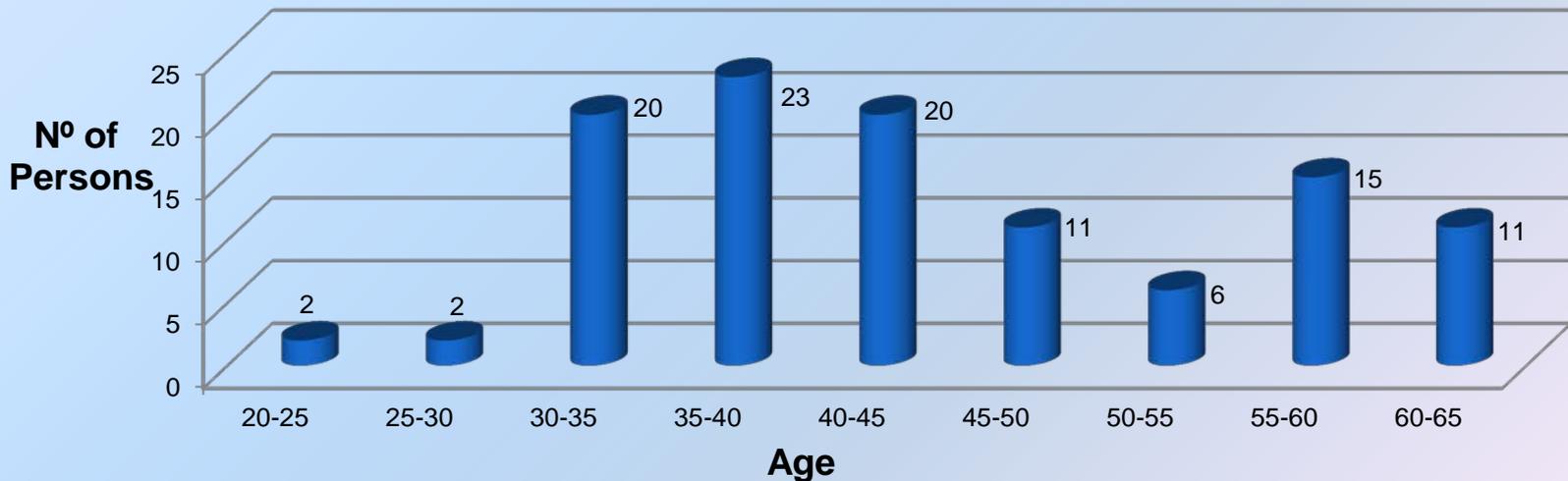


HUMAN RESOURCES

Workforce has decreased from 147 to 104 in the last 8 years
Increasing efficiency
And decreasing average employee age

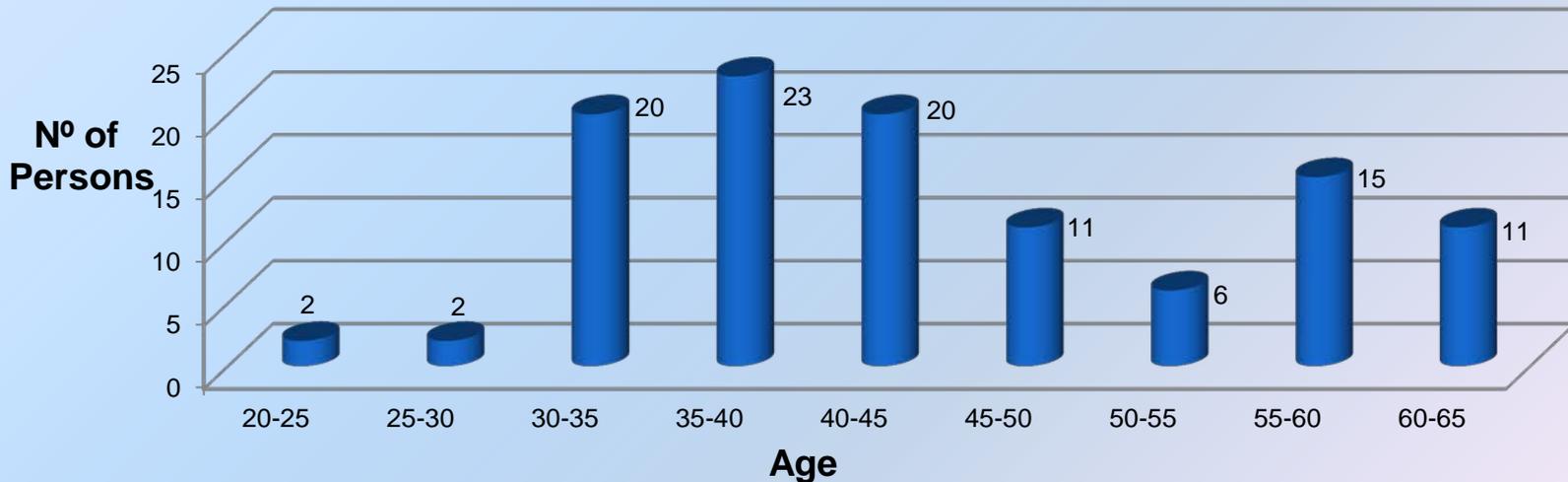
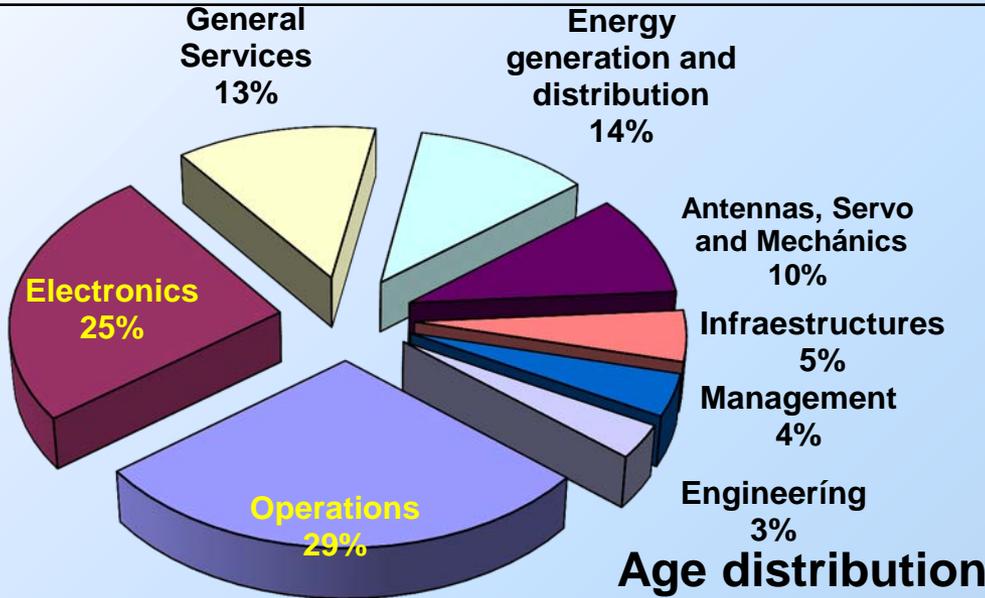


Age distribution





MDSCC OVERVIEW





MDSCC ROLES



FACILITIES:

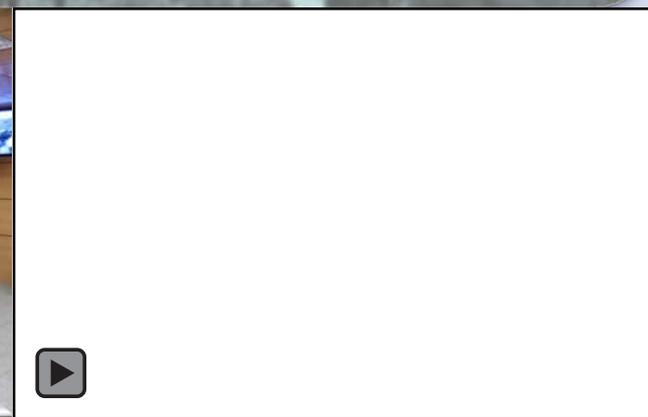
- Energy efficiency program
- Environmental code compliance
- Continuous improvement

OPERATIONS:

- 24x365 operative
- 99.8% Data delivery
- 7000 tracks per year

MAINTENANCE:

- Cost effective maintenance
- Preventive maintenance versus total maintenance ratio, 64%
- Less than 1% critical corrective maintenance



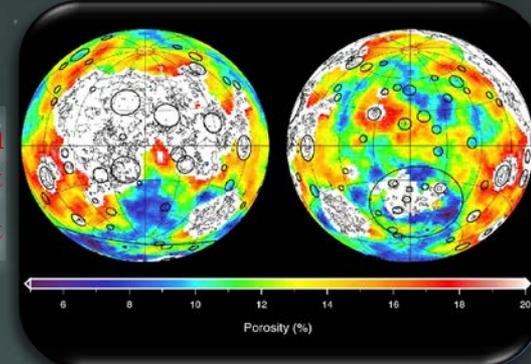


OPERATIONS



ALWAYS LOOKING AT SPACE OVER 30 ACTIVE MISSIONS.

24 x 365 DSN always on
GRAIL support on 2011 December 31st
and 2012 January 1st



LADEE launch & orbital
insertion (Oct, 2013)

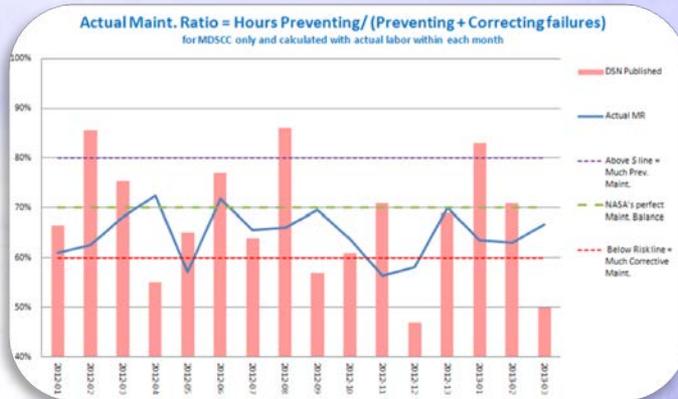
• MOM launch. DSN cooperation with
other space agencies (Nov, 2013)



FAILURE IS NOT AN OPTION

IMPLEMENTING BEST PRACTICES MAINTENANCE PROGRAM

- Adopting US and local codes
- Standardizing maintenance across the network

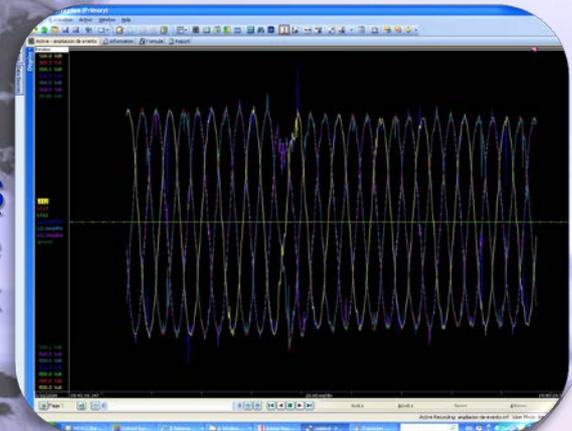


COMPLYING WITH NASA RECOMMENDED MAINTENANCE RATIO

- 64% ratio PM/(CM+PM)

AUTONOMOUS QUICK RESPONSE ON CONTINGENCIES

- Technical expertise personnel is self contained within the complex





NEW ACHIEVEMENTS



MOVING FORWARD TO IMPROVE

Cost efficiency
Increase
feasibility
Environment

MOVING FORWARD TO IMPROVE

COMMERCIAL POWER

- 14 km 20 kV line
- 50% energy saving cost
- Power source diversification
- Reducing emissions

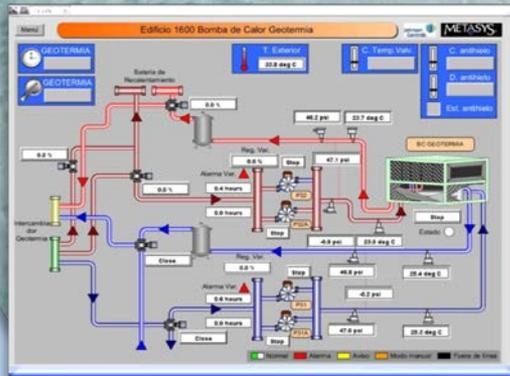
FPS UPGRADE (2012)

- 2.8 km new pipe
- Over 1000 detection elements
- Increase MDSCC safety



GREEN PROGRAM

- Geothermal, solar, VFD, etc.
- Optimize energy consumption
- Reduce the cost
- Reduce environmental impact



ANTENNAS

WORKING AS PART OF DSN TEAM

MANUFACTURED LOCALLY DELIVERY OVERSEAS

- 2 tracks already in operation
- 1 track pending to be shipped
- 2 tracks in project
- Cost saving 40%

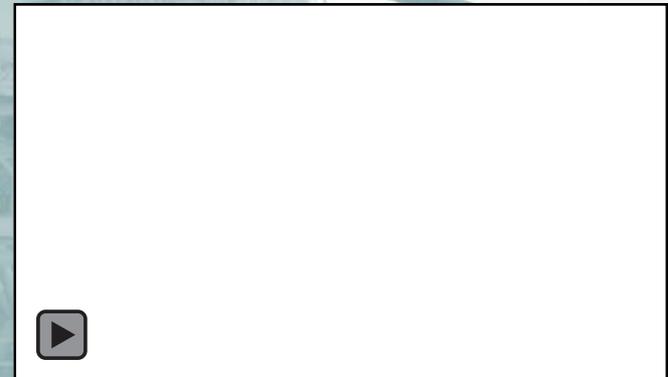


UNEXPECTED DSS-54 PEDESTAL REPARATION

- ASR detection

DSS-63 BEARING REPLACEMENT

- Manufacturing time near to one year
- An example of team work





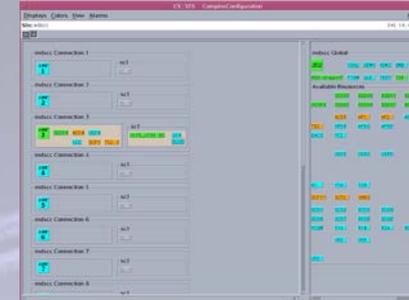
MDSCC DEVELOPEMENTS



ADDING VALUE

COMPLEX SUPERVISOR

- Version 2.0.3.
- Working at DSN from 2001



ASSET MANAGER DEVELOPEMENT

- Used at complexes to control DSN assets

ANTENNA CALIBRATION MONITORING EQUIPMENT

- Standard tool for antenna DSN calibration

