
Neil Cheatwood
IRVE-3 Principal Investigator

1
00:00:17,330 --> 00:00:13,879
this week at NASA three hour 21 concepts

2
00:00:20,510 --> 00:00:17,340
like feeding liftoff liftoff of the

3
00:00:23,570 --> 00:00:20,520
Soyuz TMA om the Russian Soyuz

4
00:00:25,910 --> 00:00:23,580
spacecraft carrying expedition 32 33

5
00:00:28,240 --> 00:00:25,920
Soyuz commander yuri malenchenko nasa

6
00:00:30,589 --> 00:00:28,250
flight engineer suni williams and flight

7
00:00:33,620 --> 00:00:30,599
engineer aki hoshide of the japan

8
00:00:35,030 --> 00:00:33,630
aerospace exploration agency heads to

9
00:00:36,860 --> 00:00:35,040
the International Space Station

10
00:00:39,619 --> 00:00:36,870
following its launch from the Baikonur

11
00:00:41,840 --> 00:00:39,629
cosmodrome in Kazakhstan 40 seconds into

12
00:00:44,420 --> 00:00:41,850
the flight Mullen chenko williams and

13
00:00:46,569 --> 00:00:44,430

hoshide a are joining up with expedition

14
00:00:50,029 --> 00:00:46,579
32 commander gennady padalka nasa

15
00:00:51,770 --> 00:00:50,039
astronaut joe acaba and cosmonaut sergei

16
00:00:56,389 --> 00:00:51,780
revin who have been on the orbiting

17
00:00:58,279 --> 00:00:56,399
outpost since May when the Curiosity

18
00:01:00,560 --> 00:00:58,289
rover sets off from its landing site

19
00:01:02,510 --> 00:01:00,570
near Gale Crater to explore the Martian

20
00:01:05,960 --> 00:01:02,520
surface the mobile Science Laboratory

21
00:01:06,969 --> 00:01:05,970
might encounter some sand dunes project

22
00:01:09,170 --> 00:01:06,979
engineers at the Jet Propulsion

23
00:01:11,750 --> 00:01:09,180
Laboratory have prepared for that

24
00:01:13,490 --> 00:01:11,760
possibility by putting a test Rover

25
00:01:14,899 --> 00:01:13,500
through the paces here on earth through

26
00:01:16,999 --> 00:01:14,909
careful targeting we've been able to

27
00:01:18,499 --> 00:01:17,009
shrink the landing ellipse for curiosity

28
00:01:20,719 --> 00:01:18,509
and we've been able to move it closer to

29
00:01:22,460 --> 00:01:20,729
where we want to actually land in case

30
00:01:24,410 --> 00:01:22,470
we land and dunes that are like this on

31
00:01:25,789 --> 00:01:24,420
Mars near the landing site we want to be

32
00:01:27,499 --> 00:01:25,799
sure that the real Rover is able to

33
00:01:29,090 --> 00:01:27,509
navigate around successfully in those

34
00:01:30,440 --> 00:01:29,100
dunes and get from the point where we

35
00:01:32,840 --> 00:01:30,450
landed to the point where we really want

36
00:01:34,940 --> 00:01:32,850
to be so we come out here today with the

37
00:01:36,380 --> 00:01:34,950
curiosity scarecrow Rover which is the

38
00:01:38,359 --> 00:01:36,390

same weight on earth as the real Rover

39
00:01:40,670 --> 00:01:38,369
is on Mars to practice driving it around

40
00:01:41,810 --> 00:01:40,680
in the nearest thing to those dunes on

41
00:01:44,719 --> 00:01:41,820
Mars we're going to find here on earth

42
00:01:46,249 --> 00:01:44,729
this is similar material and similar

43
00:01:48,740 --> 00:01:46,259
slopes to the dunes that we're going to

44
00:01:50,960 --> 00:01:48,750
find in Mars so being able to test this

45
00:01:52,490 --> 00:01:50,970
Rover in these dunes gives us a good

46
00:01:53,690 --> 00:01:52,500
idea about what the performance of the

47
00:01:56,179 --> 00:01:53,700
real Rover is going to be intervenes

48
00:01:57,149 --> 00:01:56,189
that night landed on Mars still making

49
00:01:58,990 --> 00:01:57,159
progress

50
00:02:01,030 --> 00:01:59,000
performance on this Rover is actually

51
00:02:03,130 --> 00:02:01,040
fairly similar to spear an opportunity a

52
00:02:05,109 --> 00:02:03,140
little bit better we can climb in soft

53
00:02:06,190 --> 00:02:05,119
sand up to about 15 degrees or so imma

54
00:02:09,010 --> 00:02:06,200
do the world better than spirit and

55
00:02:10,690 --> 00:02:09,020
opportunity will do we are in fact right

56
00:02:12,160 --> 00:02:10,700
now maneuvering it from an area of about

57
00:02:14,500 --> 00:02:12,170
15 degrees of tilt to an area of about

58
00:02:16,900 --> 00:02:14,510
25 degrees of tilt try to explore where

59
00:02:19,090 --> 00:02:16,910
that break is in its performance our top

60
00:02:20,199 --> 00:02:19,100
speed is very slow but our acceleration

61
00:02:22,840 --> 00:02:20,209
of that top speed is pretty much

62
00:02:24,520 --> 00:02:22,850
instantaneous so so we go from a dead

63
00:02:27,880 --> 00:02:24,530

stop to write about as fast as we run to

64
00:02:29,140 --> 00:02:27,890
go pretty quickly it's really fun the

65
00:02:31,120 --> 00:02:29,150
like every once in a while kind of leave

66
00:02:32,470 --> 00:02:31,130
the office environment behind and come

67
00:02:34,030 --> 00:02:32,480
out to an environment like this and see

68
00:02:35,979 --> 00:02:34,040
what the real Rovers are going to be

69
00:02:37,810 --> 00:02:35,989
doing on Mars it kind of connects you to

70
00:02:39,580 --> 00:02:37,820
it and reminds you that that the

71
00:02:44,890 --> 00:02:39,590
computer models we plan our far cry from

72
00:02:46,750 --> 00:02:44,900
reality this is that reality NASA's

73
00:02:49,090 --> 00:02:46,760
Cassini spacecraft has spotted a

74
00:02:52,000 --> 00:02:49,100
concentration of high-altitude haze and

75
00:02:53,920 --> 00:02:52,010
a vortex swirling in the atmosphere high

76
00:02:56,440 --> 00:02:53,930
above the South Pole of the saturn moon

77
00:02:58,470 --> 00:02:56,450
Titan hinting that a change of seasons

78
00:03:00,910 --> 00:02:58,480
may be coming on Saturn's largest moon

79
00:03:02,890 --> 00:03:00,920
Cassini researchers say the structure

80
00:03:05,830 --> 00:03:02,900
inside the vortex is reminiscent of the

81
00:03:08,080 --> 00:03:05,840
open cellular convection often seen over

82
00:03:10,539 --> 00:03:08,090
Earth's oceans but they are at a very

83
00:03:12,759 --> 00:03:10,549
high altitude on Titan which may be a

84
00:03:14,920 --> 00:03:12,769
response of titans stratosphere to

85
00:03:17,470 --> 00:03:14,930
seasonal cooling as southern winter

86
00:03:21,970 --> 00:03:17,480
approaches the vortex was imaged during

87
00:03:24,400 --> 00:03:21,980
a jun 27th flyby deputy administrator

88
00:03:27,160 --> 00:03:24,410

lori garver joined glenn research center

89
00:03:29,440 --> 00:03:27,170
director ray Lugo rational leaders and

90
00:03:31,210 --> 00:03:29,450
white house representatives at Ohio's

91
00:03:33,970 --> 00:03:31,220
Cuyahoga Community College near

92
00:03:35,860 --> 00:03:33,980
Cleveland for a workshop on building the

93
00:03:38,470 --> 00:03:35,870
national network for manufacturing

94
00:03:40,300 --> 00:03:38,480
innovation Garber emphasized how

95
00:03:42,550 --> 00:03:40,310
important the nation's manufacturing

96
00:03:45,009 --> 00:03:42,560
capabilities are for NASA space

97
00:03:47,620 --> 00:03:45,019
exploration and keeping America's new

98
00:03:49,720 --> 00:03:47,630
technology economy competitive advanced

99
00:03:52,120 --> 00:03:49,730
manufacturing capabilities are essential

100
00:03:55,300 --> 00:03:52,130
to turning research discoveries

101
00:03:58,330 --> 00:03:55,310
inventions and new ideas into better or

102
00:04:00,610 --> 00:03:58,340
novel products our nation's ability to

103
00:04:02,800 --> 00:04:00,620
innovate is unmatched Gardner also

104
00:04:05,589 --> 00:04:02,810
pointed out the important role played by

105
00:04:08,250 --> 00:04:05,599
Glenn and creating technologies for NASA

106
00:04:10,570 --> 00:04:08,260
that also benefit American manufacturers

107
00:04:12,640 --> 00:04:10,580
NASA is supporting President

108
00:04:14,890 --> 00:04:12,650
Obama's call for new Institute's for

109
00:04:16,900 --> 00:04:14,900
advanced manufacturing and will

110
00:04:21,670 --> 00:04:16,910
participate in a pilot Institute later

111
00:04:23,140 --> 00:04:21,680
this year when Rovers land on Mars they

112
00:04:26,200 --> 00:04:23,150
travel all the way to the red planet

113
00:04:28,840 --> 00:04:26,210

protected by a rigid aeroshell or heat

114
00:04:30,310 --> 00:04:28,850
shield the size of that structure limits

115
00:04:33,130 --> 00:04:30,320
just how much scientists and engineers

116
00:04:35,170 --> 00:04:33,140
and fit inside if you look at all the

117
00:04:36,700 --> 00:04:35,180
origami that's involved in packing a

118
00:04:39,160 --> 00:04:36,710
rover like we're sending to Mars right

119
00:04:41,230 --> 00:04:39,170
now into that confined space and then

120
00:04:43,060 --> 00:04:41,240
having it deploy in the right sequence

121
00:04:44,350 --> 00:04:43,070
during that time line when you've only

122
00:04:46,870 --> 00:04:44,360
got a certain amount of time to do it

123
00:04:48,160 --> 00:04:46,880
it's very complicated so Neil cheap wood

124
00:04:50,560 --> 00:04:48,170
and his colleagues at NASA's Langley

125
00:04:52,440 --> 00:04:50,570
Research Center in Hampton Virginia have

126
00:04:55,690 --> 00:04:52,450
come up with a different idea an

127
00:04:57,850 --> 00:04:55,700
inflatable heat shield the first flight

128
00:05:00,610 --> 00:04:57,860
demonstration of the concept is the

129
00:05:03,460 --> 00:05:00,620
inflatable reentry vehicle experiment or

130
00:05:06,160 --> 00:05:03,470
ervi the launch of the 10-foot diameter

131
00:05:08,380 --> 00:05:06,170
mushroom shaped curve III which is

132
00:05:10,840 --> 00:05:08,390
packed uninflated into a 22 inch

133
00:05:13,780 --> 00:05:10,850
diameter rocket is currently scheduled

134
00:05:15,880 --> 00:05:13,790
for mid to late july we will launch ERV

135
00:05:18,370 --> 00:05:15,890
III on a sounding rocket at Wallops

136
00:05:22,030 --> 00:05:18,380
Island it will go up into space inflate

137
00:05:23,980 --> 00:05:22,040
to reentry shape and perform its reentry

138
00:05:26,530 --> 00:05:23,990

experiment and it will radio the data

139
00:05:28,870 --> 00:05:26,540
back home when the experiment is over

140
00:05:31,630 --> 00:05:28,880
curvy 3 will land out in the Atlantic

141
00:05:33,460 --> 00:05:31,640
erv III has been tested and retested on

142
00:05:36,100 --> 00:05:33,470
the ground to make sure it can withstand

143
00:05:38,500 --> 00:05:36,110
the heat and force of atmospheric

144
00:05:40,570 --> 00:05:38,510
reentry the first line of defense

145
00:05:42,850 --> 00:05:40,580
against those conditions the thermal

146
00:05:45,370 --> 00:05:42,860
blanket is made up of layers of

147
00:05:47,590 --> 00:05:45,380
commercially available materials this

148
00:05:50,170 --> 00:05:47,600
combination includes nextel which is an

149
00:05:54,430 --> 00:05:50,180
aircraft engine insulator we use pyro

150
00:05:57,510 --> 00:05:54,440
gel which is a pipe insulation material

151
00:05:59,860 --> 00:05:57,520
and then we use captain coated Kevlar

152
00:06:02,350 --> 00:05:59,870
Kevlar is the same stuff that police

153
00:06:05,050 --> 00:06:02,360
used in bulletproof vest ervi has

154
00:06:07,810 --> 00:06:05,060
already had one successful test assuming

155
00:06:10,930 --> 00:06:07,820
ERV III does as well Engineers hope to

156
00:06:14,860 --> 00:06:10,940
expand the concept literally and test a

157
00:06:17,990 --> 00:06:14,870
larger inflatable in the future

158
00:06:20,120 --> 00:06:18,000
on July 12 the Smithsonian and the

159
00:06:22,310 --> 00:06:20,130
Embassy of France marked the 50th

160
00:06:25,340 --> 00:06:22,320
anniversary of the first transatlantic

161
00:06:26,410 --> 00:06:25,350
images transmitted by telstar one the

162
00:06:28,910 --> 00:06:26,420
world's first commercial

163
00:06:30,770 --> 00:06:28,920

telecommunications satellite with a live

164
00:06:33,590 --> 00:06:30,780
telecast between the National Air and

165
00:06:35,990 --> 00:06:33,600
Space Museum in Washington and thus it a

166
00:06:37,610 --> 00:06:36,000
day telecoms in plum Norbu do what a

167
00:06:40,760 --> 00:06:37,620
tremendous engineering achievement it

168
00:06:43,700 --> 00:06:40,770
was and how it really began a new era

169
00:06:45,830 --> 00:06:43,710
that we now just assume is going to

170
00:06:48,640 --> 00:06:45,840
continue into the future really but it

171
00:06:51,860 --> 00:06:48,650
had to begin with a very small step

172
00:06:53,930 --> 00:06:51,870
telstar one was launched by NASA the

173
00:06:56,450 --> 00:06:53,940
first telstar transmission 50 years ago

174
00:06:58,370 --> 00:06:56,460
marked the advent of the exchange of

175
00:07:03,080 --> 00:06:58,380
global information and the commercial

176
00:07:06,110 --> 00:07:03,090
use of space who can tell me where the

177
00:07:08,390 --> 00:07:06,120
International Space Station is yes NASA

178
00:07:10,460 --> 00:07:08,400
deputy administrator lori garver spoke

179
00:07:12,890 --> 00:07:10,470
to a group of young female students who

180
00:07:14,810 --> 00:07:12,900
were visiting nasa headquarters as part

181
00:07:17,450 --> 00:07:14,820
of the Summer Institute in science

182
00:07:20,450 --> 00:07:17,460
technology and research or sister

183
00:07:23,210 --> 00:07:20,460
program I love making a difference I

184
00:07:25,270 --> 00:07:23,220
feel like we were put here to leave the

185
00:07:28,370 --> 00:07:25,280
world better than we found it and I

186
00:07:29,660 --> 00:07:28,380
think it's pretty rare that you get me

187
00:07:31,730 --> 00:07:29,670
in a job where you feel you do that

188
00:07:33,980 --> 00:07:31,740

every day sponsored by Goddard Space

189
00:07:35,930 --> 00:07:33,990
Flight Center the five-day program is

190
00:07:38,300 --> 00:07:35,940
designed to introduce middle school

191
00:07:40,610 --> 00:07:38,310
girls to industry professionals like

192
00:07:42,350 --> 00:07:40,620
Garver in hopes of increasing their

193
00:07:45,290 --> 00:07:42,360
awareness of the opportunities available

194
00:07:49,790 --> 00:07:45,300
in non-traditional career fields such as

195
00:07:51,710 --> 00:07:49,800
science math and engineering July

196
00:07:53,930 --> 00:07:51,720
fifteenth marched the 37th anniversary

197
00:07:56,300 --> 00:07:53,940
of the first international partnership

198
00:08:00,200 --> 00:07:56,310
in space the apollo-soyuz test project

199
00:08:02,360 --> 00:08:00,210
on that date in 1975 an apollo

200
00:08:04,970 --> 00:08:02,370
spacecraft carrying astronauts tom

201
00:08:07,160 --> 00:08:04,980
stafford dance brand and deke slayton

202
00:08:09,560 --> 00:08:07,170
launched from the kennedy space center

203
00:08:12,070 --> 00:08:09,570
and two days later docked with a Soviet

204
00:08:14,750 --> 00:08:12,080
Soyuz spacecraft and its crew of two

205
00:08:17,360 --> 00:08:14,760
Alexei Leonov and Valeri Kubus all

206
00:08:19,940 --> 00:08:17,370
designed to test the compatibility of

207
00:08:21,650 --> 00:08:19,950
rendezvous and docking systems and the

208
00:08:24,290 --> 00:08:21,660
possibility of an international space

209
00:08:25,790 --> 00:08:24,300
rescue the nine-day apollo-soyuz mission

210
00:08:28,100 --> 00:08:25,800
brought together the

211
00:08:31,520 --> 00:08:28,110
two former Cold War spaceflight rivals

212
00:08:33,430 --> 00:08:31,530
to work and perform as a team the

213
00:08:36,139 --> 00:08:33,440

successful apollo-soyuz test project

214
00:08:41,060 --> 00:08:36,149
paved the way for future international

215
00:08:44,209 --> 00:08:41,070
partnerships and one year ago on July

216
00:08:45,980 --> 00:08:44,219
fifteenth 2011 pacific time after nearly

217
00:08:49,040 --> 00:08:45,990
four years of travel through the solar

218
00:08:51,290 --> 00:08:49,050
system NASA's Dawn spacecraft was pulled

219
00:08:53,990 --> 00:08:51,300
into the orbit of Vesta by the giant

220
00:08:56,389 --> 00:08:54,000
asteroids gravity dawn became the first

221
00:08:58,280 --> 00:08:56,399
spacecraft to orbit a main belt asteroid

222
00:09:01,519 --> 00:08:58,290
located in the region between Mars and

223
00:09:04,160 --> 00:09:01,529
Jupiter about 117 million miles from

224
00:09:06,530 --> 00:09:04,170
Earth images and data collected by the

225
00:09:09,139 --> 00:09:06,540
spacecraft of Vesta and the dwarf planet

226
00:09:11,389 --> 00:09:09,149
Ceres Dawn's next stop will help

227
00:09:14,000 --> 00:09:11,399
scientists characterize the early solar

228
00:09:16,880 --> 00:09:14,010
system and the processes that dominate

229
00:09:19,579 --> 00:09:16,890
its formation dawn is expected to leave

230
00:09:23,930 --> 00:09:19,589
vestas orbit late next month and arrive

231
00:09:26,750 --> 00:09:23,940
at Series in February 2015 and that's

232
00:09:28,670 --> 00:09:26,760
this week @nasa for more on these and

233
00:09:31,010 --> 00:09:28,680
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