



1

00:00:00,640 --> 00:00:07,689

For NASA, 2010 was another year of new exploration, exciting discoveries, and

2

00:00:07,689 --> 00:00:09,760

important milestones.

3

00:00:09,760 --> 00:00:15,620

From spaceflight, to science and technology; from understanding life here on Earth, to

4

00:00:15,620 --> 00:00:21,769

where we might find it elsewhere. From protecting our home planet, to inspiring the

5

00:00:21,769 --> 00:00:25,560

next generation of explorers.

6

00:00:25,560 --> 00:00:43,710

This was "This Year at NASA."

7

00:00:43,710 --> 00:00:48,350

The December 15th launch of the Soyuz spacecraft carrying Expedition 26 crew

8

00:00:48,350 --> 00:00:53,370

members Cady Coleman, Paolo Nespoli and Dimitry Kondratyev to the International

9

00:00:53,370 --> 00:00:59,200

Space Station capped another year of important milestones for the orbiting complex –

10

00:00:59,200 --> 00:01:03,960

and NASA's space shuttle program, as the retirement of its fleet of orbiters approaches

11

00:01:03,960 --> 00:01:05,140

its retirement.

12

00:01:05,140 --> 00:01:07,090

“All right give me a smile.”

13

00:01:07,090 --> 00:01:11,820

Expedition 22 Commander Jeff Williams and Flight Engineer Max Suraev made a safe

14

00:01:11,820 --> 00:01:15,360

return to Earth in a Soyuz spacecraft which landed on the remote steppes of

15

00:01:15,360 --> 00:01:16,930

Kazakhstan.

16

00:01:16,930 --> 00:01:21,310

Russian recovery teams worked in frigid temperatures to help the crew exit the

17

00:01:21,310 --> 00:01:24,829

spacecraft and begin their readjustment to Earth’s gravity.

18

00:01:24,829 --> 00:01:30,240

“Liftoff of Alexander Skvortsov, Tracy Caldwell Dyson, and Mikhail Kornienko

19

00:01:30,240 --> 00:01:33,640

beginning their journey to the International Space Station.”

20

00:01:33,640 --> 00:01:37,990

The new members of the Expedition 23 crew began their journey to the International

21

00:01:37,990 --> 00:01:42,689

Space Station with a successful launch from the Baikonur Cosmodrome in

22

00:01:42,689 --> 00:01:47,259

Kazakhstan. Soyuz Commander Alexander Skvortsov,
Flight Engineers Mikhail

23

00:01:47,259 --> 00:01:51,969

Kornienko and Tracy Caldwell Dyson will spend
the next six months aboard the

24

00:01:51,969 --> 00:01:53,329

orbiting complex.

25

00:01:53,329 --> 00:01:59,420

The crew of STS-131 returned home to Houston
following their fifteen days in space

26

00:01:59,420 --> 00:02:01,259

aboard shuttle Discovery.

27

00:02:01,259 --> 00:02:05,380

"Nice landing. Well done."

A crowd of several hundred well-wishers greeted

28

00:02:05,380 --> 00:02:09,369

the seven astronauts at Ellington
Field after their flight from the Kennedy

29

00:02:09,369 --> 00:02:14,080

Space Center one day after their safe landing.

30

00:02:14,080 --> 00:02:19,590

"4-3-2-1, launch, launch, launch."

31

00:02:19,590 --> 00:02:25,230

The first test of the fully integrated Launch
Abort System for the Orion crew vehicle was

32

00:02:25,230 --> 00:02:30,760

successfully completed at the White Sands
Missile Range on May 6. The Pad Abort 1

33
00:02:30,760 --> 00:02:35,569
test is part of an ongoing mission to develop
safer vehicles for human spaceflight

34
00:02:35,569 --> 00:02:36,840
applications.

35
00:02:36,840 --> 00:02:43,659
Carrying a six-astronaut crew – STS-132
Commander Ken Ham, Pilot Tony Antonelli

36
00:02:43,659 --> 00:02:49,430
and Mission Specialists Garrett Reisman, Steve
Bowen, Mike Good and Piers Sellers,

37
00:02:49,430 --> 00:02:54,069
space shuttle Atlantis concluded its final
flight, a 12-day trip to the International

38
00:02:54,069 --> 00:02:56,780
Space
Station with a smooth landing at the Kennedy

39
00:02:56,780 --> 00:02:57,780
Space Center.

40
00:02:57,780 --> 00:03:12,932
“And Houston/Atlantis we have wheel stop.
Copy wheel stop Atlantis. That landing was

41
00:03:12,932 --> 00:03:13,932
something that your air force crewmates should
of really been proud of; that was pretty

42
00:03:13,932 --> 00:03:14,932
sweet.”

43
00:03:14,932 --> 00:03:15,932
“I think what a lot of us are wondering

about is making sure that everything is up

44

00:03:15,932 --> 00:03:16,932

and
running again.”

45

00:03:16,932 --> 00:03:17,932

“Shannon and Doug removed the last jumpers
today and put the racks back and so it’s

46

00:03:17,932 --> 00:03:20,360

all spic and span and it’s back to business
as usual it seems.”

47

00:03:20,360 --> 00:03:25,580

The International Space Station’s cooling
system was reactivated and finally back in

48

00:03:25,580 --> 00:03:31,590

normal operation.

49

00:03:31,590 --> 00:03:32,590

“The pump is looking good.”

50

00:03:32,590 --> 00:03:33,590

“Oh, Sweet! We got our station back!”

51

00:03:33,590 --> 00:03:36,170

Three spacewalks by Expedition 24 Flight Engineers
Doug Wheelock and Tracy

52

00:03:36,170 --> 00:03:41,959

Caldwell Dyson were needed to remove and replace
a failed ammonia pump that had

53

00:03:41,959 --> 00:03:52,110

disabled one of the station’s two cooling
loops on July 31.

54

00:03:52,110 --> 00:04:07,290

"I'll pull it."

"There you can see it."

55

00:04:07,290 --> 00:04:08,290

"Yep I see."

56

00:04:08,290 --> 00:04:09,290

"3-2-1 fueling tower separates, booster ignition, and liftoff of the Soyuz Rocket

57

00:04:09,290 --> 00:04:10,290

with

Alexander Kaleri, Scott Kelly and Oleg Skripochka

58

00:04:10,290 --> 00:04:11,290

began their journey to the International Space Station."

59

00:04:11,290 --> 00:04:13,200

Following several days of traditional pre-launch activities and preparations, the

60

00:04:13,200 --> 00:04:17,170

Expedition 25 crew successfully launched aboard a Soyuz TMA-01M rocket on October

61

00:04:17,170 --> 00:04:21,700

7, beginning a two-day journey to the International Space Station. Soyuz Commander

62

00:04:21,700 --> 00:04:26,800

Alexander Kaleri, NASA Flight Engineer Scott Kelly and Russian Flight Engineer Oleg

63

00:04:26,800 --> 00:04:31,550

Skripochka are joining Commander Doug Wheelock and Flight Engineers Fyodor

64

00:04:31,550 --> 00:04:38,140

Yurchikhin and Shannon Walker, who have been in orbit since June.

65

00:04:38,140 --> 00:04:42,620

The first SpaceX Falcon 9 demonstration launch for NASA's Commercial Orbital

66

00:04:42,620 --> 00:04:47,630

Transportation Services program lifted off on Wednesday, Dec. 8 from Launch

67

00:04:47,630 --> 00:04:50,730

Complex 40 at Cape Canaveral Air Force Station in Florida.

68

00:04:50,730 --> 00:04:53,710

"We have liftoff of Falcon 9 stage one."

69

00:04:53,710 --> 00:05:00,280

Known as COTS 1, the launch is the first flight of the Dragon spacecraft and the first

70

00:05:00,280 --> 00:05:05,060

commercial attempt to re-enter a spacecraft from orbit. The demonstration mission

71

00:05:05,060 --> 00:05:11,990

proved key capabilities such as launch, structural integrity of the Dragon spacecraft,

72

00:05:11,990 --> 00:05:16,340

on-orbit operation, re-entry, descent and splashdown in the Pacific Ocean.

73

00:05:16,340 --> 00:05:22,330

As he did in 2009, President Obama made several calls from the White House to

74

00:05:22,330 --> 00:05:24,220

astronauts in space...

75
00:05:24,220 --> 00:05:29,870
But 2010 also saw the president visit the Kennedy Space Center in Florida to present

76
00:05:29,870 --> 00:05:34,340
his plans for NASA and reaffirm his support for space exploration.

77
00:05:34,340 --> 00:05:36,660
“Hey guys!”

78
00:05:36,660 --> 00:05:39,970
President Obama spoke with the crews of space shuttle Endeavour and the

79
00:05:39,970 --> 00:05:43,490
International Space Station from the Roosevelt Room of the White House.

80
00:05:43,490 --> 00:05:49,090
“I think I speak for the all young people here, and everybody back home how proud we

81
00:05:49,090 --> 00:05:56,280
are of you, how excited we are about the work that is being done on the Space Station,

82
00:05:56,280 --> 00:06:05,200
and how committed we are to continuing human space exploration in the future.”

83
00:06:05,200 --> 00:06:09,030
President Barack Obama made a trip to the Kennedy Space Center on Thursday to

84
00:06:09,030 --> 00:06:14,190
explain his plan for America’s space program. Accompanied by Florida Senator and

85
00:06:14,190 --> 00:06:19,500
former shuttle astronaut Bill Nelson, Apollo
astronaut Buzz Aldrin, and NASA

86
00:06:19,500 --> 00:06:24,121
Administrator Charles Bolden, President Obama
addressed an audience comprised of

87
00:06:24,121 --> 00:06:27,680
elected officials, leaders from industry,
academia and KSC employees.

88
00:06:27,680 --> 00:06:37,120
(applause) "I am 100% Committed to the mission
of NASA and its future. (applause)

89
00:06:37,120 --> 00:06:40,970
Because broadening our capabilities in space
will continue to serve our society in

90
00:06:40,970 --> 00:06:47,180
ways we can scarcely imagine. Because exploration
will once more inspire wonder in

91
00:06:47,180 --> 00:06:52,750
a new generation: sparking passions, launching
careers. And because, ultimately, if

92
00:06:52,750 --> 00:06:57,780
we fail to press forward in the pursuit of
discovery, we are ceding our future, ceding

93
00:06:57,780 --> 00:07:01,080
that essential element of the American character."

94
00:07:01,080 --> 00:07:02,080
(applause)

95
00:07:02,080 --> 00:07:05,300

Administrator Charlie Bolden joined President Obama at a special White House

96
00:07:05,300 --> 00:07:09,660
ceremony honoring educators from across the country for their excellence in

97
00:07:09,660 --> 00:07:14,830
mathematics, science teaching and mentoring. The event was part of the President's

98
00:07:14,830 --> 00:07:19,460
"Educate to Innovate" campaign to boost student achievement in STEM subjects:

99
00:07:19,460 --> 00:07:22,090
science, technology, engineering and math.

100
00:07:22,090 --> 00:07:25,990
"I've challenged the scientific community to think of new and creative ways to engage

101
00:07:25,990 --> 00:07:30,880
young people in their fields. That's why we launched the "Educate to Innovate"

102
00:07:30,880 --> 00:07:36,310
campaign -- a nationwide effort by citizens, non-for-profits, universities, and

103
00:07:36,310 --> 00:07:40,550
companies from across America to help us move to the top of the pack in math and

104
00:07:40,550 --> 00:07:41,580
science education."

105
00:07:41,580 --> 00:07:47,690
Through a combination of hands-on projects, creative partnerships and public

106

00:07:47,690 --> 00:07:53,340

appearances, NASA continued to promote the education of our youth in science,

107

00:07:53,340 --> 00:07:59,380

technology, engineering, and math, the STEM disciplines so important to our nation's

108

00:07:59,380 --> 00:08:01,660

future.

109

00:08:01,660 --> 00:08:06,770

NASA is teaming with Univision Communications Inc, the Department of Education

110

00:08:06,770 --> 00:08:11,580

and other organizations to support Univision's initiative to improve Hispanic students

111

00:08:11,580 --> 00:08:16,210

high school graduation rates, prepare for college and encourage them to pursue

112

00:08:16,210 --> 00:08:20,080

careers in science, technology, engineering and mathematics.

113

00:08:20,080 --> 00:08:25,750

"It's a great extension of the efforts that we've been making to foster STEM education

114

00:08:25,750 --> 00:08:30,350

to support the President's 'Educate to Innovate' program, the 'Race to the Top';

115

00:08:30,350 --> 00:08:34,870

it all fits together for us. This program is designated,

116

00:08:34,870 --> 00:08:41,180

primarily, to reach kids in the high school area, but I think with our 'Summer of Innovation'

117

00:08:41,180 --> 00:08:46,050

that's focused on kids in middle schools, they are kind of a perfect marriage."

118

00:08:46,050 --> 00:08:50,110

Teachers became students while participating in the second annual NASA Science,

119

00:08:50,110 --> 00:08:55,090

Technology, Engineering, and Mathematics -- STEM -- Educators, Workshops held this

120

00:08:55,090 --> 00:09:00,630

year in Charlotte, N.C. The 40-session workshop provided elementary, middle and

121

00:09:00,630 --> 00:09:04,840

high school teachers with creative hands-on ways to incorporate NASA content into

122

00:09:04,840 --> 00:09:06,360

their classrooms.

123

00:09:06,360 --> 00:09:12,180

About 25 seventh-grade girls from area middle schools got up close and personal with

124

00:09:12,180 --> 00:09:17,270

unique aircraft and high technology when they participated in a "Tech Trek" tour of the

125

00:09:17,270 --> 00:09:19,590

Dryden Flight Research Center.

126

00:09:19,590 --> 00:09:24,470

The Tech Trek, to develop interest and excitement about math and science and self-

127

00:09:24,470 --> 00:09:29,820

confidence among middle-school girls, included tours of Dryden's main aircraft hangar and

128

00:09:29,820 --> 00:09:32,870

several specialized research and support aircraft.

129

00:09:32,870 --> 00:09:37,710

Dozens of teachers are conducting real science in an extreme environment. Through

130

00:09:37,710 --> 00:09:42,260

Ames Research Center's Spaceward Bound project, NASA has sent teachers to

131

00:09:42,260 --> 00:09:47,940

California State University's Desert Study Center in Zzyzx.

132

00:09:47,940 --> 00:09:52,170

Here, on the edge of the barren Mojave Desert, they help conduct NASA-related field

133

00:09:52,170 --> 00:09:57,130

science. The data and knowledge they glean at Zzyzx will be used to develop

134

00:09:57,130 --> 00:10:02,060

experiments, demonstrations and lesson plans for their students.

135

00:10:02,060 --> 00:10:06,940

NASA Administrator Charles Bolden joined with other NASA volunteers in helping

136

00:10:06,940 --> 00:10:10,060

these fifth graders become rocket scientists

for day.

137

00:10:10,060 --> 00:10:17,270

The students at the Langdon Elementary School in Washington built and test flew

138

00:10:17,270 --> 00:10:21,950

their own paper rockets using a high-power paper rocket launcher.

139

00:10:21,950 --> 00:10:27,260

“Please give a warm welcome to Charlie Bolden.”

140

00:10:27,260 --> 00:10:32,180

“Alright, Alright, Alright. Hi ya doing?”

141

00:10:32,180 --> 00:10:37,320

More than 250 students joined with astronaut Leland Melvin and Administrator Charles

142

00:10:37,320 --> 00:10:42,360

Bolden at the Jet Propulsion Laboratory to help kickoff NASA’s Summer of Innovation.

143

00:10:42,360 --> 00:10:45,710

What we want to do this summer through the Summer of Innovation is take young

144

00:10:45,710 --> 00:10:50,170

men and women like Malik and we want them understand, yeah science and math

145

00:10:50,170 --> 00:10:52,320

may be difficult, but you can learn it.”

146

00:10:52,320 --> 00:10:57,850

Also, over the Labor Day weekend, actor/rapper Mos Def and astronaut Leland Melvin

147

00:10:57,850 --> 00:11:02,570

teamed up to share NASA's Summer of Innovation program with young people at the

148

00:11:02,570 --> 00:11:08,120

Instituting Science in Schools Science and Cultural Festival at the Chabot Observatory

149

00:11:08,120 --> 00:11:13,100

in Oakland, California, and people attending the Tom Joyner Morning Show Family

150

00:11:13,100 --> 00:11:17,280

Reunion in Orlando, Florida.

151

00:11:17,280 --> 00:11:22,380

Once again, NASA employees proved the importance of community involvement.

152

00:11:22,380 --> 00:11:27,380

Centers threw open their doors to neighbors, and reached out to make new friends for

153

00:11:27,380 --> 00:11:33,430

the agency. NASA also provided technological assistance to a region of our country

154

00:11:33,430 --> 00:11:38,720

threatened with ecological disaster, and expertise to another member of the global

155

00:11:38,720 --> 00:11:43,120

community in their time of grave need.

156

00:11:43,120 --> 00:11:47,630

NASA assets continue to help scientists track two events causing worldwide

157

00:11:47,630 --> 00:11:53,000

environmental and economic concern. NASA's

instrumented research aircraft, the

158

00:11:53,000 --> 00:11:59,740

Earth Resources-2, or ER-2, has been deployed to the Gulf of Mexico to do flyovers of

159

00:11:59,740 --> 00:12:05,730

the Deepwater Horizon BP oil spill and the coastline it threatens. The agency is also

160

00:12:05,730 --> 00:12:10,800

making extra satellite observations and conducting additional data processing to help

161

00:12:10,800 --> 00:12:16,060

U.S. disaster response agencies assess the spread and impact of the slick.

162

00:12:16,060 --> 00:12:17,630

"Okay guys, let's go!"

163

00:12:17,630 --> 00:12:23,529

The first hatchlings from endangered sea turtle eggs at possible risk by the BP oil spill

164

00:12:23,529 --> 00:12:28,780

were released into the Atlantic Ocean off the Kennedy Space Center on July 11.

165

00:12:28,780 --> 00:12:33,430

"There they go. Yeah! That's awesome."

166

00:12:33,430 --> 00:12:38,920

After their collection at a Florida Panhandle beach, the eggs of twenty-two Kemp's

167

00:12:38,920 --> 00:12:44,000

ridley turtles were brought to a secure, climate-controlled facility at Kennedy where the

168

00:12:44,000 --> 00:12:48,010

nest was monitored until incubation was complete.

169

00:12:48,010 --> 00:12:54,230

When she was just six years old, Carolina Gallardo fell in love with the night sky.

170

00:12:54,230 --> 00:12:56,760

As a teenager, the young woman from a poor family

171

00:12:56,760 --> 00:13:02,320

near Mexico City watched a television show about astronomy and the Hubble Space

172

00:13:02,320 --> 00:13:07,830

Telescope that would make the stars her life's work. Carolina, then thirteen, was

173

00:13:07,830 --> 00:13:13,780

so inspired by Ed Weiler, the NASA scientist featured on the program that she initiated

174

00:13:13,780 --> 00:13:18,310

a correspondence with him that would encourage her studies for years to come.

175

00:13:18,310 --> 00:13:24,090

Now, at age 30, Carolina Gallardo has finished a summer internship at the Goddard

176

00:13:24,090 --> 00:13:29,110

Space Flight Center to complete masters' programs in aeronautics/astronautics and

177

00:13:29,110 --> 00:13:34,110

space technology. A special guest at the Science Mission Directorate's monthly

178

00:13:34,110 --> 00:13:38,910

meeting at Headquarters, Caroline told senior managers how Weiler, now the

179

00:13:38,910 --> 00:13:44,390

director's Associate Administrator and others at NASA have impacted her life.

180

00:13:44,390 --> 00:13:52,470

"Now I graduate with two Masters in aerospace and I can say that thanks to you, thanks

181

00:13:52,470 --> 00:14:01,100

to your challenge, to your motivation, I can tell everyone that if it wasn't for you,

182

00:14:01,100 --> 00:14:06,560

I wouldn't have gone this far. Thank you very

183

00:14:06,560 --> 00:14:09,430

much."

184

00:14:09,430 --> 00:14:14,350

NASA Administrator Charles Bolden and the NASA team that traveled to Chile to assist

185

00:14:14,350 --> 00:14:19,480

the once-trapped miners met with President Obama on Oct. 28 in the White House

186

00:14:19,480 --> 00:14:24,620

Oval Office. The team advised Chilean rescue officials on how to maintain the

187

00:14:24,620 --> 00:14:29,670

psychological and physiological well-being of the 33 miners trapped a half-mile

188

00:14:29,670 --> 00:14:34,580

beneath the Earth's surface, as well as
the design of the rescue capsule in which

189

00:14:34,580 --> 00:14:41,020

each

man would finally ascend after 69 days underground.

190

00:14:41,020 --> 00:14:46,460

For nearly eighty years, the LEGO "brick"
has helped enhance children's creativity

191

00:14:46,460 --> 00:14:52,000

through playing and learning. Now, NASA is
teaming up with LEGO to develop

192

00:14:52,000 --> 00:14:56,930

innovative educational and outreach activities
to interest youngsters in science,

193

00:14:56,930 --> 00:15:02,680

technology, engineering and mathematics. The
collaboration, called "Build the Future,

194

00:15:02,680 --> 00:15:09,170

kicked off at Kennedy with youngsters building
their vision of the future in space.

195

00:15:09,170 --> 00:15:14,850

The continuing study of ice sheets in the
Arctic was just one way NASA researchers

196

00:15:14,850 --> 00:15:20,970

added to the data about changes in temperatures
and sea levels around the globe.

197

00:15:20,970 --> 00:15:27,450

A new NASA Web site can help our future explorers
and leaders better understand the

198

00:15:27,450 --> 00:15:31,600

how's and why's of climate change – and
what they can do to make our planet more

199

00:15:31,600 --> 00:15:32,710

habitable.

200

00:15:32,710 --> 00:15:35,780

“Kind of far south for a polar bear ain’t
you? “

201

00:15:35,780 --> 00:15:43,500

“You don’t say. Look, my habitat is shrinking
and I obviously fell asleep on the wrong

202

00:15:43,500 --> 00:15:44,500

iceberg.”

203

00:15:44,500 --> 00:15:46,399

“What you say?”

204

00:15:46,399 --> 00:15:50,130

Climate Kids can be found at <http://climate.nasa.gov/kids>

205

00:15:50,130 --> 00:15:54,330

Operation IceBridge has entered the second
phase of its spring 2010 campaign.

206

00:15:54,330 --> 00:15:59,970

NASA’s DC-8 aircraft has returned from Greenland
to the Dryden Flight Research

207

00:15:59,970 --> 00:16:05,710

Center in California, following a successful
survey of the entire Arctic Ocean. The

208

00:16:05,710 --> 00:16:11,220

plane flew from Thule, Greenland to Fairbanks,
Alaska providing a detailed snapshot

209

00:16:11,220 --> 00:16:14,060
of sea ice conditions.

210

00:16:14,060 --> 00:16:18,620
As this year's hurricane season gets underway,
the Goddard Space Flight Center has

211

00:16:18,620 --> 00:16:23,770
unveiled, for the media, NASA's new climate
simulation center. An amalgam of

212

00:16:23,770 --> 00:16:28,790
supercomputing, visualization, and data interaction
technologies, the climate

213

00:16:28,790 --> 00:16:33,550
simulation center, supports weather and climate
prediction research at one of the

214

00:16:33,550 --> 00:16:36,330
world's largest contingents of Earth scientists.

215

00:16:36,330 --> 00:16:41,660
A NASA-sponsored mission in Alaska is exploring
how changes in the Arctic's sea ice

216

00:16:41,660 --> 00:16:47,580
cover may be contributing to global warming.
ICESCAPE, for Impacts of Climate on

217

00:16:47,580 --> 00:16:52,720
Ecosystems and Chemistry of the Arctic Pacific
Environment," is working its way

218

00:16:52,720 --> 00:16:57,430
through the Bering Strait headed for the Chukchi
and Beaufort seas.

219

00:16:57,430 --> 00:17:03,140
From laboratory and wind tunnel research to

demonstration tests, NASA Aeronautics

220

00:17:03,140 --> 00:17:10,360

continued its green aviation initiatives.

Their goal: to make air travel quieter, cleaner

221

00:17:10,360 --> 00:17:16,300

and more efficient while increasing the safety and comfort of passengers.

222

00:17:16,300 --> 00:17:21,270

The Ames Research Center was the scene of a gathering of experts from government,

223

00:17:21,270 --> 00:17:26,400

industry and academia meeting to discuss the agency's green aviation research efforts

224

00:17:26,400 --> 00:17:29,510

"...doing research in alternative bio-fuels."

225

00:17:29,510 --> 00:17:35,059

and showcase groundbreaking solutions NASA and its partners are developing to

226

00:17:35,059 --> 00:17:39,390

reduce the impact of aviation systems on the environment.

227

00:17:39,390 --> 00:17:44,650

Over a two day period, attendees heard researchers, scientists, technicians and

228

00:17:44,650 --> 00:17:49,600

leading policymakers, present on the latest emerging environmentally sensitive

229

00:17:49,600 --> 00:17:51,820

aviation technologies.

230

00:17:51,820 --> 00:17:55,810

“Please join us in welcoming our NASA Administrator, Mr. Bolden.”

231

00:17:55,810 --> 00:18:00,210

NASA Administrator Charles Bolden addressed the group on day one of the event.

232

00:18:00,210 --> 00:18:05,020

“We’re so excited at NASA about the opportunities we’re being given, in the coming

233

00:18:05,020 --> 00:18:10,460

years, to help develop solutions to some of our most pressing aviation problems, and

234

00:18:10,460 --> 00:18:15,940

create the next generation of air transportation systems that will last generations and

235

00:18:15,940 --> 00:18:21,330

make us all safer and make the planet a better place That’s a huge challenge, but we

236

00:18:21,330 --> 00:18:24,990

at NASA enthusiastically accept it.”

237

00:18:24,990 --> 00:18:31,210

2010 brought new discoveries by NASA scientists and researchers exploring the sun,

238

00:18:31,210 --> 00:18:36,130

its orbiting planets and moons, the farthest reaches of the universe – and the nature

239

00:18:36,130 --> 00:18:39,670

of the life itself here on earth.

240

00:18:39,670 --> 00:18:44,660

NASA scientists drilling through the thick ice of Antarctica's Ross Ice Shelf last

241

00:18:44,660 --> 00:18:49,710

November didn't expect to see this shrimp-like thing swimming underneath. The

242

00:18:49,710 --> 00:18:55,730

creature, a three-inch long Lyssianasid amphipod, was captured 600 feet below the

243

00:18:55,730 --> 00:19:01,180

West Antarctic ice sheet by a borehole camera lowered through the ice. This was the

244

00:19:01,180 --> 00:19:05,600

view looking upwards. The critter was about 12-and-a-half miles away from open

245

00:19:05,600 --> 00:19:11,350

water. Scientists say this is the first time such a sophisticated life form was found in

246

00:19:11,350 --> 00:19:13,980

this type of sub-glacial environment.

247

00:19:13,980 --> 00:19:19,990

Scientists now believe Earth's nearest neighbor Venus is more like our planet than they

248

00:19:19,990 --> 00:19:24,559

previously thought. New findings based on pictures and infrared imagery captured by

249

00:19:24,559 --> 00:19:28,090

the European Space Agency's Venus Express mission

250

00:19:28,090 --> 00:19:34,510

and NASA's Magellan spacecraft confirm that Venus is not a cold rock but a dynamic host

251

00:19:34,510 --> 00:19:38,020

of active volcanoes like those found in Hawaii.

252

00:19:38,020 --> 00:19:42,120

"The fact that we have discovered this volcanism that's pretty recent on the surface of Venus

253

00:19:42,120 --> 00:19:48,400

definitely moves us toward a picture of Venus where it continues to have volcanism today

254

00:19:48,400 --> 00:19:51,920

and, in a lot of ways, is more like the earth than we

255

00:19:51,920 --> 00:19:52,920

had imagined."

256

00:19:52,920 --> 00:19:58,050

Relatively young lava flows within the last 3 million years have been identified by their

257

00:19:58,050 --> 00:20:02,059

emissions of infrared radiation. These observations

258

00:20:02,059 --> 00:20:06,040

suggest Venus is still capable of volcanic eruptions.

259

00:20:06,040 --> 00:20:10,809

Venus Express has been in orbit around the planet since April 2006.

260

00:20:10,809 --> 00:20:16,830

The first images are in from NASA's Solar Dynamics Observatory, or SDO, and

261

00:20:16,830 --> 00:20:20,490

scientists who study the sun say they are a stunning treasure trove of data about

262

00:20:20,490 --> 00:20:21,560

Earth's star.

263

00:20:21,560 --> 00:20:26,800

"The first images are now in hand and these are truly spectacular and they show the

264

00:20:26,800 --> 00:20:31,090

details of our sun that have not been available to us before in a comprehensive and

265

00:20:31,090 --> 00:20:32,340

multidimensional manner."

266

00:20:32,340 --> 00:20:38,770

"Ignition and lift-off of the Atlas-5 with the Solar Dynamics Observatory."

267

00:20:38,770 --> 00:20:44,480

Launched on Feb. 11, 2020, SDO is the most advanced spacecraft ever designed to

268

00:20:44,480 --> 00:20:49,750

study the sun. SDO's images confirm an unprecedented new capability for

269

00:20:49,750 --> 00:20:55,590

heliophysicists to better understand our sun's dynamic processes and how and why

270

00:20:55,590 --> 00:20:58,370

these solar activities affect everything on earth.

271

00:20:58,370 --> 00:21:01,890

“This discovery is just astounding.”

272

00:21:01,890 --> 00:21:08,200

After continually monitoring the brightness of more than 156,000 stars, NASA's Kepler

273

00:21:08,200 --> 00:21:11,990

team has released the first 43 days of science data...

274

00:21:11,990 --> 00:21:17,751

“This is the biggest release of candidate planets that has ever happened. The number

275

00:21:17,751 --> 00:21:21,820

of candidate planets is actually greater than all the planets that have been discovered

276

00:21:21,820 --> 00:21:23,120

in the last 15 years.”

277

00:21:23,120 --> 00:21:28,270

“ 3-2-engine start—1, zero, and lift off of the Delta II Rocket with Kepler.”

278

00:21:28,270 --> 00:21:36,429

Since its launch on March 6, 2009, Kepler has been on the hunt to find planets similar

279

00:21:36,429 --> 00:21:42,280

in size to our Earth, especially those in the habitable zone of stars where liquid water

280

00:21:42,280 --> 00:21:44,710

and possibly life might exist.

281

00:21:44,710 --> 00:21:49,170

New observations by the Hubble Space Telescope's

Cosmic Origins Spectrograph

282

00:21:49,170 --> 00:21:55,650

(COS), confirm the existence of a giant scorched planet traveling extremely close to its

283

00:21:55,650 --> 00:22:02,980

star. Named HD 209458b, it's being called by astronomers a "cometary planet"

284

00:22:02,980 --> 00:22:08,090

because it has the components of a planet - but with a trailing tail like a comet,

285

00:22:08,090 --> 00:22:11,230

possibly the result of strong stellar winds sweeping

286

00:22:11,230 --> 00:22:12,460

off its super heated atmosphere.

287

00:22:12,460 --> 00:22:15,390

"Mass is being stripped of at the rate of about 100,000 cars per second. So, a typical

288

00:22:15,390 --> 00:22:26,780

big car plant on the Earth might make 100, 200,

289

00:22:26,780 --> 00:22:36,150

300-thousand cars a year. That's how many they're making. This planet is losing that

290

00:22:36,150 --> 00:22:37,150

much mass per second."

291

00:22:37,150 --> 00:22:41,190

HD 209458B is 153 light years from Earth, weighs slightly less than Jupiter, and

292

00:22:41,190 --> 00:22:46,710

speeds around its star in about 3 and 1/12 days, which means one of our weeks is

293

00:22:46,710 --> 00:22:49,460

equal to two of its years.

294

00:22:49,460 --> 00:22:55,310

The EPOXI mission spacecraft made its planned flyby of comet Hartley 2 – and the

295

00:22:55,310 --> 00:22:59,670

pictures it sent back to investigation team members at the Jet Propulsion Laboratory

296

00:22:59,670 --> 00:23:02,970

did not disappoint.

297

00:23:02,970 --> 00:23:08,700

(cheers, applause)

298

00:23:08,700 --> 00:23:13,440

“Deep Impact,” so named for the 2005 mission it initially served as the “in-flight”

299

00:23:13,440 --> 00:23:19,880

spacecraft, flew by Hartley 2 about 435 miles above its surface, close enough to

300

00:23:19,880 --> 00:23:22,960

image the heart of the comet, its nucleus.

301

00:23:22,960 --> 00:23:32,100

“Congratulations on a fantastic flyby. Good job everybody!”

302

00:23:32,100 --> 00:23:36,990

“The data we have, I am convinced, the comic Hartley will have increased our

303

00:23:36,990 --> 00:23:44,780

knowledge of how comments work by at least three Hartleys. The Hartley is a real unit

304

00:23:44,780 --> 00:23:47,140

of information and three Hartley's is about

305

00:23:47,140 --> 00:23:48,730

a factor of ten."

306

00:23:48,730 --> 00:23:53,660

"I always like to tell people that you all are incredible ambassadors as you're there

307

00:23:53,660 --> 00:23:59,410

representing just two of the many nations that are partners in the International Space

308

00:23:59,410 --> 00:24:05,929

Station. What you do is actually a modern-day Star Trek, if you will; kids are excited

309

00:24:05,929 --> 00:24:07,320

about watching you."

310

00:24:07,320 --> 00:24:11,530

NASA Administrator Charles Bolden helped mark the tenth anniversary of a

311

00:24:11,530 --> 00:24:16,310

continuous human presence aboard the International Space Station by discussing life

312

00:24:16,310 --> 00:24:21,419

aboard the complex with its current residents, the Expedition 25 crew.

313

00:24:21,419 --> 00:24:27,410

“Everyday there’s new excitement and new adventure as we venture out with some of the

314

00:24:27,410 --> 00:24:33,100

science that we’re doing. And, of course, being here in space never ceases to amaze

315

00:24:33,100 --> 00:24:35,730

us of the surprises it has in store for us.”

316

00:24:35,730 --> 00:24:40,940

Expedition 25 Commander Doug Wheelock and Flight Engineers Alexander Kaleri,

317

00:24:40,940 --> 00:24:47,299

Oleg Skripochka, Scott Kelly, Fyodor Yurchikhin, and Shannon Walker are the latest of

318

00:24:47,299 --> 00:24:52,940

almost 200 men and women who, over the past decade, have called the ISS home

319

00:24:52,940 --> 00:24:54,090

while away from Earth.

320

00:24:54,090 --> 00:24:59,980

“I want to thank you for what you’ve done and for what you represent, and congratulate

321

00:24:59,980 --> 00:25:05,040

you on being the occupants of the station as we celebrate its tenth anniversary.”

322

00:25:05,040 --> 00:25:11,799

Soil inside shadowy craters on the moon is rich in useful materials. That’s one of

323

00:25:11,799 --> 00:25:15,210

the
findings by NASA scientists after analyzing

324

00:25:15,210 --> 00:25:20,679

the impact plume created by the Lunar
Crater Observation and Sensing Satellite (LCROSS)

325

00:25:20,679 --> 00:25:26,020

mission last year. The lunar soil
also showed that the moon is chemically active

326

00:25:26,020 --> 00:25:28,230

and has a water cycle.

327

00:25:28,230 --> 00:25:33,860

“There are a variety of sources, either
comets or the solar wind, and these sources

328

00:25:33,860 --> 00:25:36,130

are
coming to the moon and then, once at the moon,

329

00:25:36,130 --> 00:25:41,540

this water is migrating, moving around
the moon and finding its way to various places,

330

00:25:41,540 --> 00:25:46,210

like the cold craters. But it doesn't stop
there. Once in the cold craters, there's

331

00:25:46,210 --> 00:25:47,900

chemistry going on that's further changing
these

332

00:25:47,900 --> 00:25:53,210

compounds, having them interact with each
other and resulting in this mix of water and

333

00:25:53,210 --> 00:25:54,210

other things.”

334

00:25:54,210 --> 00:25:58,610

LCROSS collected invaluable data as it flew through the debris kicked up by the crash

335

00:25:58,610 --> 00:26:03,830

of its Centaur rocket's spent upper stage into a permanently-shadowed region of a

336

00:26:03,830 --> 00:26:08,360

lunar crater on October 9, 2009.

337

00:26:08,360 --> 00:26:13,450

The establishment of NASA's Office of the Chief Technologist helped underscore the

338

00:26:13,450 --> 00:26:19,750

bold new course set for future exploration. 2010 brought scientific advancements and

339

00:26:19,750 --> 00:26:24,720

technological developments that will help lead the way forward.

340

00:26:24,720 --> 00:26:30,110

The first, full-scale, friction stir welded and spun-formed tank dome was unveiled by

341

00:26:30,110 --> 00:26:34,611

NASA and its partners at a special ceremony at the Marshall Space Flight Center.

342

00:26:34,611 --> 00:26:40,290

"It's terrific to be here in person to publicly thank this team and to recognize

343

00:26:40,290 --> 00:26:44,300

the great efforts that come out of this work over the

344

00:26:44,300 --> 00:26:47,180

last four-to-five years. It's been a terrific effort."

345

00:26:47,180 --> 00:26:51,280

Tank domes are a necessary component in fuel tanks for securing liquid propellant.

346

00:26:51,280 --> 00:26:56,600

The 18-foot prototype was developed using cutting-edge manufacturing techniques

347

00:26:56,600 --> 00:27:02,120

that, by eliminating complex welding, machining and inspection steps, are proving

348

00:27:02,120 --> 00:27:07,070

more reliable and less expensive. They can create domes for any large liquid

349

00:27:07,070 --> 00:27:08,260

propellant tank.

350

00:27:08,260 --> 00:27:13,710

A six-member team of aquanauts is testing exploration concepts off Florida's east

351

00:27:13,710 --> 00:27:18,179

coast in the difficult and often dangerous work environment of the ocean.

352

00:27:18,179 --> 00:27:23,299

During the 14-day undersea mission, the NEEMO crew lives and works aboard the

353

00:27:23,299 --> 00:27:28,539

Aquarius Underwater Laboratory, where they'll perform life science experiments on

354

00:27:28,539 --> 00:27:33,930

human behavior, performance and physiology.

They'll also venture out into the depths

355

00:27:33,930 --> 00:27:38,799

to simulate spacewalks, and operate and maneuver mockups of vehicles future space

356

00:27:38,799 --> 00:27:44,200

explorers might use in setting up a habitat on another planet.

357

00:27:44,200 --> 00:27:49,570

The Stratospheric Observatory for Infrared Astronomy, or SOFIA, has conducted its

358

00:27:49,570 --> 00:27:56,360

"First Light" mission, producing this composite infrared image of Jupiter. A recent

359

00:27:56,360 --> 00:28:00,460

visual-wavelength picture of approximately the same side of Jupiter is shown for

360

00:28:00,460 --> 00:28:06,490

comparison. The white stripe in the infrared image is a region of relatively transparent

361

00:28:06,490 --> 00:28:12,580

clouds through which the warm interior of Jupiter can be seen. Recording the imagery

362

00:28:12,580 --> 00:28:18,340

was the recently-installed Faint Object Infrared Camera, or FORCAST. FORCAST will

363

00:28:18,340 --> 00:28:22,620

be used to study celestial objects such as planets and star-forming regions.

364

00:28:22,620 --> 00:28:28,290

A camera aboard NASA's Mars Odyssey spacecraft has helped develop the most

365

00:28:28,290 --> 00:28:32,940

accurate global Martian map ever. And not only can researchers access the map – so,

366

00:28:32,940 --> 00:28:40,150

can the public, explore and survey the entire surface of the Red Planet as well.

367

00:28:40,150 --> 00:28:45,539

The map is made from nearly 21,000 images taken by the Thermal Emission Imaging

368

00:28:45,539 --> 00:28:49,380

System, THEMIS, a multi-band infrared camera on Odyssey. The pictures have been

369

00:28:49,380 --> 00:28:53,200

smoothed, matched, blended and cartographically controlled to make a giant mosaic.

370

00:28:53,200 --> 00:29:02,340

Users can pan and zoom into the images, with some of the smallest surface details

371

00:29:02,340 --> 00:29:09,179

just 330 feet wide. Researchers at Arizona State University's Mars Space Flight Facility

372

00:29:09,179 --> 00:29:13,860

and the Jet Propulsion Laboratory have been compiling the map since THEMIS began

373

00:29:13,860 --> 00:29:14,950

observations eight years ago.

374

00:29:14,950 --> 00:29:18,380

“4-3-2-1-FIRE!”

375

00:29:18,380 --> 00:29:26,600

NASA's next-generation, five-segment solid rocket development motor -- or DM-2 –

376

00:29:26,600 --> 00:29:32,960

was fired in its test stand at ATK's facility in Promontory, Utah. The successful cold

377

00:29:32,960 --> 00:29:37,429

motor test was completed in less than three minutes and was designed to advance the

378

00:29:37,429 --> 00:29:43,340

understanding, safety, technology and capability of solid rocket motors. The DM-2's

379

00:29:43,340 --> 00:29:47,850

overall temperature was lowered to 40 degrees Fahrenheit to validate the motor's

380

00:29:47,850 --> 00:29:52,760

performance in cold weather -- in contrast to the DM-1 testing which was conducted at

381

00:29:52,760 --> 00:29:53,760

ambient temperature.

382

00:29:53,760 --> 00:29:58,770

“This was a cold test, which is one of the most severe and tough environments for a solid

383

00:29:58,770 --> 00:30:05,150

rocket booster to undergo, and it looks like the motor performed brilliantly.”

384

00:30:05,150 --> 00:30:09,750

In a year when NASA was recognized as a government leader in its use of social

385

00:30:09,750 --> 00:30:16,000

media and the Web, the agency further expanded how it enables the public to engage

386

00:30:16,000 --> 00:30:21,789

with America's space program. NASA's centers, programs and projects can now be

387

00:30:21,789 --> 00:30:27,789

found on more than 200 locations across Facebook, Flickr, YouTube, Ustream and

388

00:30:27,789 --> 00:30:34,200

Twitter, some of whose users participated in special agency events.

389

00:30:34,200 --> 00:30:39,900

NASA is bringing the public one step closer to the universe through a partnership with

390

00:30:39,900 --> 00:30:46,179

Gowalla. The mobile web application lets users check-in via smart phone as they visit

391

00:30:46,179 --> 00:30:51,490

a location. When users visit a NASA-related venue, such as the Kennedy Space

392

00:30:51,490 --> 00:30:56,420

Center or here at the Smithsonian National Air and Space Museum, they'll be awarded

393

00:30:56,420 --> 00:31:02,280

a virtual NASA item, such as moon rocks or a space shuttle. Gowalla users collecting

394

00:31:02,280 --> 00:31:07,130

enough of these items will qualify for the chance to win a special limited edition

395

00:31:07,130 --> 00:31:09,460

NASA/Gowalla map.

396

00:31:09,460 --> 00:31:15,580

The virtual items will be "available"
at NASA visitor centers and at more than 400

397

00:31:15,580 --> 00:31:20,900

museums, science centers, observatories, and
other NASA Museum Alliance

398

00:31:20,900 --> 00:31:22,059

members.

399

00:31:22,059 --> 00:31:26,500

To view the NASA/Gowalla map and connect with
NASA and @Astro_Mike on

400

00:31:26,500 --> 00:31:31,429

Gowalla and other social media applications,
visit: <http://www.nasa.gov/connect>

401

00:31:31,429 --> 00:31:41,059

As in years past, NASA and its employees garnered
numerous awards for their

402

00:31:41,059 --> 00:31:46,950

achievements in science, aeronautics, exploration,
technology and other disciplines.

403

00:31:46,950 --> 00:31:52,049

Brenda Manuel, NASA Associate Administrator
for Diversity and Equal Opportunity,

404

00:31:52,049 --> 00:31:56,830

was honored by the Society of Women Engineers
as this year's recipient of the group's

405

00:31:56,830 --> 00:32:01,470

President's Award. A lawyer by training, Manuel was recognized for her longtime

406

00:32:01,470 --> 00:32:05,690

encouragement of women to pursue careers in the STEM fields of science,

407

00:32:05,690 --> 00:32:07,950

technology, engineering and mathematics.

408

00:32:07,950 --> 00:32:14,299

STS-125, the fifth space shuttle servicing mission that gave the Hubble Space

409

00:32:14,299 --> 00:32:19,480

Telescope a new lease on life, and L-CROSS, the mission that definitively proved the

410

00:32:19,480 --> 00:32:24,790

presence of water on the moon, received awards from the Space Foundation at its 26th

411

00:32:24,790 --> 00:32:28,809

annual National Space Symposium in Colorado Springs.

412

00:32:28,809 --> 00:32:33,420

"The award this year goes to the Hubble Telescope repair team and the repair mission

413

00:32:33,420 --> 00:32:34,720

team." (applause)

414

00:32:34,720 --> 00:32:41,110

For program success in the evolution of space exploration and development, the STS-

415

00:32:41,110 --> 00:32:46,440

125 crew of Commander Scott Altman, Pilot

Greg Johnson and Mission Specialists

416

00:32:46,440 --> 00:32:51,770

Drew Feustel, Mike Good, John Grunsfeld, Mike Massimino and Megan McArthur

417

00:32:51,770 --> 00:32:55,650

received the Foundation's annual Space Achievement Award.

418

00:32:55,650 --> 00:33:02,090

"On behalf of the entire Hubble Servicing team I'd like to thank the space foundation."

419

00:33:02,090 --> 00:33:07,169

The LCROSS mission team was presented with the 2010 John L. "Jack" Swigert, Jr.,

420

00:33:07,169 --> 00:33:13,890

award for Space Exploration. Established in 2004, the annual award is a tribute to the

421

00:33:13,890 --> 00:33:19,030

late Coloradan and his enduring legacy of space exploration as a member of the

422

00:33:19,030 --> 00:33:25,310

Apollo 13 mission. LCROSS crashed one spacecraft into the moon; another, following

423

00:33:25,310 --> 00:33:31,070

minutes behind, found the water by analyzing the debris kicked up after the impact.

424

00:33:31,070 --> 00:33:37,970

"Thank you very much. I must admit this is somewhat surreal for LCROSS team. I feel

425

00:33:37,970 --> 00:33:42,750

like the independent film winning the best

picture at the Academy Awards.”

426

00:33:42,750 --> 00:33:47,789

“We’ve explored deep craters, we’ve climbed mountains, we’ve survived rover-killing

427

00:33:47,789 --> 00:33:52,909

dust storms and several harsh cold winters. The adventure is still not over for these

428

00:33:52,909 --> 00:33:54,370

two intrepid vehicles.”

429

00:33:54,370 --> 00:33:57,510

The team that operates the NASA rovers already on Mars Spirit and Opportunity was

430

00:33:57,510 --> 00:34:04,270

honored by the Space Ops organization with its 2010 Award for Outstanding

431

00:34:04,270 --> 00:34:08,639

Achievement. The presentation was made at the group’s annual conference held in

432

00:34:08,639 --> 00:34:09,639

Huntsville, Alabama.

433

00:34:09,639 --> 00:34:15,579

“My team, the team that has earned this, goes to work on Mars every single day. I have

434

00:34:15,579 --> 00:34:19,879

the great pleasure of being up here to accept this award, but it really is award that goes

435

00:34:19,879 --> 00:34:24,179

to not only the ten people listed on the certificate, but the hundreds of people that have

436

00:34:24,179 --> 00:34:28,629

contributed and continue to contribute on this really great project. Thank you all very

437

00:34:28,629 --> 00:34:30,059

much.”

438

00:34:30,059 --> 00:34:35,250

NASA's International Space Station Program has been awarded the 2009 Collier

439

00:34:35,250 --> 00:34:41,859

Trophy, considered aviation's highest honor. The National Aeronautic Association, the

440

00:34:41,859 --> 00:34:46,909

country's oldest national aviation organization, bestowed the prestigious award on the

441

00:34:46,909 --> 00:34:54,819

ISS team not only for its design, development and assembly of the world's largest

442

00:34:54,819 --> 00:34:58,140

spacecraft, but also for the complex's promising discoveries and pioneering new

443

00:34:58,140 --> 00:35:02,569

standards for international cooperation in space.

444

00:35:02,569 --> 00:35:03,779

(applause)

445

00:35:03,779 --> 00:35:08,839

Accepting the award on behalf of the ISS team was NASA Deputy Administrator Lori

446

00:35:08,839 --> 00:35:09,839

Garver.

447

00:35:09,839 --> 00:35:13,039

"I truly am standing on the shoulders of giants.

448

00:35:13,039 --> 00:35:17,989

Garver was also among a group of NASA women honored by Women in Aerospace at

449

00:35:17,989 --> 00:35:23,229

the organization's 25th annual awards dinner held near Washington. She was

450

00:35:23,229 --> 00:35:29,779

recognized for her contributions to WIA, as well as, quote, her passion and dedication

451

00:35:29,779 --> 00:35:34,700

to opening the high frontier of space to the everyday person.

452

00:35:34,700 --> 00:35:40,950

"Main engine ignition and lift off of the Atlas 5 rocket with LRO/LCROSS."

453

00:35:40,950 --> 00:35:46,349

NASA's Lunar CRater Observation and Sensing Satellite, or LCROSS, mission has

454

00:35:46,349 --> 00:35:51,749

won Popular Mechanics magazine's 2010 Breakthrough Award for innovation in

455

00:35:51,749 --> 00:35:52,749

science and technology.

456

00:35:52,749 --> 00:35:53,769

"Last packet 11-35-35.054 seconds."

457

00:35:53,769 --> 00:36:03,219

On time and under budget, (nat) the LCROSS team confirmed the presence of water

458

00:36:03,219 --> 00:36:08,540

ice on the moon, by slamming into the lunar surface the spent upper stage of the

459

00:36:08,540 --> 00:36:14,269

spacecraft's Atlas V rocket, then flying through the resultant degree plume to detect

460

00:36:14,269 --> 00:36:20,200

concentrations of water comparable to those of the Sahara desert. Fabricated with

461

00:36:20,200 --> 00:36:25,019

commercial off-the-shelf parts, the LCROSS spacecraft was cited by Popular

462

00:36:25,019 --> 00:36:33,690

Mechanics for setting "a new standard for lost-cost, high impact NASA programs

463

00:36:33,690 --> 00:36:39,160

Each year brings milestones marketing events of significance and import. 2010 was

464

00:36:39,160 --> 00:36:44,289

no different, as NASA noted and celebrated successes both past and present.

465

00:36:44,289 --> 00:36:55,269

It began as a 90-day mission, but NASA's Mars Exploration Rover, Spirit, roamed for

466

00:36:55,269 --> 00:37:00,759

more than six years to gather and return unprecedented science from the Red Planet.

467

00:37:00,759 --> 00:37:06,200

Now, impossibly stuck in a sand trap, Spirit has been designated a stationary science

468

00:37:06,200 --> 00:37:11,269

platform after efforts during the past several months to free it have been unsuccessful.

469

00:37:11,269 --> 00:37:17,969

“With the loss of mobility on Spirit, people are disappointed. These have really become

470

00:37:17,969 --> 00:37:23,891

public icons, globally, not just in the United States. Even children, easily, identify with

471

00:37:23,891 --> 00:37:29,559

the rovers; they’re cute, and they give you a human’s eye view of the surface of

472

00:37:29,559 --> 00:37:31,569

another planet for the first time.”

473

00:37:31,569 --> 00:37:36,290

The John Glenn Lecture Series at the Smithsonian’s National Air and Space Museum

474

00:37:36,290 --> 00:37:41,599

in Washington honored the 40th anniversary of the Apollo 13 mission. Joining

475

00:37:41,599 --> 00:37:46,869

Commander Jim Lovell was Apollo 13 Flight Controller, Gene Kranz; Lunar Module

476

00:37:46,869 --> 00:37:51,829

Pilot, Fred Haise; and astronaut Ken Mattingly, who was replaced on the mission by

477

00:37:51,829 --> 00:37:57,989

the late Jack Swigert after contracting measles just before the mission's start.

478

00:37:57,989 --> 00:38:07,279

In April 1970, Apollo 13 was to have been NASA's third moon landing. But Lovell and

479

00:38:07,279 --> 00:38:11,869

crew would never make it to the lunar surface. On the way to their destination, the

480

00:38:11,869 --> 00:38:17,109

Apollo 13 spacecraft was crippled by the explosion of an oxygen tank, casting doubts

481

00:38:17,109 --> 00:38:18,349

about their survival.

482

00:38:18,349 --> 00:38:19,969

"Houston, we've had a problem."

483

00:38:19,969 --> 00:38:27,039

"We didn't know it was an explosion at that time. The majority of my controller's

484

00:38:27,039 --> 00:38:30,999

data was absolute gibberish. The numbers of calls

485

00:38:30,999 --> 00:38:36,549

that came in literally about a 30 second period as each controller was reporting what

486

00:38:36,549 --> 00:38:40,519

he thought he was seeing in the console, but truly didn't believe it, couples with

487

00:38:40,519 --> 00:38:46,030

what the crew was calling, it was literally chaos.

488

00:38:46,030 --> 00:38:49,710

The fortunate thing was the training kicked in a after about 60 seconds.”

489

00:38:49,710 --> 00:38:54,730

Thus began the crew’s perilous but safe return to Earth, made possible through the

490

00:38:54,730 --> 00:39:00,549

heroic efforts of the ground control team and the astronauts themselves. Apollo 13 has

491

00:39:00,549 --> 00:39:06,410

been called a “successful failure” and one of NASA’s finest hours.

492

00:39:06,410 --> 00:39:11,910

“-2-1 and liftoff of the space shuttle Discovery with the Hubble Space Telescope, our

493

00:39:11,910 --> 00:39:13,469

window on the universe.”

494

00:39:13,469 --> 00:39:19,160

On April 24, 1990, the Hubble Space Telescope launched aboard Space Shuttle

495

00:39:19,160 --> 00:39:24,039

Discovery from the Kennedy Space Center in Florida. Since then, the observatory

496

00:39:24,039 --> 00:39:29,219

orbiting 350 miles above Earth has produced hundreds of thousands of unprecedented

497

00:39:29,219 --> 00:39:31,559

images of different corners of the universe.

498

00:39:31,559 --> 00:39:36,390

“Not many humans get to work on things that a hundred years from now history will

499

00:39:36,390 --> 00:39:40,670

remember, Hubble is certainly one of them.”

500

00:39:40,670 --> 00:39:45,269

Named after the American astronomer Edwin Hubble, the telescope’s gaze has helped

501

00:39:45,269 --> 00:39:50,239

determine the age of the universe, the identity of quasars, and the existence of dark

502

00:39:50,239 --> 00:39:55,950

energy. Hubble is one of NASA's most successful and long-lasting science missions,

503

00:39:55,950 --> 00:40:00,950

shedding light on many of the great mysteries of astronomy.

504

00:40:00,950 --> 00:40:05,980

NASA's Mars Exploration Rover, Opportunity, is the new robotic record-holder for

505

00:40:05,980 --> 00:40:11,230

longevity on the Red Planet. Opportunity surpassed the duration mark set by NASA's

506

00:40:11,230 --> 00:40:17,680

Viking Lander I of six years and 116 days operating on the surface of Mars.

507

00:40:17,680 --> 00:40:21,819

“Spirit has likely passed that record, but

right now Spirit is deeply asleep, so we haven't

508

00:40:21,819 --> 00:40:25,990

heard from the rover in about two weeks, but once she wakes up she'll reclaim the title

509

00:40:25,990 --> 00:40:30,849

as the longest lived asset on the surface of Mars."

510

00:40:30,849 --> 00:40:36,119

Cheered on by hundreds of handkerchief-waving employees to the strains of a

511

00:40:36,119 --> 00:40:39,650

traditional New Orleans brass band...

512

00:40:39,650 --> 00:40:45,289

...the last external fuel tank scheduled to fly on a space shuttle mission was rolled

513

00:40:45,289 --> 00:40:50,089

away from the Michoud Assembly Facility in New Orleans in preparation for its 900-

514

00:40:50,089 --> 00:40:55,599

mile sea journey to the Kennedy Space Center in Florida. The tank, designated ET-

515

00:40:55,599 --> 00:41:01,050

138, was completed by Lockheed Martin workers on June 28.

516

00:41:01,050 --> 00:41:07,769

For nearly 33 years, Voyager 2 has returned data about the giant outer planets, making

517

00:41:07,769 --> 00:41:13,920

important discoveries like Neptune's Great Dark Spot and its 1,000-mph winds. On

518

00:41:13,920 --> 00:41:20,890

June 28, Voyager 2 reached an operations milestone – 12,000 days.

519

00:41:20,890 --> 00:41:31,829

When Voyager 2 launched on August 20, 1977 Jimmy Carter was president. Its twin,

520

00:41:31,829 --> 00:41:37,950

Voyager 1, launched about two weeks later on Sept. 5, 1977; Built and managed at the

521

00:41:37,950 --> 00:41:42,960

Jet Propulsion Laboratory, the Voyagers 1 and 2 are the most distant human-made

522

00:41:42,960 --> 00:41:48,099

objects, traveling the outer edges of the heliosphere -- the bubble the sun creates

523

00:41:48,099 --> 00:41:50,319

around the solar system.

524

00:41:50,319 --> 00:41:55,190

"Ignition and liftoff of the Atlas V rocket with MRO."

525

00:41:55,190 --> 00:42:00,190

Five years ago, NASA's Mars Reconnaissance Orbiter was launched in search of

526

00:42:00,190 --> 00:42:06,619

evidence that water persisted on the surface of Mars over a prolonged period of time.

527

00:42:06,619 --> 00:42:10,969

Previous Mars missions indicated that, at some point in the Red Planet's history,

528

00:42:10,969 --> 00:42:14,700

water

flowed across its surface. Throughout the

529

00:42:14,700 --> 00:42:19,930

years, MRO has continued to analyze minerals,
look for water, trace the distribution of

530

00:42:19,930 --> 00:42:23,380

dust in the atmosphere and monitor Martian
weather.

531

00:42:23,380 --> 00:42:27,799

The Marshall Space Flight Center marked its
50th anniversary with multiple events

532

00:42:27,799 --> 00:42:30,299

honoring the work of several generations.

533

00:42:30,299 --> 00:42:34,539

Marshall Space Flight Center leaders unveiled
an Alabama historic marker

534

00:42:34,539 --> 00:42:38,660

commemorating the formation of the NASA center
-- and the subsequent 50 years of

535

00:42:38,660 --> 00:42:43,089

Marshall innovation. The marker was placed
at the visitor's center for Redstone

536

00:42:43,089 --> 00:42:45,839

Arsenal, Marshall's home for the past 50
years.

537

00:42:45,839 --> 00:42:50,150

To commemorate the historic anniversary, Marshall
employees posed for an aerial

538

00:42:50,150 --> 00:42:53,380
photograph, by forming a giant "50."

539

00:42:53,380 --> 00:42:58,549
On Sept. 8, 1960, President Dwight Eisenhower
visited Huntsville to lead the Marshall

540

00:42:58,549 --> 00:43:00,890
Center's dedication ceremony.

541

00:43:00,890 --> 00:43:07,710
"I dedicate this, the George C. Marshall
Space Flight Center. May this great center

542

00:43:07,710 --> 00:43:10,299
be
ever worthy of its honored name."

543

00:43:10,299 --> 00:43:15,640
He unveiled a bust of the center's namesake,
U.S. Army Gen. George C. Marshall, who

544

00:43:15,640 --> 00:43:20,849
received the Nobel Prize in 1953 for overseeing
the European Recovery Program or

545

00:43:20,849 --> 00:43:23,069
"Marshall Plan," which secured \$13 billion
dollars in post-war food, machinery and

546

00:43:23,069 --> 00:43:28,829
other aid for Europe.

547

00:43:28,829 --> 00:43:34,099
Two historic milestones have been marked at
the Kennedy Space Center -- the arrival

548

00:43:34,099 --> 00:43:38,839
of the Space Shuttle Program's final external
fuel tank, and the departure of the

549

00:43:38,839 --> 00:43:44,789

program's final solid rocket boosters from the Assembly and Refurbishment Facility.

550

00:43:44,789 --> 00:43:50,499

The external fuel tank for STS-134, the final planned shuttle flight, was removed from

551

00:43:50,499 --> 00:43:56,319

the barge that carried it 900 miles over six days at sea from the Michoud Assembly

552

00:43:56,319 --> 00:44:01,190

Facility. STS-134 is scheduled for launch next February.

553

00:44:01,190 --> 00:44:06,499

A series of roundtables kicked off NASA's commemoration of the 10th anniversary of

554

00:44:06,499 --> 00:44:12,369

human life, work and research on the International Space Station. The events,

555

00:44:12,369 --> 00:44:18,029

originating from three NASA centers and headquarters in Washington, aired on NASA

556

00:44:18,029 --> 00:44:22,719

Television and featured former space station residents, key leaders and team members

557

00:44:22,719 --> 00:44:26,719

who have guided the station through its first 10 years.

558

00:44:26,719 --> 00:44:34,519

Among them, Expedition 1 Commander Bill Shepherd and Flight Engineers Sergei

559

00:44:34,519 --> 00:44:39,769

Krikalev and Yuri Gidzenko, who became the first residents of the space station on

560

00:44:39,769 --> 00:44:40,910

Nov. 2, 2000.

561

00:44:40,910 --> 00:44:49,369

"It was kind of a strange day for me because Sergei and Yuri were very experienced. I

562

00:44:49,369 --> 00:44:54,680

was pumping my fist mostly because, as a crew, we'd waited a long time to get to that

563

00:44:54,680 --> 00:45:00,470

point in life where this was actually happening and I was very keen to emphasize, let's

564

00:45:00,470 --> 00:45:01,470

go get this done."

565

00:45:01,470 --> 00:45:08,640

"The main thought I had was that now it's starting for real and launching the Expedition,

566

00:45:08,640 --> 00:45:18,229

this is our first work and oftentimes the way you start it, it's the way it's going

567

00:45:18,229 --> 00:45:19,229

to go next."

568

00:45:19,229 --> 00:45:22,451

Since Expedition 1, 200 explorers have visited the International Space Station; 15

569

00:45:22,451 --> 00:45:27,509

nations have contributed modules and hardware;
and more than 600 experiments

570

00:45:27,509 --> 00:45:33,109

have been conducted aboard the orbiting complex.

571

00:45:33,109 --> 00:45:37,210

And, of course, no year @NASA would be complete
without a look back at those

572

00:45:37,210 --> 00:45:39,609

annual events the public has come to rely
and depend upon to expand our knowledge

573

00:45:39,609 --> 00:45:49,130

of space and exploration – with a little
fun.

574

00:45:49,130 --> 00:45:55,029

Yuri's Night 2010 celebrated humankind's
achievements in space exploration with

575

00:45:55,029 --> 00:46:01,140

music, dance, fashion, and art at countless
locations around the world, including

576

00:46:01,140 --> 00:46:06,760

several NASA centers.

577

00:46:06,760 --> 00:46:12,469

Yuri's Night is named for the first human
in space, cosmonaut Yuri Gagarin, who

578

00:46:12,469 --> 00:46:16,520

rocketed into Earth's orbit on April 12,
1961.

579

00:46:16,520 --> 00:46:20,799

Hundreds of students from middle schools,
high schools, and colleges representing 20

580

00:46:20,799 --> 00:46:25,359

states were in northern Alabama for the annual
Space Launch Initiative, or

581

00:46:25,359 --> 00:46:28,990

LaunchFest.

Each year, NASA challenges young, aspiring

582

00:46:28,990 --> 00:46:33,849

rocketeers from around the country to
design and build these launch vehicles complete

583

00:46:33,849 --> 00:46:38,380

with a working science payload, then
send them aloft, here at LaunchFest, to an

584

00:46:38,380 --> 00:46:39,380

altitude of one mile.

585

00:46:39,380 --> 00:46:47,450

Huntsville's U.S. Space & Rocket Center
hosted the 17th annual Great Moonbuggy

586

00:46:47,450 --> 00:46:49,359

Race. (nat)

587

00:46:49,359 --> 00:46:55,390

Competing were upwards of 600 student drivers,
engineers and mechanics

588

00:46:55,390 --> 00:47:02,160

representing more than 70 teams from 18 states,
Puerto Rico, Canada, Germany, India

589

00:47:02,160 --> 00:47:03,160

and Romania.

590

00:47:03,160 --> 00:47:07,869

“We got around the obstacle; we had a flat on our tire, and the chain was slipping. I

591

00:47:07,869 --> 00:47:12,609

burnt a lot of energy out there, but I never gave up.”