
32223
IOP/SS Validation Displa
IOP/SS Test Interface
DELL

1
00:00:06,399 --> 00:00:09,610
WELCOME TO TODAY'S UPDATE ON
NASA'S HUMAN DEEP SPACE

2
00:00:09,610 --> 00:00:13,849
EXPLORATION PROCESS, AND THANKS
FOR JOINING US IN FIRING ROOM

3
00:00:13,849 --> 00:00:17,730
ONE IN THE LAUNCH CONTROL CENTER
AT KENNEDY SPACE CENTER.

4
00:00:17,730 --> 00:00:21,180
WITH US TODAY ARE DAN
DUNNBACHER, DEPUTY ASSOCIATE

5
00:00:21,180 --> 00:00:27,280
ADMINISTRATOR FOR EXPLORATION
SYSTEMS DEVELOPMENT, MARK GEYER,

6
00:00:27,280 --> 00:00:31,880
ORION PROGRAM MANAGER, TODD MAY,
SPACE LAUNCH PROGRAM

7
00:00:31,880 --> 00:00:35,200
ADMINISTRATOR, AND PEPPER
PHILLIPS, GROUND SYSTEMS AND

8
00:00:35,200 --> 00:00:38,210
OPERATIONS DEVELOPMENT MANAGER.

9
00:00:38,210 --> 00:00:42,190
FOR THOSE OF YOU JOINING US ON
NASA TV AND SOCIAL MEDIA, IF

10
00:00:42,190 --> 00:00:45,370
YOU'D LIKE TO ASK A QUESTION
DURING THE BRIEFING, USE THE

11

00:00:45,370 --> 00:00:49,430
HASH TAG #ASKNASA.

12
00:00:49,430 --> 00:00:50,430
WITH THAT, DAN?

13
00:00:50,430 --> 00:00:55,939
>> THANK YOU, RACHEL, AND GOOD
AFTERNOON, EVERYONE, AND WELCOME

14
00:00:55,939 --> 00:00:59,830
TO THIS LITTLE BRIEFING.

15
00:00:59,830 --> 00:01:05,900
FIRST OF ALL, WELCOME TO CENTRAL
FLORIDA FOR TOMORROW'S SPACEX

16
00:01:05,900 --> 00:01:06,900
LAUNCH.

17
00:01:06,900 --> 00:01:11,170
A VERY KEY PART OF OUR OVERALL
INTEGRATED EXPLORATION MISSION

18
00:01:11,170 --> 00:01:15,830
THAT INCLUDES THE CREW AND CARGO
RESUPPLY FOR SPACE STATION AS

19
00:01:15,830 --> 00:01:18,240
WELL AS THE WORK WE'LL BE
TALKING ABOUT WHICH IS OUR

20
00:01:18,240 --> 00:01:23,000
BEYOND EARTH ORBIT EXPLORATION.

21
00:01:23,000 --> 00:01:27,080
THE INTEGRATION WITH OUR
BRETHREN WITH THE COMMERCIAL

22

00:01:27,080 --> 00:01:29,650
CARGO AND CREW IS VERY
IMPORTANT.

23
00:01:29,650 --> 00:01:31,260
THEY FLY TOMORROW.

24
00:01:31,260 --> 00:01:34,000
WE ARE WORKING VERY DILIGENTLY
TO OUR FIRST TEST FLIGHT WHICH

25
00:01:34,000 --> 00:01:37,570
WILL COME UP IN SEPTEMBER OF
2014 CALLED EXPLORATION FLIGHT

26
00:01:37,570 --> 00:01:39,820
TEST ONE.

27
00:01:39,820 --> 00:01:43,680
IN THAT FLIGHT TEST, IT'S
PRIMARILY TO GET SOME GOOD TEST

28
00:01:43,680 --> 00:01:47,880
DATA FOR THE ORION SPACECRAFT
AND MARK WILL TALK ABOUT THAT.

29
00:01:47,880 --> 00:01:50,890
BUT IT ALSO IS A VERY GOOD
INTEGRATED FLIGHT TEST PLAN

30
00:01:50,890 --> 00:01:55,320
WHERE FLIGHT TEST OBJECTIVES FOR
THE SPACE LAUNCH SYSTEM AS WELL

31
00:01:55,320 --> 00:01:58,720
AS OUR GROUND SYSTEM AND OUR
RECOVERY EFFORTS THAT WE WILL

32
00:01:58,720 --> 00:02:02,601
ULTIMATELY NEED FOR OUR CREWED

MISSIONS WITH ORION AND THE

33
00:02:02,601 --> 00:02:03,920
SPACE LAUNCH SYSTEM.

34
00:02:03,920 --> 00:02:06,110
IT'S A VERY IMPORTANT FLIGHT
TEST FOR US.

35
00:02:06,110 --> 00:02:09,220
IT'S A VERY KEY IMPORTANT
MILESTONE FOR THE TEAM AND FOR

36
00:02:09,220 --> 00:02:11,739
ALL OF OUR EFFORTS.

37
00:02:11,739 --> 00:02:13,650
AND WE'RE LOOKING FOR FORWARD TO
THAT.

38
00:02:13,650 --> 00:02:18,599
AND YOU CAN SEE SOME OF THE
HARDWARE HERE AT KSC AS WE MOVE

39
00:02:18,599 --> 00:02:19,599
FORWARD.

40
00:02:19,599 --> 00:02:25,969
IT IS A VERY KEY ELEMENT OF OUR
OVERALL PLAN TO GET HUMANS BACK

41
00:02:25,969 --> 00:02:29,639
BEYOND EARTH ORBIT AS QUICKLY AS
WE CAN.

42
00:02:29,639 --> 00:02:33,060
OUR NEXT FLIGHT TEST FOLLOWING
EXPLORATION FLIGHT TEST ONE WILL

43

00:02:33,060 --> 00:02:37,919
BE OUR EXPLORATION MISSION ONE
IN THE 2017 TIME FRAME.

44
00:02:37,919 --> 00:02:40,810
AND THE TEAM IS WORKING VERY
HARD FOR THAT.

45
00:02:40,810 --> 00:02:44,099
SO AGAIN, WE'RE EXCITED TO BE
HERE.

46
00:02:44,099 --> 00:02:48,909
WE'RE EXCITED TO WATCH THE
DEVELOPMENT OF THE OVERALL

47
00:02:48,909 --> 00:02:52,390
NASA'S INTEGRATED PLAN FOR HUMAN
EXPLORATION FROM INTERNATIONAL

48
00:02:52,390 --> 00:02:57,709
SPACE STATION OUT TO MOON,
ASTEROID, AND EVENTUALLY TO

49
00:02:57,709 --> 00:02:58,709
MARS.

50
00:02:58,709 --> 00:03:01,060
AND WE LOOK FORWARD TO IT, AND
THANK YOU FOR YOUR INTEREST.

51
00:03:01,060 --> 00:03:02,060
MARK?

52
00:03:02,060 --> 00:03:03,680
>> THANK YOU, DAN.

53
00:03:03,680 --> 00:03:08,779
SO AS DAN MENTIONED, SEPTEMBER,
2014, THAT'S ONLY 19 MONTHS

54
00:03:08,779 --> 00:03:09,779
AWAY.

55
00:03:09,779 --> 00:03:13,939
WE'VE GOT A LOT OF WORK GOING ON
TO GET READY FOR THAT FLIGHT.

56
00:03:13,939 --> 00:03:16,129
THE PICTURE THAT WE'RE SHOWING
HERE IS ACTUALLY THE CREW MODULE

57
00:03:16,129 --> 00:03:21,390
WHICH IS BEING ASSEMBLED RIGHT
HERE IN -- AT KSC IN THE ONC

58
00:03:21,390 --> 00:03:22,390
BUILDING.

59
00:03:22,390 --> 00:03:27,029
THAT'S WHERE ALL THE AVIONICS,
THE CABLES, TUBING, SECONDARY

60
00:03:27,029 --> 00:03:29,840
STRUCTURE, HEAT SHIELD,
PARACHUTES AND EVERYTHING ELSE

61
00:03:29,840 --> 00:03:32,609
AND THE SERVICE MODULE ITSELF
WILL BE INSTALLED AND ASSEMBLED

62
00:03:32,609 --> 00:03:33,609
HERE.

63
00:03:33,609 --> 00:03:37,939
WE'LL PUT THE LAUNCH SYSTEM ON
IT AND STACK IT ON A DELTA FOUR,

64
00:03:37,939 --> 00:03:40,109

THE LAUNCH VEHICLE WE USE.

65
00:03:40,109 --> 00:03:43,349
THE ESC ONE FLIGHT WILL BE TWO
ORBITS.

66
00:03:43,349 --> 00:03:47,290
THE SECOND WILL BE HIGH
ALTITUDE, 3,000 MILES, THE

67
00:03:47,290 --> 00:03:50,779
FARTHEST WE'VE EVER TAKEN A
HUMAN SPACECRAFT SINCE WE WENT

68
00:03:50,779 --> 00:03:52,780
TO THE MOON WITH "APOLLO."

69
00:03:52,780 --> 00:03:55,709
3,000 MILES, THINK ABOUT IT,
ABOUT 15,000 MILES WITH THE

70
00:03:55,709 --> 00:03:59,560
SPACE STATION ALTITUDE.

71
00:03:59,560 --> 00:04:00,560
IT'S WAY UP THERE.

72
00:04:00,560 --> 00:04:05,199
THE REASON WE'RE DOING THAT IS
WE GET TO 84% OF THE ENTRY

73
00:04:05,199 --> 00:04:07,319
VELOCITY THAT WE WOULD SEE
COMING BACK FROM THE MOON.

74
00:04:07,319 --> 00:04:11,859
IT ALLOWS US TO STRESS THE HEAT
SHIELD THAT'S GOING TO BE CLOSE

75

00:04:11,859 --> 00:04:14,529
TO WHAT WE'LL SEE WHEN WE COME
BACK FROM THE REGION AROUND THE

76
00:04:14,529 --> 00:04:15,529
MOON.

77
00:04:15,529 --> 00:04:16,669
WE'RE ALSO INSTRUMENTING THE
HEAT SHIELD WITH

78
00:04:16,669 --> 00:04:19,060
STATE-OF-THE-ART INSTRUMENTS
THAT ALLOW US IT ACTUALLY

79
00:04:19,060 --> 00:04:21,739
MEASURE NOT JUST THE HEAT BUT
THE PLASMA THAT WE'RE GOING TO

80
00:04:21,739 --> 00:04:24,960
LOOK AT WHICH ALLOWS US TO MAKE
OUR MODELS ON EARTH MUCH BETTER

81
00:04:24,960 --> 00:04:28,819
SO WE CAN MAKE HEAT SHIELDS
LIGHTER, SAFE, MORE RELIABLE.

82
00:04:28,819 --> 00:04:30,550
AND THIS IS WHY WE'RE DOING
THIS.

83
00:04:30,550 --> 00:04:35,319
WE'RE ALSO GOING TO EXERCISE
SEVEN OF THE TOP TEN RISK AREAS

84
00:04:35,319 --> 00:04:40,090
IN THE ORION DESIGN INCLUDING
THE HEAT SHIELD.

85
00:04:40,090 --> 00:04:41,870

THAT ALSO INCLUDE PARACHUTE
DEPLOYMENT.

86
00:04:41,870 --> 00:04:44,410
IT INCLUDES NAVIGATION AND
GUIDANCE.

87
00:04:44,410 --> 00:04:46,610
INCLUDES ALL THE SOFTWARE
THEY'RE GOING TO EXERCISE ON THE

88
00:04:46,610 --> 00:04:52,360
FLIGHT, AS WELL AS KEY AREAS,
LIKE I SAID, WITH NAVIGATION AND

89
00:04:52,360 --> 00:04:54,449
GUIDANCE AND THEN SEPARATION
EVENTS.

90
00:04:54,449 --> 00:04:56,669
WE HAVE SOME -- LAUNCH ABOARD
SYSTEM WILL COME OFF.

91
00:04:56,669 --> 00:04:58,800
WE HAVE LARGE BEARINGS ON THE
SERVICE MODULE THAT WILL BE

92
00:04:58,800 --> 00:05:00,150
DEPLOYED.

93
00:05:00,150 --> 00:05:02,020
SEPARATION EVENTS ARE IMPORTANT
PART OF THE FLIGHTS.

94
00:05:02,020 --> 00:05:04,970
WE'LL TEST THOSE IN THE
ENVIRONMENTS THAT WE'RE GOING TO

95
00:05:04,970 --> 00:05:06,340
SEE WHEN WE ACTUALLY PUT PEOPLE

ON BOARD.

96
00:05:06,340 --> 00:05:09,229
THEY'RE ALL REAL IMPORTANT TO US
TO MAKE SURE THAT WE ALL HAVE

97
00:05:09,229 --> 00:05:12,240
GREAT MODELS, BUT WHEN YOU FLY
IT IN THE ENVIRONMENT IT WILL

98
00:05:12,240 --> 00:05:13,240
BEHAVE AS YOU EXPECT.

99
00:05:13,240 --> 00:05:18,460
THAT'S WHY EFT ONE IS SO
IMPORTANT FOR ORION.

100
00:05:18,460 --> 00:05:21,669
SOME THINGS THAT ARE NOT AS
GLAMOROUS AS, SAY, HOT HEAT

101
00:05:21,669 --> 00:05:23,759
SHIELDS AND PARACHUTE
DEPLOYMENT, BUT WE'RE ALSO

102
00:05:23,759 --> 00:05:27,099
REINVIGORATING THE SUPPLIER BASE
HERE IN THE UNITED STATES FOR

103
00:05:27,099 --> 00:05:28,560
HIGH-TECH PARTS.

104
00:05:28,560 --> 00:05:33,139
TITANIUM PARTS, COMPOSITE PARTS,
TRIPLE-E PARTS, AVIONICS, THINGS

105
00:05:33,139 --> 00:05:37,100
THAT ARE -- SINCE THE SHUTTLE
HAS COME DOWN, THERE'S NOT A LOT

106
00:05:37,100 --> 00:05:40,460
OF BUSINESS IN THESE AREAS, AND
WE'VE REINVIGORATED THAT TEAM.

107
00:05:40,460 --> 00:05:43,620
RECERTIFIED FOR PEOPLE, MAKING
PARTS AND MAKING COATINGS.

108
00:05:43,620 --> 00:05:46,930
THAT'S A BIG PART NOT JUST OF
ORION BUT ALSO KEEPING UNITED

109
00:05:46,930 --> 00:05:49,319
STATES TECHNOLOGY EDGE THERE.

110
00:05:49,319 --> 00:05:52,380
ANOTHER INTERESTING THING ABOUT
THIS PROGRAM IS THE DATA THAT WE

111
00:05:52,380 --> 00:05:58,110
GET FROM THESE FLIGHT TESTS, NOT
ONLY INFORM ORION FOR EM-1 AND

112
00:05:58,110 --> 00:06:02,310
THE OTHER MISSIONS WE'LL DO, BUT
WE PROVIDE HUNDREDS OF DATA

113
00:06:02,310 --> 00:06:06,139
PRODUCTS TO THE COMMERCIAL
PROVIDERS THAT DAN TALKED ABOUT

114
00:06:06,139 --> 00:06:07,870
THAT ARE GOING TO BE FLYING ISS.

115
00:06:07,870 --> 00:06:10,800
PARACHUTE DATA, HEAT SHIELD
DATA, AERODYNAMIC DATA BASE

116
00:06:10,800 --> 00:06:14,300

DATA.

117
00:06:14,300 --> 00:06:17,350
THIS IS ONE OF THE SPINOFFS THAT
THIS PROGRAM PROVIDES FOR THE

118
00:06:17,350 --> 00:06:19,280
GUYS GOING TO LOWER EARTH ORBIT.

119
00:06:19,280 --> 00:06:21,199
IT'S GOING TO BE A GREAT FLIGHT
FOR US.

120
00:06:21,199 --> 00:06:22,790
VERY EXCITING.

121
00:06:22,790 --> 00:06:25,919
AND IT'S ALL HAPPENED HERE,
RIGHT HERE IN FLORIDA.

122
00:06:25,919 --> 00:06:26,919
TODD?

123
00:06:26,919 --> 00:06:30,500
>> SO IT MIGHT NOT BE
INTUITIVELY OBVIOUS WHY AN SLS

124
00:06:30,500 --> 00:06:33,900
GUY IS SITTING HERE FOR A FLIGHT
THAT'S GOING TO BE ON THE DELTA

125
00:06:33,900 --> 00:06:34,900
4.

126
00:06:34,900 --> 00:06:37,521
BUT AS IT TURNS OUT, THERE'S A
LOT OF THINGS ABOUT THE MISSION

127
00:06:37,521 --> 00:06:42,060

THAT HELPS THE SLS AS WELL AS
WE'RE HELPING THE MISSION TO BE

128
00:06:42,060 --> 00:06:43,930
SUCCESSFUL.

129
00:06:43,930 --> 00:06:47,520
AS FAR AS THE FORMER, IT TURNS
OUT THAT A LOT OF THE DATA THAT

130
00:06:47,520 --> 00:06:50,590
MARK'S TALKING ABOUT WHERE WE'RE
HIGHLY INSTRUMENTING THIS IS

131
00:06:50,590 --> 00:06:53,030
DATA THAT WE'RE GOING TO USE TO
UNDERSTAND THE STRUCTURAL

132
00:06:53,030 --> 00:06:56,460
PROPERTIES, THE AERO LOADING,
ENVIRONMENTAL LOADING, GUIDANCE

133
00:06:56,460 --> 00:06:59,900
NAVIGATION AND CONTROL,
SEPARATION LOADS, THAT WE FEED

134
00:06:59,900 --> 00:07:04,080
BACK INTO THE INTEGRATED STACKED
LOADS FOR OUR FIRST FLIGHT,

135
00:07:04,080 --> 00:07:05,430
EM-1.

136
00:07:05,430 --> 00:07:09,360
IT TURNS OUT THAT WE'RE ALSO
BUILDING AN ADAPTER THAT WE

137
00:07:09,360 --> 00:07:12,430
DELIVER TO MARK USED KIND OF A
SKUNK-WORKS THEME.

138
00:07:12,430 --> 00:07:15,229
IT WAS A TWO-YEAR EFFORT.

139
00:07:15,229 --> 00:07:20,259
THE PICTURE YOU SEE HERE IS
ACTUALLY THAT -- WE CALL IT THE

140
00:07:20,259 --> 00:07:21,259
MSA.

141
00:07:21,259 --> 00:07:24,470
THAT'S ACTUALLY A DESIGN LAUNCH
BUILD AND USED MULTIPLE TIMES.

142
00:07:24,470 --> 00:07:31,290
THAT FLIES ON THE EFT-1 FLIGHT
AND WILL FLY ON EM-1 AND EM-2.

143
00:07:31,290 --> 00:07:34,479
THAT'S ACTUALLY BEING BUILT IN
-- AT MARSHALL SPACEFLIGHT

144
00:07:34,479 --> 00:07:36,169
CENTER AS WE SPEAK.

145
00:07:36,169 --> 00:07:39,840
WE'RE WELDING THE FLIGHT ARTICLE
NOW TODAY.

146
00:07:39,840 --> 00:07:43,389
THERE'S A COUPLE CONNECTIONS
HERE BETWEEN US ON THIS MISSION.

147
00:07:43,389 --> 00:07:46,699
SLS IS PROCEEDING VERY WELL
RIGHT NOW.

148
00:07:46,699 --> 00:07:50,280

WE ARE HEADING INTO VEHICLE PDR
THIS SUMMER.

149
00:07:50,280 --> 00:07:55,039
WE HAVE PURCHASED MOST OF THE
TOOLING THAT GOES INTO MISHU.

150
00:07:55,039 --> 00:07:57,419
AND OVER THIS YEAR, THOSE --
THOSE TOOLS ARE GOING TO BE

151
00:07:57,419 --> 00:08:00,669
INSTALLED THERE, INCLUDING ONE
OF THE TALLEST WELDING MACHINES

152
00:08:00,669 --> 00:08:05,699
EVER BUILT AT OVER 160-FEET
TALL.

153
00:08:05,699 --> 00:08:09,669
WE ALSO ARE HEADING INTO A TIME
WHERE WE WILL TAKE THE J2X OFF

154
00:08:09,669 --> 00:08:14,120
THE STAND IN STENNIS AND
RECONFIGURE IT FOR THE RF-25

155
00:08:14,120 --> 00:08:18,199
TESTING TO GET THOSE ENGINES
READY TO GO ON TO THE FIRST EM-1

156
00:08:18,199 --> 00:08:19,199
FLIGHT.

157
00:08:19,199 --> 00:08:22,639
AS WE SPEAK, WE'RE PUTTING
TOGETHER THE QUALIFICATION MOTOR

158
00:08:22,639 --> 00:08:28,160
FOR THE BOOSTER QUALIFICATION

TEST LATE THIS YEAR.

159
00:08:28,160 --> 00:08:30,289
AND ALL THOSE THINGS ARE
PROCEEDING ON TRACK.

160
00:08:30,289 --> 00:08:32,690
AND WE'RE LOOKING FORWARD TO
BEING BACK DOWN HERE FOR AN

161
00:08:32,690 --> 00:08:37,300
EVENT LIKE THIS IN DECEMBER OF
2017.

162
00:08:37,300 --> 00:08:42,910
>> SO AS THE LOCAL GUY, KFC GUY,
I WELCOME YOU TO KFC.

163
00:08:42,910 --> 00:08:46,060
I KNOW DAN MENTIONED THAT THIS
IS WHERE IT ALL COMES TOGETHER.

164
00:08:46,060 --> 00:08:49,390
SO WE'RE REALLY PROUD TO DISPLAY
WHAT'S BEEN GOING ON AROUND THE

165
00:08:49,390 --> 00:08:50,390
CENTER.

166
00:08:50,390 --> 00:08:52,690
TALK ABOUT EFT-1 FIRST.

167
00:08:52,690 --> 00:08:57,010
SO OUR INVOLVEMENT IN THAT
MISSION IS TWOFOLD REALLY.

168
00:08:57,010 --> 00:09:00,160
THE ACTIVE PART IS WHAT DAN
MENTIONED IS THE LANDING AND

169
00:09:00,160 --> 00:09:02,400
RECOVERY ASPECT.

170
00:09:02,400 --> 00:09:05,320
OUR TEAM IS GOING TO BE THE ONE
EXECUTING THAT LANDING AND

171
00:09:05,320 --> 00:09:06,320
RECOVERY.

172
00:09:06,320 --> 00:09:08,670
OF COURSE, WE'RE DOING IT WITH
THE DOD COMMUNITY.

173
00:09:08,670 --> 00:09:11,340
SO IT'S OUR PARTNERSHIP TO GO
OUT THERE AND RECOVER OFF THE

174
00:09:11,340 --> 00:09:12,730
WEST COAST.

175
00:09:12,730 --> 00:09:16,720
THE TEAMS ARE EXERCISING SOME
STATIC TESTS NOW, BUT WE'RE

176
00:09:16,720 --> 00:09:19,060
GOING TO BE READY WITH THIS
FIRST FULL-UP ACTIVE TEST WITH A

177
00:09:19,060 --> 00:09:20,590
LIVE SPACECRAFT.

178
00:09:20,590 --> 00:09:24,970
AND THAT, WHAT'S DIFFERENT IS WE
GET TO GO OUT AND RECOVER

179
00:09:24,970 --> 00:09:25,970
PARACHUTES.

180
00:09:25,970 --> 00:09:28,970
THE FORWARD BAY COVERS, THAT
ENTIRE RECOVERY OPERATION IS

181
00:09:28,970 --> 00:09:32,460
GOING TO BE END TO END DONE ON
THE WEST COAST.

182
00:09:32,460 --> 00:09:35,960
ONCE WE RECOVER, WE BRING IT IN
SURE AND WILL BE SERVICING THE

183
00:09:35,960 --> 00:09:37,260
SPACECRAFT ON THE WEST COAST.

184
00:09:37,260 --> 00:09:41,090
THAT'S A CHANGE FROM WHAT WILL
BE OUR BASELINE, OUR DESERVICING

185
00:09:41,090 --> 00:09:44,560
O, WE'LL BE BACK HERE AT KFC AS
A NOMINAL PLAN.

186
00:09:44,560 --> 00:09:48,020
THE DE-SERVICING IS NOT READY TO
BE DONE HERE AT KFC.

187
00:09:48,020 --> 00:09:50,290
WE'RE TAKING ADVANTAGE OF ASSETS
OUT WEST.

188
00:09:50,290 --> 00:09:54,400
THEN WE'RE GOING TO TRANSPORT IT
BACK OVER LAND, BACK TO KFC.

189
00:09:54,400 --> 00:09:57,430
WE'LL EXERCISE THAT PROCESS AND
LEARN FROM IT.

190

00:09:57,430 --> 00:10:00,640
ELSEWHERE, KFC, WE'RE GETTING
READY FOR EM-1.

191
00:10:00,640 --> 00:10:04,180
IF YOU HAVE HAD THE CHANCE TO
SEE THINGS GOING ON.

192
00:10:04,180 --> 00:10:06,470
THE OBVIOUS ONES, THE ONES THAT
ARE BIG.

193
00:10:06,470 --> 00:10:07,990
YOU SEE OUT AT THE PAD.

194
00:10:07,990 --> 00:10:11,170
WE'RE REFURBISHED -- DOING A LOT
OF REFURBISHMENT WORK.

195
00:10:11,170 --> 00:10:16,480
WE'VE JUST COMPLETED SOME WORK
LIKE ON THE HYDROGEN SPHERE AND

196
00:10:16,480 --> 00:10:19,480
THE OXYGEN SPHERE AND THE WATER
TANK.

197
00:10:19,480 --> 00:10:21,880
THOSE ARE BIG ITEMS THAT YOU SEE
AT THE PAD THAT REFURBISHED.

198
00:10:21,880 --> 00:10:25,280
ESSENTIALLY WE'VE GOT A STRIPPED
DOWN VERSION OF THE OLD PADS,

199
00:10:25,280 --> 00:10:28,170
THE OLD SYSTEMS HAVE COME OUT.

200
00:10:28,170 --> 00:10:29,170
WE'VE -- WE'VE ARE YOUER IS

04:27:45:FASS

201
00:10:29,170 --> 00:10:31,550
-- WE'VE RESURFACED THE CONCRETE
SLOPE.

202
00:10:31,550 --> 00:10:34,560
WE'RE GETTING INTO THE DETAILED
SYSTEMS AT THE PAD.

203
00:10:34,560 --> 00:10:37,850
THE ENVIRONMENTAL CONTROL
SYSTEM, HVAC SYSTEMS.

204
00:10:37,850 --> 00:10:41,570
THOSE ARE THE ONES BEING
REVAMPED TODAY.

205
00:10:41,570 --> 00:10:45,910
AND THE VAB, WE'VE REMOVED THE
PLATFORM, THE OLD PLATFORM SET

206
00:10:45,910 --> 00:10:49,090
FOR SHUTTLE OUT OF HIGH BAY
THREE.

207
00:10:49,090 --> 00:10:50,920
THAT EFFORT IS -- IS FINISHING
UP.

208
00:10:50,920 --> 00:10:53,000
MEANWHILE, WE'RE COMPLETING OUR
DESIGNS IN CONJUNCTION WITH

209
00:10:53,000 --> 00:10:56,930
TODD'S TEAM TO MAKE SURE WE'VE
GOT A RECONFIGUREABLE PLATFORM

210
00:10:56,930 --> 00:11:00,840
SET THAT ALIGNS TO HIS OUTER

MOLD LINE AND INTERFACES THAT HE

211
00:11:00,840 --> 00:11:01,840
REQUIRES.

212
00:11:01,840 --> 00:11:04,880
ELSEWHERE, OF COURSE, THERE'S
THE BIG MOBILE LAUNCHER.

213
00:11:04,880 --> 00:11:08,490
THE EAST REFURB PARK SITE.

214
00:11:08,490 --> 00:11:09,560
THAT'S COME ALONG WELL.

215
00:11:09,560 --> 00:11:14,590
WE'VE GOT OUR DESIGN NEAR
COMPLETE ON THE STRUCTURAL MODS

216
00:11:14,590 --> 00:11:17,170
THAT WE'LL HAVE TO DO TO THE
VEHICLE TO RECONFIGURE IT FROM

217
00:11:17,170 --> 00:11:21,880
THE OLD AIRES CONFIGURATION TO
WHAT WE'LL BE DOING FOR SLS AND

218
00:11:21,880 --> 00:11:22,880
ORION.

219
00:11:22,880 --> 00:11:27,430
WE EXPECT, IN FACT, TO ADVERTISE
AN AWARD CONTRACT THIS FISCAL

220
00:11:27,430 --> 00:11:32,770
YEAR TO DO THE CONSTRUCTION ON
THAT WORK.

221
00:11:32,770 --> 00:11:35,610

AND THEN OF COURSE THERE'S A
CRAWLER TRANSPORTER THAT'S RIGHT

222
00:11:35,610 --> 00:11:39,310
NOW, CRAWLER TRANSPORTER TWO IS
THE ONE WE'RE PLANNING ON USING

223
00:11:39,310 --> 00:11:40,310
FOR FLS.

224
00:11:40,310 --> 00:11:44,060
OF COURSE, WE'RE SINGLE STRING,
SO THAT'S THE ONE WE'RE FOCUSING

225
00:11:44,060 --> 00:11:47,051
ON, WE'RE USING CRAWLER
TRANSPORTER ONE TODAY TO MOVE

226
00:11:47,051 --> 00:11:50,360
ASSETS WHILE CRAWLER TRANSPORTER
TWO IS GOING THROUGH ITS MAJOR

227
00:11:50,360 --> 00:11:51,970
MOD PERIOD.

228
00:11:51,970 --> 00:11:55,230
WE DID HAVE OUR, BACK IN
NOVEMBER IF YOU RECALL, WE HAD

229
00:11:55,230 --> 00:11:58,430
OUR VERIFICATION AND VALIDATION
TEST WITH ODD WORK WE'VE DONE ON

230
00:11:58,430 --> 00:12:00,510
CRAWLER TRANSPORTER TWO.

231
00:12:00,510 --> 00:12:03,450
IT WAS REALLY, IT WAS REALLY
LIFE EXTENSION MODS.

232
00:12:03,450 --> 00:12:07,610
NOW WE'RE GOING INTO THINGS THAT
WE REQUIRE SPECIFICALLY FOR SLS

233
00:12:07,610 --> 00:12:11,960
AND ORION CAPABILITY WHICH IS
BASICALLY OPERATING IT FROM 12

234
00:12:11,960 --> 00:12:19,190
MILLION POUNDS -- UPGRADING FROM
18 MILLION POUNDS TO 18 MILLION

235
00:12:19,190 --> 00:12:20,620
POUNDS.

236
00:12:20,620 --> 00:12:23,580
WE HAVE ROLLER BEARING
FABRICATION, PRIMARY

237
00:12:23,580 --> 00:12:27,260
WEIGHT-BEARING ITEMS ON THE
TRUCKS, ON THE CRAWLER

238
00:12:27,260 --> 00:12:28,260
TRANSPORTER.

239
00:12:28,260 --> 00:12:29,850
SO THAT'S END WORK.

240
00:12:29,850 --> 00:12:32,570
WE'VE GOT SOME OTHER ACTIVITIES
THAT WE'VE ALREADY COMPLETED

241
00:12:32,570 --> 00:12:34,760
SUCH AS MODIFYING THE BRAKES.

242
00:12:34,760 --> 00:12:36,490
AGAIN, WE'VE CHECKED THOSE OUT.

243
00:12:36,490 --> 00:12:40,310
SO THE TEAM HERE AT KFC IS
EXCITED ABOUT EFT-1'S

244
00:12:40,310 --> 00:12:42,290
OPPORTUNITY TO LEARN.

245
00:12:42,290 --> 00:12:46,560
ONE ASPECT THAT I NEED TO POINT
OUT SINCE WE'RE SITTING IN IT IS

246
00:12:46,560 --> 00:12:48,920
FLIGHT FOLLOWING FOR EFT-1.

247
00:12:48,920 --> 00:12:52,680
THIS ROOM IS THE ROOM WE PLAN TO
USE FOR SLS AND ORION.

248
00:12:52,680 --> 00:12:55,990
AND IT'S BEING MODIFIED TO
SUPPORT EM-1.

249
00:12:55,990 --> 00:12:59,440
WE, IN FACT, ARE GOING TO USE
THESE AFFECTS YOU SEE FOR FLIGHT

250
00:12:59,440 --> 00:13:02,750
FOLLOWING OF EFT-1.

251
00:13:02,750 --> 00:13:06,510
OUR TEAM WILL START ACTIVELY
USING THESE ASSETS AND THESE

252
00:13:06,510 --> 00:13:10,070
CONSOLES WHEN ORION POWERS UP.

253
00:13:10,070 --> 00:13:12,540
SO WE'LL GO THROUGH POWER-UP.

254
00:13:12,540 --> 00:13:13,940
WE'LL GO THROUGH PROCESSING.

255
00:13:13,940 --> 00:13:16,030
WE'RE GOING TO GO THROUGH THE
LAUNCH.

256
00:13:16,030 --> 00:13:18,620
WE'RE GOING TO GO THROUGH THE
MISSION SEQUENCE AND LANDING AND

257
00:13:18,620 --> 00:13:24,200
RECOVERY AND GET DATA, VALUABLE
DATA WE'LL USE TO ENHANCE AND

258
00:13:24,200 --> 00:13:27,010
HELP US LEARN WHEN WE BUILD THIS
ROOM.

259
00:13:27,010 --> 00:13:29,040
I THINK THAT COVERS KFC.

260
00:13:29,040 --> 00:13:30,040
>> GREAT.

261
00:13:30,040 --> 00:13:31,040
OKAY.

262
00:13:31,040 --> 00:13:33,930
WE'LL TAKE A FEW QUESTIONS FROM
REPORTERS.

263
00:13:33,930 --> 00:13:36,390
AND IF YOU'LL STATE YOUR NAME
AND AFFILIATION AT THE CENTRAL

264
00:13:36,390 --> 00:13:40,820
MIC HERE, WE'LL GO AHEAD.

265
00:13:40,820 --> 00:13:44,880
>> JASON ROUND WITH
AMERICASPACE.COM.

266
00:13:44,880 --> 00:13:46,210
I ACTUALLY HAVE TWO QUESTIONS.

267
00:13:46,210 --> 00:13:47,480
I'M NOT SURE WHO TO FIELD THEM
TO.

268
00:13:47,480 --> 00:13:52,410
THE FIRST GOES TO THE FACT THAT
EFT-1 WILL BE A FLIGHT TEST.

269
00:13:52,410 --> 00:13:55,170
YOU MENTIONED IT WILL TEST THE
HEAT SHIELD AS WELL AS

270
00:13:55,170 --> 00:13:56,170
PARACHUTES.

271
00:13:56,170 --> 00:13:58,630
WHAT OTHER SYSTEMS THAT WE USED
ON THE MANNED VERSION OF ORION

272
00:13:58,630 --> 00:14:01,140
WILL BE TEST FLIGHT?

273
00:14:01,140 --> 00:14:03,150
>> GREAT QUESTION.

274
00:14:03,150 --> 00:14:06,780
BASICALLY IT'S A RING-OUT OF THE
CREW MODULE SYSTEM.

275
00:14:06,780 --> 00:14:11,520
SO ALL THE ENTRY NAVIGATION AND
GUIDANCE THAT WE DO, ALL THE

276
00:14:11,520 --> 00:14:13,190
MAJOR AVIONICS WILL BE FLYING.

277
00:14:13,190 --> 00:14:16,410
THE BOXES WILL BE FLYING THROUGH
A HIGH RADIATION FIELD, AS WELL.

278
00:14:16,410 --> 00:14:17,820
WE'RE TESTING THAT.

279
00:14:17,820 --> 00:14:21,790
JUST TO GIVE YOU A SENSE FOR
SOFTWARE, THE SOFTWARE TAKES --

280
00:14:21,790 --> 00:14:24,470
WE'RE GOING TO THROUGH ABOUT
HALF OF THE TOTAL SOFTWARE WE'RE

281
00:14:24,470 --> 00:14:25,470
FLYING IN MANNED FLIGHT.

282
00:14:25,470 --> 00:14:27,710
IT GETS YOU A SENSE ABOUT HOW
MANY FUNCTIONS WE'RE GOING TO BE

283
00:14:27,710 --> 00:14:28,710
CHECKING OUT.

284
00:14:28,710 --> 00:14:33,000
BUT ALL THE -- ALL THE GUIDANCE
THAT HAS TO DO ON ASCENT, SO

285
00:14:33,000 --> 00:14:38,320
WE'RE GOING TO SEPARATE THE LAS,
THE BEARINGS, THE BIG COVER WHEN

286
00:14:38,320 --> 00:14:39,320
WE ENTER.

287
00:14:39,320 --> 00:14:43,130
THEN IT'S ALL THE PARACHUTES,
ALL THE GUIDANCE, AND THEN ALL

288
00:14:43,130 --> 00:14:44,320
THE WAY DOWN TO THE LANDING.

289
00:14:44,320 --> 00:14:46,910
SO THE ONLY THING THAT WE'RE NOT
WRINGING OUT IN THIS FLIGHT IS

290
00:14:46,910 --> 00:14:50,170
-- IN THE CREW MODEL IS GOING TO
BE THE LIFE SUPPORT SYSTEM.

291
00:14:50,170 --> 00:14:52,920
THE PUMPS, PANS, SEATS, THAT
KIND OF STUFF.

292
00:14:52,920 --> 00:14:54,670
>> MY SECOND QUESTION I THINK IS
ON THE MINDS OF A LOT OF

293
00:14:54,670 --> 00:14:55,670
AMERICANS THESE DAYS.

294
00:14:55,670 --> 00:14:58,050
YOU KNOW, FRIDAY'S
SEQUESTRATION.

295
00:14:58,050 --> 00:15:01,760
AND WE'VE HEARD THAT WHILE ORION
AND SLS WILL PRETTY MUCH NOT BE

296
00:15:01,760 --> 00:15:04,390
TOUCHED, WE'VE HEARD THAT
ELEMENTS LIKE THE PLANETARY

297

00:15:04,390 --> 00:15:07,960
BUDGET AND THE COMMERCIAL SIDE
OF THE HOUSE MIGHT BE IMPACTED.

298
00:15:07,960 --> 00:15:10,430
WILL SEQUESTRATION HAVE ANY
IMPACT ON WHAT'S GOING ON WITH

299
00:15:10,430 --> 00:15:13,980
ORION OR SLS THAT YOU'RE AWARE?

300
00:15:13,980 --> 00:15:18,180
>> SEQUESTRATION AS FAR AS IT
AFFECTS SLS AND ORION WILL NOT

301
00:15:18,180 --> 00:15:19,500
AFFECT IT IMMEDIATELY.

302
00:15:19,500 --> 00:15:22,290
WE ARE WORKING TO THE SCHEDULE.

303
00:15:22,290 --> 00:15:26,190
SEQUESTRATION AS WE CURRENTLY
UNDERSTAND IT WILL AFFECT THE

304
00:15:26,190 --> 00:15:30,250
NASA BUDGET TO THE TUNE OF ABOUT
A 5% HIT.

305
00:15:30,250 --> 00:15:34,700
AND WE WORKED VERY HARD TO WORK
THAT INTO THE PROGRAMS, PLAN FOR

306
00:15:34,700 --> 00:15:36,810
IT, PREPARE FOR IT.

307
00:15:36,810 --> 00:15:41,230
THERE WILL BE SOME IMPACTS, AS
YOU MENTIONED, ACROSS -- ACROSS

308
00:15:41,230 --> 00:15:42,230
THE AGENCY.

309
00:15:42,230 --> 00:15:45,940
BUT FOR SLS AND ORION, WE'RE
WORKING TO HOLD SCHEDULE AT

310
00:15:45,940 --> 00:15:50,040
LEAST FOR THE NEAR TERM AND
MINIMIZE THOSE IMPACTS.

311
00:15:50,040 --> 00:15:54,120
>> KEN KRAMER FOR "SPACEFLIGHT"
MAGAZINE.

312
00:15:54,120 --> 00:15:56,080
I HAVE A QUESTION ABOUT EM-1.

313
00:15:56,080 --> 00:16:01,490
WHICH CAN WE EXPECT TO SEE THE
VARIOUS STAGES ARRIVE HERE?

314
00:16:01,490 --> 00:16:07,560
AND WHEN WOULD IT BE FULLY
STACKED?

315
00:16:07,560 --> 00:16:09,360
>> IT SOUNDS LIKE I LOST MY MIC.

316
00:16:09,360 --> 00:16:13,200
OUR PLAN IS TO START PROCESSING
IN THE 2016 TIME FRAME.

317
00:16:13,200 --> 00:16:16,720
SO HARDWARE ARRIVES BEFORE THAT
IN DIFFERENT INCREMENTS.

318
00:16:16,720 --> 00:16:20,010
MOST OF TODD'S HARDWARE WILL BE

IN THE DIRECT PATH.

319
00:16:20,010 --> 00:16:23,690
AND I'LL CALL IT SHIP AND SHOOT
OR SHIP AND STACK IS PROBABLY

320
00:16:23,690 --> 00:16:24,970
MORE APPROPRIATE.

321
00:16:24,970 --> 00:16:30,130
MARK GEYER'S HARDWARE, ACTUALLY
THE FIRST ORION SPACECRAFT THAT

322
00:16:30,130 --> 00:16:34,350
WE'LL LAUNCH ON EM-1 WILL BE
SEVERAL MONTHS BEFORE THAT.

323
00:16:34,350 --> 00:16:38,300
SO IT'S ROUGHLY THE 2015 TIME
FRAME IS WHEN WE'LL SEE HARDWARE

324
00:16:38,300 --> 00:16:41,279
KFC.

325
00:16:41,279 --> 00:16:45,550
>> CAN YOU TELL US IT THE WORK
THAT'S GOING TO BE DONE ON ORION

326
00:16:45,550 --> 00:16:47,380
UNTIL THE END OF THIS YEAR?

327
00:16:47,380 --> 00:16:48,420
THANKS.

328
00:16:48,420 --> 00:16:49,460
>> GREAT.

329
00:16:49,460 --> 00:16:53,420
ALREADY ALL THE PRIMARY

STRUCTURE IS HERE WHICH IS

330
00:16:53,420 --> 00:16:56,160
BASICALLY A THING THAT HOLDS
PRESSURE, THE BIG GREEN THING

331
00:16:56,160 --> 00:16:57,350
YOU MIGHT HAVE SEEN.

332
00:16:57,350 --> 00:17:00,260
NOW WE'RE OUTFITTING ALL THE
SECONDARY STRUCTURE WHICH WE

333
00:17:00,260 --> 00:17:04,290
HANG THE HEAT SHIELD ON AND THEN
WE INSTALL THE TUBING FOR THE

334
00:17:04,290 --> 00:17:05,470
PROPULSION SYSTEM.

335
00:17:05,470 --> 00:17:07,530
THAT'S -- THE TUBES ARE STARTING
TO SHOW UP, AND WE'RE STARTING

336
00:17:07,530 --> 00:17:09,039
TO WELD THOSE IN.

337
00:17:09,039 --> 00:17:11,980
WE'RE ACTUALLY BUILDING THE
HARNESSES IN THE ONC, AS WELL.

338
00:17:11,980 --> 00:17:14,780
WHAT WE'RE DOING THIS YEAR IS DO
THAT FINAL OUTFITTING.

339
00:17:14,780 --> 00:17:18,740
PUTTING THE THRUSTERS ON, TUBING
ON, WELDING IT, LAYING OUT THE

340

00:17:18,740 --> 00:17:19,740
HARNESSES.

341
00:17:19,740 --> 00:17:23,420
IN THE JULY TIME FRAME, ALL THE
COMPUTERS WILL HAVE SHOWN UP,

342
00:17:23,420 --> 00:17:26,170
AND WE'LL DO THE FIRST POWER-ON
OF THE FLIGHT ARTICLE.

343
00:17:26,170 --> 00:17:29,790
SO THAT'S WHAT -- THOSE ARE THE
BIG MILESTONES HERE AT KFC.

344
00:17:29,790 --> 00:17:32,260
AT THE SAME TIME, WE'LL BE
FINISHING THE OUTFIT OF THE

345
00:17:32,260 --> 00:17:37,020
SERVICE MODULE AND BRINGING THE
BIG FAIRINGS IN.

346
00:17:37,020 --> 00:17:40,600
LATER THIS YEAR, EARLY NEXT YEAR
WE'LL DO THE STACKING OF THE

347
00:17:40,600 --> 00:17:43,760
CREW MODULE AND SERVICE MODULE
AND FINISH THE LAST.

348
00:17:43,760 --> 00:17:46,410
IN DENVER, THOUGH, JUST TO LET
YOU KNOW, OUR AVIONICS

349
00:17:46,410 --> 00:17:48,110
LABORATORY IS IN DENVER.

350
00:17:48,110 --> 00:17:50,540
WE ALREADY HAVE ALL THE

ENGINEERING UNITS OF THE

351
00:17:50,540 --> 00:17:53,910
COMMUTERS AND POWER DISTRIBUTION
UNITS AND BATTERIES AND GUIDANCE

352
00:17:53,910 --> 00:17:55,350
AND THE COM SYSTEM.

353
00:17:55,350 --> 00:17:57,640
ALL THE ENGINEERING UNITS ARE
LAID OUT IN DENVER IN A

354
00:17:57,640 --> 00:17:58,640
LABORATORY.

355
00:17:58,640 --> 00:18:01,090
WE'VE MADE OUR FIRST RUN OF THE
SOFTWARE THAT'S GOING TO

356
00:18:01,090 --> 00:18:02,790
ACTUALLY TURN THE VEHICLE ON.

357
00:18:02,790 --> 00:18:05,450
WE'RE STARTING TO GO THROUGH THE
FUNCTIONAL CHECKS IN DENVER NOW.

358
00:18:05,450 --> 00:18:08,720
SO THERE'S A TON GOING ON RIGHT
NOW.

359
00:18:08,720 --> 00:18:10,370
YEAH.

360
00:18:10,370 --> 00:18:18,150
>> TODD HALVERSON, "FLORIDA
TODAY" FOR MARK GEYER.

361
00:18:18,150 --> 00:18:23,820

COULD YOU TALK ABOUT HOW EFT-1,
THE DATA FROM THAT FLIGHT, IS

362
00:18:23,820 --> 00:18:28,800
GOING TO INFORM THE DESIGN WORK
YOU'RE DOING ON THE VEHICLE AND

363
00:18:28,800 --> 00:18:36,090
WHETHER, YOU KNOW, CHANGES MIGHT
BE MADE BECAUSE OF THE DATA YOU

364
00:18:36,090 --> 00:18:37,210
GET BACK?

365
00:18:37,210 --> 00:18:38,210
>> GREAT QUESTION.

366
00:18:38,210 --> 00:18:43,110
SO I MENTIONED WE HAVE A HEAT
SHIELD DESIGN TODAY, AND I'LL

367
00:18:43,110 --> 00:18:46,040
GIVE YOU AN EXAMPLE, WE HAVE A
THICKNESS OF THE ABLATOR

368
00:18:46,040 --> 00:18:48,630
MATERIAL, STUFF THAT BURNS OFF
WHEN YOU ENTER.

369
00:18:48,630 --> 00:18:52,270
THAT'S BASED ON MODELS -- OF
COURSE WE STARTED WITH "APOLLO."

370
00:18:52,270 --> 00:18:58,190
WE HAVE ART KIT CHAMBERS HERE AT
JCS AND NAIMS CALIFORNIA WHERE

371
00:18:58,190 --> 00:19:02,790
WE CAN TEST PIECES, SEE HOW MUCH
THEY AVOID.

372
00:19:02,790 --> 00:19:05,170
UNTIL YOU ACTUALLY PUT IT INTO A
SPACECRAFT AND UNTIL YOU

373
00:19:05,170 --> 00:19:09,000
ACTUALLY FLY THE PROFILE, YOU'RE
GOING TO FLY, RIGHT, ALL BASED

374
00:19:09,000 --> 00:19:11,480
ON MILES -- YOU WANT TO MAKE
SURE YOU'VE FLOWN THAT IN AN

375
00:19:11,480 --> 00:19:14,470
ENVIRONMENT BEFORE YOU PUT
ANYBODY ON BOARD.

376
00:19:14,470 --> 00:19:16,120
WE HAVE A LOT OF
INSTRUMENTATION, LIKE I SAID.

377
00:19:16,120 --> 00:19:18,640
WE'RE ACTUALLY GOING TO MEASURE
THE PLASMA, THE TEMPERATURE AND

378
00:19:18,640 --> 00:19:21,070
OTHER PROPERTY WHICH WE'VE NEVER
MEASURED BEFORE IN ONE OF THESE

379
00:19:21,070 --> 00:19:22,220
FLIGHTS.

380
00:19:22,220 --> 00:19:24,450
SO THAT ALSO HELPS OUR GROUND
BASE MODELS.

381
00:19:24,450 --> 00:19:27,760
THAT'S THE KIND OF EXAMPLE OF
HOW WE MAKE SURE THAT WE GET THE

382
00:19:27,760 --> 00:19:28,760
BEST HEAT SHIELD.

383
00:19:28,760 --> 00:19:31,600
REMEMBER, MASS IS VERY PRECIOUS
ON THIS VEHICLE.

384
00:19:31,600 --> 00:19:33,990
WE DON'T WANT TO HAVE A WHOLE
BUNCH OF HEAT SHIELD THICKNESS

385
00:19:33,990 --> 00:19:35,340
THAT WE DON'T NEED.

386
00:19:35,340 --> 00:19:39,510
IT'S PART OF REALLY OPTIMIZING
THE DESIGN SO WE CAN DO MORE IN

387
00:19:39,510 --> 00:19:41,780
THE MISSION AND STILL HAVE A
SAFE SPACECRAFT.

388
00:19:41,780 --> 00:19:44,920
THERE'S ALL SORTS OF LOADS, AS
WELL, RIGHT?

389
00:19:44,920 --> 00:19:48,590
WE HAVE MODELS THAT TELL US WHAT
THE METAL IS GOING TO SEE DURING

390
00:19:48,590 --> 00:19:49,590
LIFTOFF.

391
00:19:49,590 --> 00:19:52,120
WE HAVE MODELS, WHAT WE EXPECT
THE METAL TO SEE IN ENTRY AND

392
00:19:52,120 --> 00:19:53,770
WHEN IT HITS THE WATER.

393
00:19:53,770 --> 00:19:56,940
WE'RE GOING TO INSTRUMENT ALL
THOSE KEY PARTS OF THE STRUCTURE

394
00:19:56,940 --> 00:19:59,680
AND MEASURE ALL THAT DATA WHEN
WE'RE ACTUALLY PERFORMING THE

395
00:19:59,680 --> 00:20:00,680
FLIGHT.

396
00:20:00,680 --> 00:20:03,760
SO THAT'S ANOTHER TO SAY IS THE
STRUCTURE TOO STRONG, YOU KNOW,

397
00:20:03,760 --> 00:20:06,020
DID WE OVERDO IT BECAUSE WE'LL
NEED THAT MASS, OR ARE WE

398
00:20:06,020 --> 00:20:09,790
FINDING AREAS IN THE VEHICLE
WHERE WE THINK IT'S PROBABLY TOO

399
00:20:09,790 --> 00:20:10,920
CLOSE TO THE MARGIN.

400
00:20:10,920 --> 00:20:14,920
THIS REALLY GIVES US A CHANCE TO
TWEAK I WOULD SAY, TO OPTIMIZE

401
00:20:14,920 --> 00:20:17,430
THE DESIGN BEFORE WE ACTUALLY
PUT ANYBODY IN IT.

402
00:20:17,430 --> 00:20:20,500
SO THOSE ARE TWO BIG EXAMPLES.

403
00:20:20,500 --> 00:20:27,340

>> AND HOW IMPORTANT IS IT TO
GET THAT DATA EARLY ON IN THE

404
00:20:27,340 --> 00:20:28,400
DESIGN PHASE?

405
00:20:28,400 --> 00:20:29,400
>> YEAH.

406
00:20:29,400 --> 00:20:30,400
SO IT'S HUGE.

407
00:20:30,400 --> 00:20:32,230
LATER ON, THE MORE EXPENSIVE IT
GETS, RIGHT?

408
00:20:32,230 --> 00:20:35,130
THE LATER ON WE MAKE CHANGES AND
ESPECIALLY IF WE'RE MAKING

409
00:20:35,130 --> 00:20:37,530
CHANGES IN THE ROCKETS WAITING
FOR US, SAY WE FOUND SOME

410
00:20:37,530 --> 00:20:39,690
PROBLEM AND THEY'RE READY TO GO
AND WE'RE NOT READY AND

411
00:20:39,690 --> 00:20:41,280
EVERYBODY'S WAITING ON US.

412
00:20:41,280 --> 00:20:43,250
THAT'S WHY EFT-1 IS REALLY
IMPORTANT FOR US TO GET

413
00:20:43,250 --> 00:20:48,220
HIGH-RISK AREAS TESTED SO IF WE
FIND PROBLEMS WE CAN FIX THEM

414

00:20:48,220 --> 00:20:49,980
WHILE THEY'RE STILL IN
DEVELOPMENT.

415
00:20:49,980 --> 00:20:52,020
SO IT'S REALLY, REALLY
IMPORTANT.

416
00:20:52,020 --> 00:20:53,809
>> AND JUST ONE LAST ONE FROM
ME.

417
00:20:53,809 --> 00:20:54,809
TODD, GO AHEAD.

418
00:20:54,809 --> 00:20:58,870
>> I WAS GOING TO ADD THAT -- I
WAS GOING TO ADD THAT FOR THE

419
00:20:58,870 --> 00:21:02,140
SAME REASONS MARK TAKES THAT
SAME DATA AND PUTS IT BACK INTO

420
00:21:02,140 --> 00:21:03,140
MS.

421
00:21:03,140 --> 00:21:05,400
MODELS WE HAVE INTEGRATED
STACK MODELS THAT WE'RE LOOKING

422
00:21:05,400 --> 00:21:08,160
AT ON THE LAUNCH VEHICLE ITSELF.

423
00:21:08,160 --> 00:21:10,980
AS YOU SAID, YOU CAN DO CERTAIN
THINGS WITH WIND TUNNELS AND

424
00:21:10,980 --> 00:21:13,890
THINGS LIKE THAT TO GET BUFFETT
LOADS AND ENVIRONMENTAL LOADS

425
00:21:13,890 --> 00:21:16,880
AND ARROW LOAD AND THINGS LIKE
THAT.

426
00:21:16,880 --> 00:21:19,930
GETTING THIS DATA BACK ACTUALLY
HELPS US VALIDATE THOSE MODELS

427
00:21:19,930 --> 00:21:21,600
IN A WAY THAT ADDS ROBUST NOT.

428
00:21:21,600 --> 00:21:24,110
AND IF WE HAVE TO TWEAK THE
MODELS, WE CAN DO THAT.

429
00:21:24,110 --> 00:21:29,460
>> BEFORE YOU GO, TODD, JUST SO
YOU UNDERSTAND THE SYSTEM, AS

430
00:21:29,460 --> 00:21:32,450
THESE GUYS MAKE TRADES AND
ADJUSTMENTS AND CHANGES TO THEIR

431
00:21:32,450 --> 00:21:37,559
DEVELOPMENT ON THEIR PARTICULAR
VEHICLES, IT TRANSLATES TO WHAT

432
00:21:37,559 --> 00:21:40,090
SERVICES WE PROVIDE AND WHAT
CAPABILITIES WE PROVIDE ON THE

433
00:21:40,090 --> 00:21:41,090
GROUND.

434
00:21:41,090 --> 00:21:44,650
SO AS THEY MATURE AND AS THEY
LEARN THEIR LESSONS AND MAKE

435

00:21:44,650 --> 00:21:48,270
CHANGES EARLY, THE EASIER IT IS
FOR US ON THE GROUND TO BE ABLE

436
00:21:48,270 --> 00:21:50,460
TO REACT AND BE READY WHEN
THEY'RE READY.

437
00:21:50,460 --> 00:21:53,830
>> AND JUST ONE LAST ONE FOR
MARK.

438
00:21:53,830 --> 00:21:57,250
COULD YOU TALK ABOUT THE
POWER-UP IN JUBAI, I GUESS YOU

439
00:21:57,250 --> 00:22:02,170
SAID, AND HOW BIG A DEAL THAT IS
GOING TO BE GIVEN THE FACT WE

440
00:22:02,170 --> 00:22:05,100
HAVEN'T HAD A POWER-ON SINCE
LAST YEAR.

441
00:22:05,100 --> 00:22:06,100
>> YEAH.

442
00:22:06,100 --> 00:22:11,340
SO -- WELL, IT'S REALLY EXCITING
AND NOT JUST TO COMPUTER NERDS.

443
00:22:11,340 --> 00:22:14,230
YOU THINK OF THIS HUNDREDS OF
CHANNELS THAT HAVE TO TALK TO

444
00:22:14,230 --> 00:22:15,230
ONE ANOTHER.

445
00:22:15,230 --> 00:22:18,010
WE GET A LOT OF DATA FROM THE

GUIDANCE SYSTEM THAT THE

446
00:22:18,010 --> 00:22:19,710
COMPUTER HAS TO REACT TO.

447
00:22:19,710 --> 00:22:22,400
AND THEN WE'RE ALSO MEASURING,
WE HAVE THOUSANDS OF PARAMETERS

448
00:22:22,400 --> 00:22:25,210
THAT WE'RE ACTUALLY MEASURING
DURING THIS FLIGHT.

449
00:22:25,210 --> 00:22:27,770
SO THE POWER-ON ALLOWS US TO
TURN THE COMPUTERS ON AND MAKE

450
00:22:27,770 --> 00:22:29,570
SURE THAT THEY'RE TALKING TO ONE
ANOTHER.

451
00:22:29,570 --> 00:22:32,590
AND THEY'RE GETTING THE DATA
THAT WE HAVE NO TIMING ISSUES.

452
00:22:32,590 --> 00:22:35,990
SO IT'S -- HUNDREDS OF CHANNELS,
THE UPDATE WE'LL HAVE TO MAKE

453
00:22:35,990 --> 00:22:37,360
SURE ARE WORKING WELL.

454
00:22:37,360 --> 00:22:41,960
AND THAT -- AND THAT THE TIMING
IS EXACTLY WHAT WE EXPECT.

455
00:22:41,960 --> 00:22:44,700
AGAIN, WE WILL HAVE RUN ALL THAT
AND THE PROCEDURES OUT IN

456
00:22:44,700 --> 00:22:48,070
DENVER, BUT WHAT WE FIND IS WHEN
YOU ACTUALLY STICK SOMETHING IN

457
00:22:48,070 --> 00:22:51,630
A SPACECRAFT AND YOU HAVE THE
ACTUAL FLIGHT CABLES, SOMETIMES

458
00:22:51,630 --> 00:22:54,000
YOU'LL FIND SURPRISES.

459
00:22:54,000 --> 00:22:57,140
SO THAT'S WHY WE DO THE REAL
POWER ON HERE IN JULY.

460
00:22:57,140 --> 00:22:59,760
THAT'S A HUGE TEST FROM US.

461
00:22:59,760 --> 00:23:03,040
>> WE HAVE A QUESTION FROM
TWITTER FROM JIMMY LYNN WHO ASKS

462
00:23:03,040 --> 00:23:06,190
-- HOW MANY ORION CAPSULES ARE
PLANNED TO BE MADE?

463
00:23:06,190 --> 00:23:08,370
>> YEAH, GOOD QUESTION.

464
00:23:08,370 --> 00:23:11,760
IF YOU LOOK -- LET'S TALK ABOUT
THROUGH THE MANNED FLIGHT WHICH

465
00:23:11,760 --> 00:23:13,490
IS, YOU KNOW, IN 2021.

466
00:23:13,490 --> 00:23:19,800
SO TODAY WE'RE ALSO TRYING TO BE
VERY AFFORDABLE, COST CONSCIOUS.

467
00:23:19,800 --> 00:23:23,440
SO THE CAPSULE WE'RE GOING TO
FLY ON EFT-1, WE'RE GOING TO FLY

468
00:23:23,440 --> 00:23:27,059
AGAIN ON A FLIGHT THAT WE CALL
ASEN ABORT TWO.

469
00:23:27,059 --> 00:23:31,590
THAT'S A TEST OF THE LAUNCH
ABORT SYSTEM.

470
00:23:31,590 --> 00:23:33,370
TAKES THE LAUNCH ABORT SYSTEM
AND PUTS IT IN ITS MOST

471
00:23:33,370 --> 00:23:37,770
STRESSING ENVIRONMENT WHICH IS
THE MAX DYNAMIC PRESSURE.

472
00:23:37,770 --> 00:23:40,300
WE'RE GOING TO LAUNCH THAT OUT
AT THE CAPE, AS WELL, ON A SMALL

473
00:23:40,300 --> 00:23:41,300
BOOSTER.

474
00:23:41,300 --> 00:23:43,309
WE'RE GOING TO REUSE THAT FOR
THAT IMPORTANT TEST.

475
00:23:43,309 --> 00:23:47,331
EM-1, THE FLIGHT WE TALKED ABOUT
IN 2017, THAT WILL BE A PLATE

476
00:23:49,331 --> 00:23:48,331
CAPSULE.

477

00:23:49,331 --> 00:23:51,920
WE'LL FLY THAT, THAT'S THE NEXT
IN 2017.

478
00:23:51,920 --> 00:23:53,990
WE'LL REUSE THAT, AS WELL.

479
00:23:53,990 --> 00:23:57,820
WHEN IT COMES BACK, WE'LL TAKE
IT TO OHIO AND DO THE ABORT

480
00:23:57,820 --> 00:23:58,820
QUALIFICATION.

481
00:23:58,820 --> 00:24:01,680
WE'LL TAKE IT UP TO ABORT LOADS
AFTER WE'VE FLOWN IT ON EM-1.

482
00:24:01,680 --> 00:24:03,550
AND THEN WE BUILD A CAPSULE FOR
EM-2.

483
00:24:03,550 --> 00:24:10,320
YOU THINK ABOUT THE GROUND TEST
CAPSULE, THERE'S FOUR AND WE'LL

484
00:24:10,320 --> 00:24:14,240
REUSE THOSE AS MUCH AS WE CAN.

485
00:24:14,240 --> 00:24:17,420
>> WE HAVE ANOTHER QUESTION FROM
TWITTER FROM STEVEN ANDERSON WHO

486
00:24:17,420 --> 00:24:22,280
ASKS -- WHEN ARE WE GOING TO
SEND PERSONNEL BACK TO THE MOON?

487
00:24:22,280 --> 00:24:26,930
>> WELL, WHETHER DO WE GO BACK
TO THE MOON IS STILL -- WHEN DO

488
00:24:26,930 --> 00:24:29,690
WE GO BACK TO THE MOON IS STILL
UNDER STUDY.

489
00:24:29,690 --> 00:24:31,670
WE KNOW WE'RE EVENTUALLY GOING
TO MARS.

490
00:24:31,670 --> 00:24:35,800
AND THERE ARE MULTIPLE
DESTINATIONS BETWEEN HERE AND

491
00:24:35,800 --> 00:24:40,930
MARS, AND WE'RE SORTING THROUGH
WHAT IS THE BEST OR -- THE BEST

492
00:24:40,930 --> 00:24:43,760
WAY TO APPROACH THIS
EXPLORATION, HOW CAN WE LEARN,

493
00:24:43,760 --> 00:24:47,370
WHAT DO WE NEED TO LEARN ON OUR
WAY TO MARS, AND HOW BEST CAN WE

494
00:24:47,370 --> 00:24:48,420
LEARN IT.

495
00:24:48,420 --> 00:24:52,630
AND SO THE MOON IS ONE OF THOSE
DESTINATIONS POSSIBLY.

496
00:24:52,630 --> 00:24:56,200
ASTEROIDS ARE ANOTHER POSSIBLE
DESTINATION.

497
00:24:56,200 --> 00:25:00,010
EXPLORATION MISSION ONE THAT
WE'VE TALKED ABOUT IN 2017 AND

498
00:25:00,010 --> 00:25:05,350
ALSO OUR FIRST CRUDE FLIGHT ARE
CURRENTLY PLANNED TO GO TO LUNAR

499
00:25:05,350 --> 00:25:06,350
SPACE.

500
00:25:06,350 --> 00:25:08,150
WE'RE GOING TO THE LUNAR -- THE
VICINITIES OF THE MOON.

501
00:25:08,150 --> 00:25:10,980
WE ARE NOT GOING TO GO ALL THE
WAY AND LAND ON THE MOON BECAUSE

502
00:25:10,980 --> 00:25:12,800
WE WON'T HAVE THAT CAPABILITY.

503
00:25:12,800 --> 00:25:17,250
BUT WE WILL BE GOING TO THE AREA
AROUND THE MOON PRIMARILY TO

504
00:25:17,250 --> 00:25:22,420
LEARN WHAT WE NEED TO KNOW OUR
WAY TO MARS AND ALSO TO TEST OUT

505
00:25:22,420 --> 00:25:26,480
OUR SYSTEMS, TO TEST OUT THE
SPACE LAUNCH SYSTEM AND ORION IN

506
00:25:26,480 --> 00:25:30,760
THEIR ENVIRONMENTS SO WE CAN
PREPARE OURSELVES FOR THE LONGER

507
00:25:30,760 --> 00:25:34,140
TRIPS OUT TO MARS.

508
00:25:34,140 --> 00:25:36,420
>> THIS PROBABLY FEEDS RIGHT

INTO THAT FROM TWITTER, AS WELL,

509
00:25:36,420 --> 00:25:37,910
FROM STONE SASBO.

510
00:25:37,910 --> 00:25:40,280
IT SAYS -- WHAT ARE THE CURRENT
MAIN GOALS OF DEEP SPACE

511
00:25:40,280 --> 00:25:45,100
EXPLORATION AND WHEN ARE WE
HOPING TO DISCOVER?

512
00:25:45,100 --> 00:25:48,270
>> THE CURRENT MAIN GOAL IS
RIGHT THERE IN THE WORD.

513
00:25:48,270 --> 00:25:49,690
IT'S EXPLORATION.

514
00:25:49,690 --> 00:25:53,929
IT'S TO EXPLORE THE UNKNOWN, TO
LEARN WHAT WE CAN FROM THE

515
00:25:53,929 --> 00:26:00,010
UNKNOWN, AND TO BE ABLE TO GET
HUMANS OUT THERE WITH THE

516
00:26:00,010 --> 00:26:03,020
SPECIAL EXPERTISE AND THE
SPECIAL ABILITY THAT THE HUMAN

517
00:26:03,020 --> 00:26:08,560
MIND HAS TO BE ABLE TO LOOK AT A
GIVEN SITUATION AND FIGURE OUT

518
00:26:08,560 --> 00:26:12,930
WHAT WE CAN LEARN ABOUT OUR
UNIVERSE, WHAT CAN WE LEARN FROM

519
00:26:12,930 --> 00:26:16,210
THAT EXPLORATION THAT CAN --
THAT CAN FEED BACK INTO WHAT WE

520
00:26:16,210 --> 00:26:20,390
WANT TO KNOW BETTER ABOUT HOW TO
LIVE AND WORK ON EARTH.

521
00:26:20,390 --> 00:26:24,320
AND HOW TO MAKE OUR LIVES ALL
BETTER BASED ON WHAT WE LEARN IN

522
00:26:24,320 --> 00:26:27,720
THE SCIENCES AND WHAT WE LEARNED
FROM THAT EXPLORATION.

523
00:26:27,720 --> 00:26:30,590
WE LEARNED A VAST AMOUNT FROM
THE MOON.

524
00:26:30,590 --> 00:26:34,110
WE WENT TO THE -- FUNDAMENTALLY
WE WENT TO THE EQUATOR OF THE

525
00:26:34,110 --> 00:26:35,110
MOON.

526
00:26:35,110 --> 00:26:37,070
THERE'S LOTS MORE TO LEARN
THERE.

527
00:26:37,070 --> 00:26:40,780
OBVIOUSLY LEARNING MORE FROM
ASTEROIDS AND EVENTUALLY ALL THE

528
00:26:40,780 --> 00:26:45,100
LESSONS WE'RE LEARNING FROM
"CURIOSITY" AND THE MARS ROVERS

529

00:26:45,100 --> 00:26:49,600
AND GETTING THAT HUMAN MIND
THERE IN ADDITION TO THE ROBOTS

530
00:26:49,600 --> 00:26:51,190
IS WHAT WE'RE AFTER.

531
00:26:51,190 --> 00:26:53,200
WE THINK WE CAN LEARN AN AWFUL
LOT FROM THAT.

532
00:26:53,200 --> 00:26:55,490
WHAT WE WILL LEARN, IT'S HARD TO
PREDICT.

533
00:26:55,490 --> 00:26:59,110
EXPLORATION NECESSARILY IS
EXPLORING THE UNKNOWN.

534
00:26:59,110 --> 00:27:01,330
BUT WE'RE GOING THERE TO LEARN.

535
00:27:01,330 --> 00:27:05,740
>> I THINK THERE'S -- DAN TALKED
IT I THINK THE EXCITING PART OF

536
00:27:05,740 --> 00:27:08,590
THE EXPLORATION WHICH I THINK A
LOT OF US AS KIDS, THAT'S WHERE

537
00:27:08,590 --> 00:27:09,590
WE'RE IN THIS BUSINESS.

538
00:27:09,590 --> 00:27:11,500
I THINK THERE'S ANOTHER
IMPORTANT PART ABOUT IT, TOO, AS

539
00:27:11,500 --> 00:27:14,760
WELL AS -- AS FAR AS NATIONAL
LEADERSHIP, AS FAR AS AMERICA

540
00:27:14,760 --> 00:27:17,430
BEING A LEADER IN THE WORLD.

541
00:27:17,430 --> 00:27:20,250
YOU CAN SEE -- YOU CAN SEE THAT
IN OTHER COUNTRIES TRYING TO

542
00:27:20,250 --> 00:27:22,970
ACCOMPLISH THINGS THAT WE HAVE
ALREADY DONE -- AND I THINK IT'S

543
00:27:22,970 --> 00:27:25,970
IMPORTANT FOR THE UNITED STATES
TO CONTINUE TO BE A LEADER.

544
00:27:25,970 --> 00:27:27,309
IT'S OKAY TO LEAD OTHER
COUNTRIES.

545
00:27:27,309 --> 00:27:29,010
IT'S LIKE WE'RE ADDING TO THIS
THING.

546
00:27:29,010 --> 00:27:31,220
BUT TO BE THE LEADER, I THINK
THAT'S IMPORTANT FOR NATIONAL

547
00:27:31,220 --> 00:27:33,330
PRESTIGE AND LEADERSHIP.

548
00:27:33,330 --> 00:27:37,200
>> JASON RYAN FROM
AMERICASPACE.COM AGAIN.

549
00:27:37,200 --> 00:27:38,580
WE MENTIONED MARS.

550
00:27:38,580 --> 00:27:43,010

WE KNOW THAT ORION IS A LARGER
KIND OF VERSION OF AN "APOLLO"

551
00:27:43,010 --> 00:27:44,010
SPACECRAFT.

552
00:27:44,010 --> 00:27:46,030
THERE'S BEEN SOME STUDIES THAT
SHOW THIS A SPACECRAFT THAT

553
00:27:46,030 --> 00:27:48,540
WOULD TAKE A CREW TO MARS WOULD
HAVE TO BE THE SIZE OF PERHAPS

554
00:27:48,540 --> 00:27:50,679
LARGER THAN THE INTERNATIONAL
SPACE STATION.

555
00:27:50,679 --> 00:27:55,160
AND WE KIND OF TALKED ABOUT THE
NEAR-TERM STUFF, YOU KNOW, 2014,

556
00:27:55,160 --> 00:27:56,790
2017, 2021.

557
00:27:56,790 --> 00:27:59,290
WHEN IT COMES TO MARS, WHAT ARE
YOU GUYS LOOKING AT?

558
00:27:59,290 --> 00:28:03,060
WHAT TYPE OF CRAFT ARE YOU JUST,
YOU KNOW, PENCILLING IN NOW OR

559
00:28:03,060 --> 00:28:04,060
CONSIDERING?

560
00:28:04,060 --> 00:28:05,840
CAN YOU GIVE US SOME BROAD
STROKES ON THAT?

561
00:28:05,840 --> 00:28:08,560
>> I CAN GIVE YOU THE BROAD
STROKES.

562
00:28:08,560 --> 00:28:12,540
AND WE START AT MARS AND WHAT
WOULD A MARS MISSION LOOK LIKE

563
00:28:12,540 --> 00:28:16,470
AND THEN WHAT DO WE NEED TO
LEARN AND DEVELOP AND

564
00:28:16,470 --> 00:28:20,160
CAPABILITIES DO WE NEED TO BE
ABLE TO EXECUTE THAT MISSION.

565
00:28:20,160 --> 00:28:22,940
AND WE WORK OUR WAY BACKWARDS.

566
00:28:22,940 --> 00:28:25,400
WE'VE WORKED OUR WAY BACKWARDS
TO THE FACT THAT WE KNOW WE NEED

567
00:28:25,400 --> 00:28:28,860
AN ORION SPACECRAFT TO GET THE
CREW UP TO SPACE AND TO BRING

568
00:28:28,860 --> 00:28:30,260
THEM HOME SAFELY.

569
00:28:30,260 --> 00:28:33,640
WE KNOW THIS WE NEED A LARGE
LAUNCH VEHICLE TO GET ALL THE

570
00:28:33,640 --> 00:28:38,440
PAYLOAD UP TO ORBIT AND INTO
SPACE.

571
00:28:38,440 --> 00:28:42,980

AND WE KNOW THAT WE WILL HAVE TO
DEVELOP OTHER HABITATS, OTHER

572
00:28:42,980 --> 00:28:48,170
CAPABILITIES THAT ARE NEEDED TO
EXECUTE A MARS MISSION.

573
00:28:48,170 --> 00:28:52,110
NOW WHAT THOSE HABITATS, THOSE
OTHER CRAFTS LOOK LIKE RIGHT

574
00:28:52,110 --> 00:28:53,280
NOW, WE DON'T KNOW.

575
00:28:53,280 --> 00:28:55,150
WE'RE STUDYING ALL THE OPTIONS.

576
00:28:55,150 --> 00:28:57,450
BUT WE'RE ALSO RUNNING
EXPERIMENTS ON THE INTERNATIONAL

577
00:28:57,450 --> 00:29:01,510
SPACE STATION SUCH AS THE
BIGELOW BEAM EXPERIMENT WITH AN

578
00:29:01,510 --> 00:29:05,070
INFLATABLE STRUCTURE THAT'S
COMING UP.

579
00:29:05,070 --> 00:29:08,490
HOPEFULLY A TWO-YEAR EXPERIMENT
ON SPACE STATION TO HELP US

580
00:29:08,490 --> 00:29:13,140
LEARN AND TO HELP US DESIGN WHAT
THOSE FUTURE CRAFTS TO MARS WILL

581
00:29:13,140 --> 00:29:16,440
BE.

582
00:29:16,440 --> 00:29:19,090
>> KEN KRAMER, "UNIVERSE TODAY"
FOR MARK GEYER.

583
00:29:19,090 --> 00:29:23,059
CAN YOU TALK IN DETAIL ABOUT THE
ASCENT ABOARD TEST.

584
00:29:23,059 --> 00:29:28,630
WHEN'S IT GOING TO BE, WHERE'S
THE ROCKET, WHEN IS IT GOING TO

585
00:29:28,630 --> 00:29:29,630
LAUNCH?

586
00:29:29,630 --> 00:29:32,480
WILL YOU BUILD A NEW -- TALK IN
SOME DETAIL ABOUT THAT, PLEASE.

587
00:29:32,480 --> 00:29:37,161
>> AGAIN, ASSENTS BOARD TWO IS
REALLY TO TEST THE LAUNCH BOARD

588
00:29:37,161 --> 00:29:38,161
ABORT SYSTEM.

589
00:29:38,161 --> 00:29:42,549
YOU'RE TRYING TO LAUNCH THE
ABORT ENVIRONMENT.

590
00:29:42,549 --> 00:29:44,450
YOU WOULDN'T WANT IT ON A REAL
ROCKET BECAUSE YOU WOULD HAVE TO

591
00:29:44,450 --> 00:29:47,340
BLOW UP THE ROCKET TO GET IN THE
RIGHT ENVIRONMENT.

592
00:29:47,340 --> 00:29:51,650

WE'LL REUSE A PEACEKEEPER STAGE
THAT WE HAVE A DEAL WITH THE AIR

593
00:29:51,650 --> 00:29:53,170
FORCE THAT WE GET.

594
00:29:53,170 --> 00:29:56,549
WE'LL BALLAST IT SO WE GET THE
RIGHT ENVIRONMENT.

595
00:29:56,549 --> 00:29:58,200
WE'LL LAUNCH IT RIGHT HERE IN
FLORIDA.

596
00:29:58,200 --> 00:30:01,809
I CAN'T REMEMBER THE NAME OF THE
LAUNCHPAD.

597
00:30:01,809 --> 00:30:02,809
I -- 46.

598
00:30:02,809 --> 00:30:03,809
46.

599
00:30:03,809 --> 00:30:06,320
WE'RE REFURBING THAT.

600
00:30:06,320 --> 00:30:07,770
IT'S SMALLER.

601
00:30:07,770 --> 00:30:11,870
IT WILL HAVE THE BOOSTER FROM
THE AIR FORCE.

602
00:30:11,870 --> 00:30:15,110
WE'LL HAVE A CREW MODULE AND THE
LAUNCH ABORT.

603
00:30:15,110 --> 00:30:16,610

YOU SAW THE ABORT MOTOR TODAY.

604
00:30:16,610 --> 00:30:21,210
BUT THERE'S ALSO A CONTROL
MOTOR, JETTISON MOTOR AND THE

605
00:30:21,210 --> 00:30:24,179
FARINGS.

606
00:30:24,179 --> 00:30:28,191
BASICALLY THE BOOSTER WILL GET
US FAST UP TO MAX X, THEN WE

607
00:30:28,191 --> 00:30:29,250
LIGHT THE ABORT.

608
00:30:29,250 --> 00:30:30,480
THEN WE'LL DO THE ABORT.

609
00:30:30,480 --> 00:30:33,670
WE'LL CONTROL THE ALTITUDE WITH
THE ACM AND DO THE SEPARATION

610
00:30:33,670 --> 00:30:34,720
AND ALL THE PARACHUTE TESTS.

611
00:30:34,720 --> 00:30:38,640
IF YOU THINK ABOUT THE ONE TEST
THAT WE DID A FEW YEARS AGO,

612
00:30:38,640 --> 00:30:42,780
IT'S BASICALLY EXERCISING THAT
SAME INTEGRATED SYSTEM BUT IN A

613
00:30:42,780 --> 00:30:47,580
MUCH MORE STRESSING AERODYNAMIC
ENVIRONMENT.

614
00:30:47,580 --> 00:30:50,830

SO IT WILL HAVE ALL THREE BIG,
SOLID ROCKET MOTORS.

615
00:30:50,830 --> 00:30:54,660
EFT-1, THE ONLY ACTIVE SOLID
ROCK MOTOR IS A JETTISON MOTOR.

616
00:30:54,660 --> 00:30:58,050
WE'RE GOING TO SIMULATE A
NOMINAL JETTISON OF THE LAST

617
00:30:58,050 --> 00:30:59,050
TOWER.

618
00:30:59,050 --> 00:31:02,050
WE'RE NOT PUTTING AN ACTIVE
ABORT MOTOR OR ACTIVE ACH

619
00:31:02,050 --> 00:31:05,360
BECAUSE YOU'D BE WASTING MONEY,
THROWING IT AWAY.

620
00:31:05,360 --> 00:31:07,890
>> CAN YOU TALK ALSO ABOUT THE
SERVICE MODULE?

621
00:31:07,890 --> 00:31:11,340
ESA'S GOING TO BUILD IT FOR THE
EM-1 FLIGHT.

622
00:31:11,340 --> 00:31:13,840
IT'S NOT CLEAR TO ME, THOUGH, IT
EM MIGHT HAVE 2 AS -- EM-2.

623
00:31:13,840 --> 00:31:17,290
AT THE BRIEFING YOU TALKED ABOUT
USING PIECES.

624
00:31:17,290 --> 00:31:23,260
I WONDER IF YOU COULD TALK IN

DETAIL AND WOULD ESA BE INVOLVED

625
00:31:23,260 --> 00:31:26,140
IN FUTURE SERVICE MODELS BEYOND
EM-1?

626
00:31:26,140 --> 00:31:27,140
>> YEAH.

627
00:31:27,140 --> 00:31:30,090
THE CURRENT AGREEMENT IS FOR THE
FIRST ONE.

628
00:31:30,090 --> 00:31:34,480
WE'RE WORKING WITH THEM, AND
THEY'RE DOING A DESIGN.

629
00:31:34,480 --> 00:31:39,100
NASA WILL OWN THE INTELLECTUAL
PROPERTY FOR THAT DESIGN.

630
00:31:39,100 --> 00:31:40,980
THE SECOND WE HAVE OPTIONS.

631
00:31:40,980 --> 00:31:44,870
WE CAN TALK TO ESA ABOUT SOME
FURTHER DEAL DOWNSTREAM, IF

632
00:31:44,870 --> 00:31:47,309
THERE WAS OTHER THINGS THEY
WANTED TO BARTER AND IF THE

633
00:31:47,309 --> 00:31:48,950
GOVERNMENT FELT THAT WAS THE
RIGHT THING TO DO.

634
00:31:48,950 --> 00:31:51,950
WE COULD BARTER FOR ANOTHER AND
GET THE SECOND ONE OR TAKE THE

635
00:31:51,950 --> 00:31:53,300
DESIGN AND BUILD OUR OWN.

636
00:31:53,300 --> 00:31:55,919
THAT'S -- WE HAVE TIME TO GO
FIGURE THAT OUT.

637
00:31:55,919 --> 00:31:57,980
BUT WE GET ONE AS PART OF THE
DEAL.

638
00:31:57,980 --> 00:32:02,389
SO EM-1 WILL BE AN ESA-PROVIDED
SERVICE MODULE.

639
00:32:02,389 --> 00:32:05,100
>> I'M GOING TO FOLLOW UP ON
KEN'S QUESTION THERE AND ASK,

640
00:32:05,100 --> 00:32:07,860
YOU WORKED WITH ESA ON THIS ONE.

641
00:32:07,860 --> 00:32:10,350
OF COURSE, THE BUDGET IS A BIG
CONCERN THESE DAYS.

642
00:32:10,350 --> 00:32:13,290
IS NASA LOOKING AT OTHER WAYS TO
PERHAPS SHARE THE LOAD SO TO

643
00:32:13,290 --> 00:32:15,440
SPEAK AND GAIN PARTNERS KIND OF
LIKE WHAT YOU'VE DONE IN THE

644
00:32:15,440 --> 00:32:17,129
INTERNATIONAL SPACE STATION?

645
00:32:17,129 --> 00:32:20,580
>> SO FOR ORION, THE SERVICE

MODULE IS THE EXTENT.

646
00:32:20,580 --> 00:32:23,160
WE HAVE THE DESIGN AND PIECES
FOR EVERYTHING ELSE.

647
00:32:23,160 --> 00:32:24,250
WOULD BE OTHER PARTS OF THE
ARCHITECTURE.

648
00:32:24,250 --> 00:32:26,040
I KNOW DAN AND BILL ARE THINKING
ABOUT --

649
00:32:26,040 --> 00:32:29,290
>> THE ANSWER TO YOUR QUESTION
IS, YES, WE ARE LOOKING FOR

650
00:32:29,290 --> 00:32:33,929
POSSIBLE PARTNERSHIPS AND TRYING
TO SORT THROUGH THE VARIOUS

651
00:32:33,929 --> 00:32:37,510
DESIRES OF ALL THE INTERNATIONAL
PARTNERS.

652
00:32:37,510 --> 00:32:42,350
WE HAVE STUDIES ONGOING IN THAT
AREA.

653
00:32:42,350 --> 00:32:44,960
AND WE'RE LOOKING AT ALL LEVELS
OF PARTNERSHIP.

654
00:32:44,960 --> 00:32:48,160
IT'S VERY CLEAR TO US THAT THE
INTERNATIONAL PARTNERSHIP AS

655
00:32:48,160 --> 00:32:51,570
DEMONSTRATED BY THE

INTERNATIONAL SPACE STATION IS A

656
00:32:51,570 --> 00:32:56,400
KEY INGREDIENT TO A LONG-TERM
SUSTAINABLE PROGRAM.

657
00:32:56,400 --> 00:33:01,040
AND WE ARE LOOKING FOR THOSE
OPPORTUNITIES.

658
00:33:01,040 --> 00:33:04,380
WE ARE WORKING WITH THE EUROPEAN
SPACE AGENCY, WITH THE JAPANESE

659
00:33:04,380 --> 00:33:07,110
SPACE AGENCY, WITH THE RUSSIANS.

660
00:33:07,110 --> 00:33:10,590
WE'RE WORKING WITH ALL OF OUR
INTERNATIONAL PARTNERS FOR THOSE

661
00:33:10,590 --> 00:33:11,590
OPPORTUNITIES.

662
00:33:11,590 --> 00:33:15,140
WE HAVE NOTHING YET THAT'S
SOLIDIFIED AS WHAT WE HAVE WITH

663
00:33:15,140 --> 00:33:17,760
THE ORION SERVICE MODULE.

664
00:33:17,760 --> 00:33:19,399
BUT WE'RE LOOKING FOR THE
OPPORTUNITIES.

665
00:33:19,399 --> 00:33:20,399
>> OKAY.

666
00:33:20,399 --> 00:33:25,840

THANKS FOR JOINING US TODAY TO
LEARN MORE ABOUT NASA'S HUMAN

667
00:33:25,840 --> 00:33:28,950
EXPLORATION PROGRAMS.

668
00:33:28,950 --> 00:33:34,510
VISIT WWW.NASA.GOV/EXPLORATION,
AND WE'LL CONCLUDE WITH A VIDEO

669
00:33:34,510 --> 00:33:37,210
THAT SHOWS PROGRESS THAT WE'RE
MAKING TOWARD EFT-1.

670
00:33:37,210 --> 00:34:02,520
THEN THEY WERE FORMED -- IT WAS
A BUMP, A PROCESS CALLED BUMP

671
00:34:02,520 --> 00:34:03,520
FORMING.

672
00:34:03,520 --> 00:34:07,370
YOU MAKE THEM INTO THE SHAPE
THAT WE NEED HERE, AND WE WELD

673
00:34:07,370 --> 00:34:13,089
THREE OF THESE SEGMENTS TOGETHER
TO FORM THE CONE THAT YOU SEE

674
00:34:13,089 --> 00:34:14,509
BEHIND YOU.

675
00:34:14,509 --> 00:34:19,639
\M\M
>> WE JUST DELIVERED THE FIRST

676
00:34:19,639 --> 00:34:28,080
CREW MODULE TO KFC.

677

00:34:28,080 --> 00:34:47,320
IT STARTED A LOT OF THE PARTS --
TO THE OUTSIDE OF THE CM, AND

678
00:34:47,320 --> 00:34:52,530
WE'VE ACTUAL PUT IT IN WHAT WE
CALL THE BIRD CAGE SO WE CAN

679
00:34:52,530 --> 00:34:56,259
LOCATE ALL THOSE PARTS, YOU
KNOW, WITHIN THOUSANDS OF AN

680
00:34:56,259 --> 00:34:59,609
INCH TO MAKE SURE THAT
EVERYTHING IS GOING TOGETHER

681
00:34:59,609 --> 00:35:00,609
OKAY.

682
00:35:00,609 --> 00:35:03,730
>> PUTTING WIRING INSIDE,
PUTTING TUBES FOR THE -- YOU

683
00:35:03,730 --> 00:35:10,690
KNOW, FOR THE PROPULSION SYSTEM,
PUTTING VALVES AND PUMPS AND SO

684
00:35:10,690 --> 00:35:16,549
ALL OF THAT HAPPENS IN STAGES
RIGHT THERE IN THE ONC BUILDING.

685
00:35:16,549 --> 00:35:21,099
>> WE HAVE A CONTRACT WITH USA,
SPACE LINE, TO BUILD OUR

686
00:35:21,099 --> 00:35:22,099
HARNESSES.

687
00:35:22,099 --> 00:35:30,619
THEY'RE SET UP IN THE ONC AND SO

THEIR LITTLE SHOP DELIVERS TO

688
00:35:30,619 --> 00:35:41,199
THE BIG SHOP.

689
00:35:41,199 --> 00:35:59,039
>> THERMAL PROTECTION IS VERY
DIFFICULT AS REENTRY VEHICLES TO

690
00:35:59,039 --> 00:36:14,289
TEST AND MODEL.

691
00:36:14,289 --> 00:37:21,190
REALLY YOU HAVE IT FLY IT TO
REALLY UNDERSTAND WHAT'S GOING

692
00:37:21,190 --> 00:37:41,200
TO HAPPEN.

693
00:37:41,200 --> 00:38:44,930
WE'RE BUILDING CERAMIC THERMAL
INSULATION TILES FOR THE BACK OF

694
00:38:44,930 --> 00:39:05,920
THE CAPSULE.

695
00:39:05,920 --> 00:39:10,819
WE'RE BUILDING THERMAL TILES FOR
THE CAPSULE AND BUILDING

696
00:39:10,819 --> 00:39:17,680
MULTILAYER INSULATION FOR THAT
CAPSULE.

697
00:39:17,680 --> 00:39:22,359
>> I'M HEAT SHIELD DESIGN LEAD.

698
00:39:22,359 --> 00:39:24,049
WE'RE BUILDING FOR THE FUTURE

ORION.

699
00:39:24,049 --> 00:39:30,769
>> THE HEAT SHIELD IS IN THE 20
BY 25 ROUTER.

700
00:39:30,769 --> 00:39:32,900
A FIVE-ACCESS ROUTER.

701
00:39:32,900 --> 00:39:38,160
RIGHT NOW IT'S MACHINING THE
INTERIOR BOWL IF YOU WILL OF THE

702
00:39:38,160 --> 00:39:40,130
HEAT SHIELD.

703
00:39:40,130 --> 00:39:45,410
COULD TAKE WEEKS OF MACHINE TIME
RUNNING MULTIPLE SHIFTS.

704
00:39:45,410 --> 00:39:47,749
IT'S THE BIGGEST HEAT SHIELD
EVER CONSTRUCTED.

705
00:39:47,749 --> 00:39:51,760
THE COMPONENT IS THE HEAT
SHELLED SKELETON.

706
00:39:51,760 --> 00:39:52,760
-- HEAT SHIELD SKELETON.

707
00:39:52,760 --> 00:39:58,670
THE BACK ITS-- THE BACKBONE OF
THE STRUCTURE ITSELF.

708
00:39:58,670 --> 00:40:02,499
THE OTHER UNIQUE THING IS THE
HAND DRILLING.

709

00:40:02,499 --> 00:40:04,290
IT'S NOT AUTOMATED BY A ROUTER.

710
00:40:04,290 --> 00:40:11,000
IT HAS TO BE HAND DRILLED BY
TECHNICIANS ON THE INSIDE.

711
00:40:11,000 --> 00:40:13,720
>> 200-PLUS TITANIUM PARTS ALL
MCHED TOGETHER.

712
00:40:13,720 --> 00:40:14,720
>> WE HAVE -- MATCHED TOGETHER.

713
00:40:14,720 --> 00:40:19,780
WE HAVE A TOOL THAT PUTS PIECES
IN THE RIGHT SPOT.

714
00:40:19,780 --> 00:40:24,690
THEN WE DRILL AND LOCK THEM ALL
TOGETHER.

715
00:40:24,690 --> 00:40:30,029
>> MCC IS TRANSFORMING FROM
SUPPORTING SPACE SHUTTLE AND

716
00:40:30,029 --> 00:40:33,760
SPACE STATION TO A PLATFORM THAT
WILL SUPPORT SPACE STATION AND

717
00:40:33,760 --> 00:40:34,760
MPT OR ORION.

718
00:40:34,760 --> 00:40:46,569
IN THE FUTURE WE NEED TO GO TO A
MORE MODERN SYSTEM.

719
00:40:46,569 --> 00:40:50,880
>> KFC WILL OPERATE THE VEHICLE
ALL THE WAY UP UNTIL LAUNCH.

720
00:40:50,880 --> 00:40:54,799
WE'LL OPERATE THE VEHICLES UNTIL
SPLASH DOWN UNTIL FORCES TAKE

721
00:40:54,799 --> 00:40:55,969
OVER AFTER THAT.

722
00:40:55,969 --> 00:41:01,019
>> THIS IS THE LAUNCH CONTROLLER
WE'LL USE FOR ORION SLS MISSION.

723
00:41:01,019 --> 00:41:04,749
WE'VE BEEN WORKING WITH THE
ORION PROGRAM TO GET THE

724
00:41:04,749 --> 00:41:08,060
SPACECRAFT DATA SO WE CAN
PROCESS IT WITH OUR SOFTWARE IN

725
00:41:08,060 --> 00:41:09,060
THE FIRING ROOM.

726
00:41:09,060 --> 00:41:14,119
WE WILL BE FLIGHT SELLING THAT
MISSION OUT OF IR-1.

727
00:41:14,119 --> 00:41:17,950
WE REFITTED THE ROOM, REDID IT,
PUTTING THE SOUND DEPRESSION

728
00:41:17,950 --> 00:41:21,279
CARPETING ON THE WALLS, MAKING
IT A MORE COMFORTABLE PLACE TO

729
00:41:21,279 --> 00:41:22,279
WORK.

730
00:41:22,279 --> 00:41:24,920

SO WE'RE AIMING FOR ABOUT 50
PEOPLE IN FIRE ROOM ONE, FOR AN

731
00:41:24,920 --> 00:41:25,920
EM-1 MISSION.

732
00:41:25,920 --> 00:41:34,160
WE ARE ACTUALLY USING FIRE ROOM
NOW TO TEST PAD B SUBSYSTEMS.

733
00:41:34,160 --> 00:41:38,029
>> THIS IS GOING TO BE ALMOST
LIKE A COMPLETE NEW PAD BECAUSE

734
00:41:38,029 --> 00:41:42,299
WE WILL HAVE REFURBISHED EACH
AND EVERY SYSTEM THAT IT'S

735
00:41:42,299 --> 00:41:43,760
INSIDE OF.

736
00:41:43,760 --> 00:41:48,210
WE'RE GOING TO HAVE THE VEHICLE
LAUNCHED FROM THE MOBILE

737
00:41:48,210 --> 00:41:50,839
LAUNCHER AND NOT ONLY LAUNCH
FROM THE MOBILE LAUNCHER BUT

738
00:41:50,839 --> 00:41:56,859
HAVE A TOWER THAT WILL HAVE ALL
THE SERVICES ATTACHED TO THE

739
00:41:56,859 --> 00:41:57,859
VEHICLE.

740
00:41:57,859 --> 00:42:01,210
THE TOWER IS GOING TO BE ON THE
MOBILE LAUNCHER.

741
00:42:01,210 --> 00:42:07,729
THE VEHICLE WILL BE ASSEMBLED AT
THE VAB.

742
00:42:07,729 --> 00:42:10,999
>> IT'S A RETURN TO A CONCEPT
THAT WE KNEW THAT WORKED WELL

743
00:42:10,999 --> 00:42:15,019
DURING THE "APOLLO" YEARS WHEN
THE MOBILE LAUNCH PLATFORM HAD A

744
00:42:15,019 --> 00:42:16,670
TOWER ON IT.

745
00:42:16,670 --> 00:42:21,430
>> WE KNEW THAT THE BAB WAS
DESIGNED TO ACCOMMODATE A LAUNCH

746
00:42:21,430 --> 00:42:24,910
TOWER ON A MOBILE LAUNCH
PLATFORM.

747
00:42:24,910 --> 00:42:30,229
WE HAVE TO MAKE SURE THAT THE --
BAB COULD REMAIN STAFFED AND

748
00:42:30,229 --> 00:42:34,049
ACCOMMODATE DIFFERENT VEHICLE
ARCHITECTURES.

749
00:42:34,049 --> 00:42:38,170
AND NOW WE HAVE A CLEAN VAB
SHELL, PER SE, ABOUT THE

750
00:42:38,170 --> 00:42:43,630
INFRASTRUCTURE SO THAT WE CAN
ACCOMMODATE THE NEW HARDWARE,

751

00:42:43,630 --> 00:42:48,710
THE NEW VEHICLE ACCESS WITH THE
NEW PLATFORMS.

752
00:42:48,710 --> 00:42:51,639
AND THAT IS THE FIRST PHASE OF
WHAT WE'RE DOING NOW.

753
00:42:51,639 --> 00:42:55,549
>> AND ONCE THE VEHICLE IS READY
WITH ALL THE CONNECTIONS, THE

754
00:42:55,549 --> 00:42:58,410
ONLY THING WE'VE GOT TO DO IS
MOVE THE VEHICLE FROM THE BACK

755
00:42:58,410 --> 00:43:00,849
TO THE CONNECTIONS ON THE MOBILE
LAUNCHER.

756
00:43:00,849 --> 00:43:04,940
ONCE WE DO THOSE CONNECTION,
WE'RE READY TO LAUNCH.

757
00:43:04,940 --> 00:43:07,099
>> THERE WAS A TIME WHEN I HAD
TO EXPLAIN WHAT A CRAWLER WAS.

758
00:43:07,099 --> 00:43:09,839
IF YOU DIDN'T WORK OUT HERE AT
THE SPACE CENTER OR WEREN'T IN

759
00:43:09,839 --> 00:43:13,109
THE CENTRAL FLORIDA AREA, A LOT
OF PEOPLE -- SOMEHOW THE VEHICLE

760
00:43:13,109 --> 00:43:14,380
GOT UP TO THE PAD.

761
00:43:14,380 --> 00:43:18,180

WE KNEW WHAT TO EXPECT FROM A
LOAD PERSPECTIVE WITH THE NEW

762
00:43:18,180 --> 00:43:21,680
VEHICLE, THE LARGER ROCKET AND
THINGS ALONG THOSE LINES.

763
00:43:21,680 --> 00:43:23,799
THAT GOES FROM THE CRAWLER
LIFTED LOAD, THE HYDRAULICS,

764
00:43:23,799 --> 00:43:25,019
ALSO THE CRAWLER AWAY.

765
00:43:25,019 --> 00:43:27,799
WE'LL HAVE TO NATURE THE LOAD
AND -- THE CAPABILITY FOR THE

766
00:43:27,799 --> 00:43:29,760
CRAWLER AT THE ROCK.

767
00:43:29,760 --> 00:43:33,509
WHAT WE'VE ESSENTIALLY DONE IS
KEEP THE SAME HYDRAULICS ON SUCH

768
00:43:33,509 --> 00:43:37,130
AS INCREASING THE SIZE, DIAMETER
OF THE HYDRAULICS.

769
00:43:37,130 --> 00:43:39,940
LAST NOVEMBER WE ACTUALLY TOOK A
RIDE OUT WITH THE COMPLETED

770
00:43:39,940 --> 00:43:42,710
CRAWLER AFTER THE PAD AND TESTED
OUT THE SYSTEM.

771
00:43:42,710 --> 00:43:46,819
AND A COUPLE OF ITEMS,
EVERYTHING WORKED GREAT.

772
00:43:46,819 --> 00:43:49,410
THE CONTROL SYSTEM HAD BEEN
UPGRADED.

773
00:43:49,410 --> 00:43:53,069
THE DRIVER PAD HAD BEEN
REPLACED, BRAKES HAD BEEN

774
00:43:53,069 --> 00:43:54,069
REPLACED.

775
00:43:54,069 --> 00:43:57,049
NEARLY EVERY SUBSYSTEM HAD SOME
WORK DONE TO IT.

776
00:43:57,049 --> 00:44:01,319
THE TRACTION SUPPORT ELEMENTS,
EACH OF THE FOUR CORNERS HAD 22

777
00:44:01,319 --> 00:44:04,651
ROLLERS, ABOUT THE SIZE OF A CAR
TO BE HONEST WITH YOU.

778
00:44:04,651 --> 00:44:07,810
AND WE'RE CHANGING OUT ALL OF
THOSE AND LARGE NOTICES, AS

779
00:44:07,810 --> 00:44:08,910
WELL.

780
00:44:08,910 --> 00:44:12,539
>> WHAT I LOVE DOING IS
REMINDING THE OUTSIDE WORLD

781
00:44:12,539 --> 00:44:14,900
WHETHER IT'S WITHIN OUR
GOVERNMENT OR ESPECIALLY THE

782

00:44:14,900 --> 00:44:19,390
MEDIA HAS THAT HAS A PERCEPTION
THAT WE'RE IN A LULL, THERE'SING

783
00:44:19,390 --> 00:44:20,680
IN GOING ON.

784
00:44:20,680 --> 00:44:22,529
THE SPACE PROGRAM SHUTTING DOWN.

785
00:44:22,529 --> 00:44:26,819
TO SAY, NO, THIS IS THE FAR
OPPOSITE FOR US.

786
00:44:26,819 --> 00:44:31,920
WE ARE UTILIZING THIS
INTERPROGRAM TIME FRAME TO MAKE

787
00:44:31,920 --> 00:44:36,210
ALL THE MODIFICATIONS AND ALL
THE INFRASTRUCTURE CHANGES THAT

788
00:44:36,210 --> 00:44:40,029
WILL HELP BRING THAT AGENCY
VISION INTO REALITY.

789
00:44:40,029 --> 00:44:44,319
>> MANY OF US FEEL THE COUNTRY
WANTS TO GO FORWARD, AND -- AND

790
00:44:44,319 --> 00:44:46,019
NASA HAS A BIG FOLLOWING.

791
00:44:46,019 --> 00:44:49,059
EVERY TIME I TALK IT PEOPLE,
THEY'RE EXCITED GOOD NASA.

792
00:44:49,059 --> 00:44:52,900
>> ENABLING PEOPLE TO GO BEYOND
WHERE THEY HAVE EVER GONE BEFORE

793
00:44:52,900 --> 00:44:56,349
AND LOOK AND DISCOVER THINGS
THAT THEY DIDN'T EVEN KNOW

794
00:44:56,349 --> 00:45:00,029
EXISTED IS JUST -- IT'S JUST A
REAL HONOR.

795
00:45:00,029 --> 00:45:02,460
>> IT'S BEEN A PLEASURE TO BE
INVOLVED WITH THIS PROJECT, AND

796
00:45:02,460 --> 00:45:04,989
I CAN'T SAY ENOUGH FOR THE TEAM
THAT PUT THIS TOGETHER.

797
00:45:04,989 --> 00:45:06,969
>> I'M PRIVILEGED TO WORK THIS
PROGRAM.

798
00:45:06,969 --> 00:45:09,790
I THINK MOST PEOPLE WHO WORK IT
TODAY FEEL THE SAME WAY.

799
00:45:09,790 --> 00:45:10,940
>> I CAN'T BELIEVE THEY PAY ME
FOR THIS JOB.

800
00:45:10,940 --> 00:45:11,940
IT'S JUST WONDERFUL.

801
00:45:11,940 --> 00:45:12,940
GREAT.

802
00:45:12,940 --> 00:45:13,940
\M\M
>> THE SYSTEM IS THE NEXT,

803

00:45:13,940 --> 00:45:14,940
NEWEST, BIGGEST ROCKET WE'RE
GOING TO BUILD.

804
00:45:14,940 --> 00:45:15,940
AND IT'S NOT JUST A REPLACEMENT
FOR THE SPACE SHUTTLE.

805
00:45:15,940 --> 00:45:16,940
THIS ROCKET IS GOING TO CARRY US
MUCH FURTHER THAN THE SHUTTLE

806
00:45:16,940 --> 00:45:17,940
WOULD GO.

807
00:45:17,940 --> 00:45:18,940
IT'S NASA'S NEXT BIG ROCKET FOR
DEEP SPACE EXPLORATION.

808
00:45:18,940 --> 00:45:19,940
>> THE SLS IS A NATIONAL
CAPABILITY THAT PROVIDES A

809
00:45:19,940 --> 00:45:20,940
UNIQUE ACCESS TO SPACE THAT
AMERICA HAS NOT HAD IN 40 YEARS.

810
00:45:20,940 --> 00:45:21,940
>> THE LARGE LAUNCHES REALLY
OPENS THE DOOR TO DESTINATIONS

811
00:45:21,940 --> 00:45:22,940
BEYOND.

812
00:45:22,940 --> 00:45:23,940
IT'S NOT LIMITED -- IT'S ONLY
LIMITED BY IMAGINATION.

813
00:45:23,940 --> 00:45:24,940
\M\M

>> WHAT WE'RE FOCUSED ON HERE AT

814
00:45:24,940 --> 00:45:25,940
THE CENTER IS THE PROPULSION
SYSTEM.

815
00:45:25,940 --> 00:45:26,940
AND THAT CONSISTS OF TWO SOLID
ROCKET BOOSTERS AND A CORE WITH

816
00:45:26,940 --> 00:45:27,940
SOME TANKS THAT FEED LIQUID
ROCKET ENGINES IN THE MIDDLE.

817
00:45:27,940 --> 00:45:28,940
THEN THE ASTRONAUTS SIT ON THE
TOP.

818
00:45:28,940 --> 00:45:29,940
IN THE ORION SPACECRAFT.

819
00:45:29,940 --> 00:45:30,940
>> ONE OF THE THINGS WE
RECOGNIZE FOR SLS IS WE HAVE TO

820
00:45:30,940 --> 00:45:31,940
BE AFFORDABLE.

821
00:45:31,940 --> 00:45:32,940
SO WE HAD TO DO THINGS
DIFFERENTLY, MORE EFFICIENTLY,

822
00:45:32,940 --> 00:45:33,940
AND SMARTER.

823
00:45:33,940 --> 00:45:34,940
>> WE'RE ALL CONSCIOUS ABOUT
SAVING MONEY, DOING IT MORE

824

00:45:34,940 --> 00:45:35,940
AFFORDABLY THAN WE HAVE IN THE
PAST.

825
00:45:35,940 --> 00:45:36,940
BUT AT THE SAME TIME WE CAN'T
SACRIFICE RELIABLE OR SAFETY.

826
00:45:36,940 --> 00:45:37,940
>> THE SYSTEM USES A SIGNIFICANT
AMOUNT OF HERITAGE HARDWARE,

827
00:45:37,940 --> 00:45:38,940
WHICH IS THING THAT WE HAVE
EVOLVED FROM THE SPACE SHUTTLE

828
00:45:38,940 --> 00:45:39,940
PROGRAM.

829
00:45:39,940 --> 00:45:40,940
>> THE SPACE SHUTTLE HAS TWO
CANDLE-LOOKING THINGS WHICH ARE

830
00:45:40,940 --> 00:45:41,940
THE SOLID ROCKETS.

831
00:45:41,940 --> 00:45:42,940
THOSE ARE KEPT AND THOSE ARE
USED ON SLS.

832
00:45:42,940 --> 00:45:43,940
>> WE'VE ADDED A SEGMENT TO THE
FOUR-SEGMENT SOLID ROCKET

833
00:45:43,940 --> 00:45:44,940
BOOSTERS THAT WE HAD ON THE
SHUTTLE.

834
00:45:44,940 --> 00:45:45,940
THAT GIVES IT MORE POWER, MORE

THRUST, AND IT HELPS THE LARGER

835
00:45:45,940 --> 00:45:46,940
ROCKET GET OFF THE GROUND.

836
00:45:46,940 --> 00:45:47,940
WHAT THOSE BOOSTER ARE FOR IS
JUST TO GET YOU GOING.

837
00:45:47,940 --> 00:45:48,940
THEY BURN FOR A COUPLE OF
MINUTES, THEN THEY FALL TO THE

838
00:45:48,940 --> 00:45:49,940
GROUND.

839
00:45:49,940 --> 00:45:50,940
THEN YOUR LIQUID ENGINES, YOU'RE
UP HIGH ENOUGH THAT IT CAN CARRY

840
00:45:50,940 --> 00:45:51,940
YOU AS HIGH AS YOU WANT TO GO.

841
00:45:51,940 --> 00:45:52,940
IF YOU HAVE ADDITIONAL STAGES
LIKE WE'RE GOING TO HAVE ONE,

842
00:45:52,940 --> 00:45:53,940
YOU CAN GO FURTHER INTO THE
SPACE.

843
00:45:53,940 --> 00:45:54,940
>> RIGHT NOW WE HAVE 14 INCHES
ON THE SHUTTLE.

844
00:45:54,940 --> 00:45:55,940
-- 14 ENGINES ON THE SHUTTLE.

845
00:45:55,940 --> 00:45:56,940

ONE ENGINE THAT WAS ASSEMBLED
AND NEEDS TESTING.

846
00:45:56,940 --> 00:45:57,940
WE LOOKED AT ALL OF IT AND
DETERMINED WE COULD ASSEMBLE 16

847
00:45:57,940 --> 00:45:58,940
ENGINES THAT WE'LL BE ABLE TO
USE.

848
00:45:58,940 --> 00:45:59,940
>> WE ARE MAKING TREMENDOUS
PROGRESS.

849
00:45:59,940 --> 00:46:00,940
WE'VE GOT ALL OF OUR CONTRACTORS
ON BOARD.

850
00:46:00,940 --> 00:46:01,940
WE'RE TESTING ENGINES, SOLID
ROCKET BOOSTERS, AVIONICS

851
00:46:01,940 --> 00:46:02,940
SYSTEMS.

852
00:46:02,940 --> 00:46:03,940
>> IT'S SET A RECORD AT STENNIS.

853
00:46:03,940 --> 00:46:04,940
IN TESTING IT WAS THE FIRST
OXYGEN ENGINE TO GET TO A FULL

854
00:46:04,940 --> 00:46:05,940
DURATION TEST IN FOUR TESTS.

855
00:46:05,940 --> 00:46:06,940
>> WE WERE DEVELOPING THIS
BOOSTER UNDER THE AIRES PROGRAM,

856
00:46:06,940 --> 00:46:07,940
AND WE'RE MOVING THAT INTO THE
SLS VEHICLE.

857
00:46:07,940 --> 00:46:08,940
THE MOTOR ITSELF HAS BEEN
THROUGH THREE DEVELOPMENT

858
00:46:08,940 --> 00:46:09,940
FIRINGS WHICH ARE FULL-SCALE
MOTORS TESTED OUT IN UTAH.

859
00:46:09,940 --> 00:46:10,940
AND WE'VE GOTTEN A LOT OF GOOD
ENGINEERING DATA FROM THOSE

860
00:46:10,940 --> 00:46:11,940
TESTS.

861
00:46:11,940 --> 00:46:12,940
>> THIS GOES FROM BETWEEN THE
BOTTOM OF THE ORION CAPSULE AND

862
00:46:12,940 --> 00:46:13,940
THE TOP OF THE ONE WE'RE
DEVELOPING HERE AT MARSHALL.

863
00:46:13,940 --> 00:46:14,940
>> IT'S BEEN SPECIFICALLY
DESIGNED TO GIVE STRENGTH TO THE

864
00:46:14,940 --> 00:46:15,940
ADAPTER SO THAT IT CAN TAKE THE
LOAD IN FLIGHT AND STILL BE

865
00:46:15,940 --> 00:46:16,940
LIGHTWEIGHT.

866
00:46:16,940 --> 00:46:17,940

THIS SHAPE STARTED OUT AS A
SERIES OF FLAT PANELS.

867
00:46:17,940 --> 00:46:18,940
THE PATTERN WAS MACHINED INTO
THE SURFACES.

868
00:46:18,940 --> 00:46:19,940
THEN THEY WERE FORMED IN A
PROCESS CALLED BUMP FORMING.

869
00:46:19,940 --> 00:46:20,940
YOU MAKE THEM TO THE SHAPE THAT
WE NEED HERE.

870
00:46:20,940 --> 00:46:21,940
AND WE WELD THREE OF THESE
SEGMENTS TOGETHER TO FORM THE

871
00:46:21,940 --> 00:46:22,940
CONE THAT YOU SEE BEHIND ME.

872
00:46:22,940 --> 00:46:23,940
>> WE JUST DELIVERED THE FIRST
CREW MODULE TO THE LNC BUILDING

873
00:46:23,940 --> 00:46:24,940
AT KFC.

874
00:46:24,940 --> 00:46:25,940
IT STARTED A LOT OF THE PARTS ON
TO THE OUTSIDE OF THE CM, AND

875
00:46:25,940 --> 00:46:26,940
WE'VE ACTUALLY PUT IT IN WHAT WE
CALL THE BIRD CAGE SO WE CAN

876
00:46:26,940 --> 00:46:27,940
LOCATE ALL THOSE PARTS WITHIN
THOUSANDTHS OF AN INCH TO MAKE

877
00:46:27,940 --> 00:46:28,940
SURE EVERYTHING IS GOING
TOGETHER OKAY.

878
00:46:28,940 --> 00:46:29,940
>> PUTTING WIRING INSIDE OF IT,
PUTTING TUBES FOR THE PROPULSION

879
00:46:29,940 --> 00:46:30,940
SYSTEM, PUTTING VALVES AND PUMPS
AND JUST ALL OF THAT HAPPENS IN

880
00:46:30,940 --> 00:46:31,940
STAGES RIGHT THERE IN THE ONP
BUILDING.

881
00:46:31,940 --> 00:46:32,940
>> WE HAVE AN OLD CONTRACT WITH
USA, UNITED STATES ALLIANCE, TO

882
00:46:32,940 --> 00:46:33,940
SET UP SHOPS IN THE ONC.

883
00:46:33,940 --> 00:46:34,940
THEIR LITTLE SHOP DELIVERS TO
THE BIG SHOPS.

884
00:46:34,940 --> 00:46:35,940
>> THERMAL PROTECTION IS VERY
DIFFICULT IN RE-ENTRY VEHICLES

885
00:46:35,940 --> 00:46:36,940
TO TEST AND TO MODEL.

886
00:46:36,940 --> 00:46:37,940
REALLY YOU HAVE TO FLY IT TO
REALLY UNDERSTAND WHAT'S GOING

887

00:46:37,940 --> 00:46:38,940
TO HAPPEN.

888
00:46:38,940 --> 00:46:39,940
WE'RE BUILDING CERAMIC
INSULATION TILES FOR THE BACK

889
00:46:39,940 --> 00:46:40,940
SHELL OF THE CAPSULE.

890
00:46:40,940 --> 00:46:41,940
WE'RE BUILDING THERMAL BARRIERS
FOR THE CAPSULE AND BUILDING

891
00:46:41,940 --> 00:46:42,940
HIGH LAYERS OF INSULATION FOR
THAT CAPSULE.

892
00:46:42,940 --> 00:46:43,940
>> I'M THE HEAT SHIELD DESIGN
LEAD.

893
00:46:43,940 --> 00:46:44,940
WE'RE DESIGNING AND BUILDING THE
HEAT SHIELDS FOR THE FUTURE

894
00:46:44,940 --> 00:46:45,940
ORION MISSION.

895
00:46:45,940 --> 00:46:46,940
>> THE HEAT SHIELD RIGHT NOW IS
IN OUR BIG 20-BY-20 ROUTER.

896
00:46:46,940 --> 00:46:47,940
IT'S A FIVE-ACCESS ROUTER.

897
00:46:47,940 --> 00:46:48,940
RIGHT NOW IT'S MACHINING THE
INTERIOR BOWL IF YOU WILL OF THE

898
00:46:48,940 --> 00:46:49,940
HEAT SHIELD.

899
00:46:49,940 --> 00:46:50,940
>> TO CUT OUT THE HEAT SHIELD ON
THE ROUTER COULD TAKE WEEKS OF

900
00:46:50,940 --> 00:46:51,940
MACHINE TIME RUNNING MULTIPLE
SHIFTS.

901
00:46:51,940 --> 00:46:52,940
IT'S THE BIGGEST HEAT SHIELD
EVER CONSTRUCTED.

902
00:46:52,940 --> 00:46:53,940
>> THE COMPONENT IS THE HEAT
SHIELD SKELETON.

903
00:46:53,940 --> 00:46:54,940
SO THAT'S A PIECE OF THE
TITANIUM SUBSTRUCTURE, THE

904
00:46:54,940 --> 00:46:55,940
BACKBONE THAT MAKES UP THE
CARRIER'S STRUCTURE ITSELF.

905
00:46:55,940 --> 00:46:56,940
>> ANOTHER UNIQUE THING IS ALL
THE HAND DRILLING THAT WE'RE

906
00:46:56,940 --> 00:46:57,940
DOING.

907
00:46:57,940 --> 00:46:58,940
SO IT'S NOT AUTOMATED BY A
ROUTER IN THIS CASE.

908
00:46:58,940 --> 00:46:59,940

AND IT ALL HAS TO BE HAND
DRILLED BY TECHNICIANS ON THE

909
00:46:59,940 --> 00:47:00,940
INSIDE.
>> 200-PLUS TITANIUM PARTS ALL

910
00:47:00,940 --> 00:47:01,940
DRILLED TOGETHER.

911
00:47:01,940 --> 00:47:02,940
>> WE HAVE A TOOL THAT PUTS ALL
THE PIECES IN THE RIGHT SPOT,

912
00:47:02,940 --> 00:47:03,940
THEN WE DRILL AND PUT THEM ALL
TOGETHER.

913
00:47:03,940 --> 00:47:04,940
>> MCR IS TRANSFORMING FROM A
SUPPORTING SPACE SHUTTLE AND

914
00:47:04,940 --> 00:47:05,940
SPACE STATION TO A PLATFORM THAT
WILL SUPPORT SPACE STATION AND

915
00:47:05,940 --> 00:47:06,940
MPCB ORION.

916
00:47:06,940 --> 00:47:07,940
>> FOR THE FUTURE WE NEED TO GO
TO A IMMEDIATE MODERN SYSTEM.

917
00:47:07,940 --> 00:47:08,940
>> KFC WILL OPERATE THE VEHICLE
ON LAUNCH, WILL OPERATE THE

918
00:47:08,940 --> 00:47:09,940
VEHICLES ON SPLASHDOWN AND AS
FORCES COME IN AND TAKE OVER

919
00:47:09,940 --> 00:47:10,940
AFTER THAT.

920
00:47:10,940 --> 00:47:11,940
>> ONE IS THE LAUNCH CONTROL
ROOM WE'RE GOING TO USE FOR

921
00:47:11,940 --> 00:47:12,940
ORION SLS FOR EM-1 MISSIONS.

922
00:47:12,940 --> 00:47:13,940
WE'VE BEEN WORKING WITH THE
ORION PROGRAM TO GET THE

923
00:47:13,940 --> 00:47:14,940
SPACECRAFT DATA SO WE CAN
PROCESS IT WITH OUR SOFTWARE IN

924
00:47:14,940 --> 00:47:15,940
THE FIRE ROOM.

925
00:47:15,940 --> 00:47:16,940
WE WILL BE FOLLOWING THAT
MISSION OUT OF FIRE ROOM ONE.

926
00:47:16,940 --> 00:47:17,940
WE REFITTED THE ROOM.

927
00:47:17,940 --> 00:47:18,940
WE REDID IT PUTTING THE SOUND
SUPPRESSION CARPETING ON THE

928
00:47:18,940 --> 00:47:19,940
WALLS, MAKING IT MORE
COMFORTABLE PLACE TO WORK.

929
00:47:19,940 --> 00:47:20,940
WE'RE AIMING FOR ABOUT 50 PEOPLE

IN FIRE ROOM ONE FOR AN EM

930
00:47:20,940 --> 00:47:21,940
MISSION.

931
00:47:21,940 --> 00:47:22,940
WE ARE ACTUALLY USING FIRE ROOM
ONE NOW TO TEST PAD B

932
00:47:22,940 --> 00:47:23,940
SUBSYSTEMS.

933
00:47:23,940 --> 00:47:24,940
>> THIS IS GOING TO BE ALMOST
LIKE A COMPLETE NEW PAD BECAUSE

934
00:47:24,940 --> 00:47:25,940
WE WILL HAVE REFURBISHED EACH
AND EVERY SYSTEM THAT IS INSIDE

935
00:47:25,940 --> 00:47:26,940
THE PAD.

936
00:47:26,940 --> 00:47:27,940
>> WE'RE GOING TO HAVE THE
VEHICLE LAUNCHED FROM THE MOBILE

937
00:47:27,940 --> 00:47:28,940
LAUNCHER, AND NOT ONLY LAUNCHED
FROM THE MOBILE LAUNCHER BUT

938
00:47:28,940 --> 00:47:29,940
HAVE A TOWER THAT WILL HAVE ALL
THE SERVICES ATTACHED TO THE

939
00:47:29,940 --> 00:47:30,940
VEHICLE.

940
00:47:30,940 --> 00:47:31,940

THE TOWER IS GOING TO BE ON THE
MOBILE LAUNCHER.

941
00:47:31,940 --> 00:47:32,940
THE VEHICLE WILL BE ASSEMBLED AT
THE VAB.

942
00:47:32,940 --> 00:47:33,940
>> IT'S A RETURN TO A CONCEPT
THAT WE KNEW THAT WORKED VERY

943
00:47:33,940 --> 00:47:34,940
WELL DURING THE "APOLOOH "--
"APOLLO" YEARS WHEN IT HAD A

944
00:47:34,940 --> 00:47:35,940
PLARM -- A PLATFORM ON IT.

945
00:47:35,940 --> 00:47:36,940
WE KNEW THE TOWER HAD A LAUNCH
TOWER ON THE PLATFORM.

946
00:47:36,940 --> 00:47:37,940
WE HAVE TO MAKE SURE THAT VAB
CAN REMAIN ADAPTABLE AND

947
00:47:37,940 --> 00:47:38,940
ACCOMMODATE DIFFERENT VEHICLE
ARCHITECTURES.

948
00:47:38,940 --> 00:47:39,940
THAT WE HAD A CLEAN VAB SHELL,
INFRASTRUCTURE, SO WE CAN

949
00:47:39,940 --> 00:47:40,940
ACCOMMODATE THE NEW HARDWARE,
THE NEW VEHICLE ACCESS WITH THE

950
00:47:40,940 --> 00:47:41,940
NEW PLATFORMS.

951
00:47:41,940 --> 00:47:42,940
AND THAT IS A FIRST PHASE THAT
WE'RE DOING NOW.

952
00:47:42,940 --> 00:47:43,940
>> AND ONCE THE VEHICLE IS READY
WITH ALL THE CONNECTIONS, THE

953
00:47:43,940 --> 00:47:44,940
ONLY THING WE'VE GOT TO DO IS
MOVE THE VEHICLE FROM THE BACK

954
00:47:44,940 --> 00:47:45,940
TO A CONNECTION TO THE MOBILE
LAUNCHER.

955
00:47:45,940 --> 00:47:46,940
AND ONCE WE DO THOSE
CONNECTIONS, WE'RE READY TO

956
00:47:46,940 --> 00:47:47,940
LAUNCH.

957
00:47:47,940 --> 00:47:48,940
>> THERE WAS A TIME WHERE I HAD
TO EXPLAIN WHAT A CRAWLER WAS.

958
00:47:48,940 --> 00:47:49,940
IF YOU DIDN'T WORK OUT HERE AT
THE SPACE CENTER OR IF YOU

959
00:47:49,940 --> 00:47:50,940
WEREN'T IN THE CENTRAL FLORIDA
AREA, PEOPLE THOUGHT -- SOMEHOW

960
00:47:50,940 --> 00:47:51,940
THE VEHICLE GOT OUT TO THE PAD.

961

00:47:51,940 --> 00:47:52,940
WE KNEW WHAT TO EXPECT FROM A
LOAD PERSPECTIVE WITH THE NEW

962
00:47:52,940 --> 00:47:53,940
VEHICLE, LARGER ROCKET, THINGS
ALONG THOSE LINES.

963
00:47:53,940 --> 00:47:54,940
AND THAT GOES FROM THE CRAWLER
LIFTED LOAD, THE HYDRAULICS,

964
00:47:54,940 --> 00:47:55,940
ALSO TO THE CRAWL AWAY.

965
00:47:55,940 --> 00:47:56,940
WE'LL HAVE TO INCREASE THE LOAD
CAPABILITY FOR THE CRAWL-AWAY

966
00:47:56,940 --> 00:47:57,940
ITSELF OF THE ROCK.

967
00:47:57,940 --> 00:47:58,940
WHAT WE'VE ESSENTIALLY DONE IS
KEEP ALL THE SAME HYDRAULICS BUT

968
00:47:58,940 --> 00:47:59,940
INCREASED THE SIZE AND DIAMETER
OF THE HYDRAULICS NUMBERS.

969
00:47:59,940 --> 00:48:00,940
LAST NOVEMBER WE ACTUALLY TOOK A
RIDE OUT WITH THE COMPLETED

970
00:48:00,940 --> 00:48:01,940
CRAWLER TO THE PAD AND TESTED
OUT THE SYSTEM AND A COUPLE

971
00:48:01,940 --> 00:48:02,940
PUNCHED ASSIGNMENTS, BUT

EVERYTHING WORKED GREAT.

972
00:48:02,940 --> 00:48:03,940
THE CONTROL SYSTEM HAD BEEN
UPGRADED.

973
00:48:03,940 --> 00:48:04,940
THE CABINET -- THE DRIVER'S
CONSOLE HAD BEEN REPLACED.

974
00:48:04,940 --> 00:48:05,940
THE BRIGGS HAD BEEN REPLACED.

975
00:48:05,940 --> 00:48:06,940
NEARLY EVERY SUBSYSTEM HAD SOME
WORK DONE TO IT.

976
00:48:06,940 --> 00:48:07,940
THE TRACTION SUPPORT ELEMENTS,
EACH OF THE FOUR CORNERS HAD 22

977
00:48:07,940 --> 00:48:08,940
ROLLERS, ABOUT THE SIZE OF A CAR
TO BE HONEST WITH YOU.

978
00:48:08,940 --> 00:48:09,940
AND WE'RE CHANGING OUT ALL OF
THOSE, ENLARGING THOSE, AS WELL.

979
00:48:09,940 --> 00:48:10,940
>> WHAT I LOVE DOING IS
REMINDING THE OUT WORLD WHETHER

980
00:48:10,940 --> 00:48:11,940
IT'S WITHIN OUR GOVERNMENT OR
ESPECIALLY THE MEDIA THAT HAS A

981
00:48:11,940 --> 00:48:12,940
PERCEPTION THAT WE'RE IN A LULL,
THERE'S NOTHING GOING ON, THAT

982
00:48:12,940 --> 00:48:13,940
-- YOU KNOW, THE SPACE PROGRAM'S
SHUTTING DOWN, TO KIND OF DISPEL

983
00:48:13,940 --> 00:48:14,940
THE RUMOR AND SAY, NO, THIS IS
THE FAR OPPOSITE FOR US.

984
00:48:14,940 --> 00:48:15,940
WE ARE UTILIZING THIS
INTERPROGRAMMED TIME FRAME TO

985
00:48:15,940 --> 00:48:16,940
MAKE ALL THE MODIFICATIONS AND
ALL THE PROSCHANGES THAT WILL

986
00:48:16,940 --> 00:48:17,940
HELP BRING THAT AGENCY VISION
INTO REALITY.

987
00:48:17,940 --> 00:48:18,940
>> MANY OF US FEEL THE COUNTRY
WANTS TO GO FORWARD, AND NASA

988
00:48:18,940 --> 00:48:19,940
HAS A BIG FOLLOWING.

989
00:48:19,940 --> 00:48:20,940
EVERY TIME I TALK TO PEOPLE WHO
ARE EXCITED ABOUT NASA.

990
00:48:20,940 --> 00:48:21,940
>> ENABLING PEOPLE TO GO BEYOND
WHERE THEY HAVE EVER GONE BEFORE

991
00:48:21,940 --> 00:48:22,940
AND LOOK AND DISCOVER THINGS
THAT THEY DIDN'T EVEN KNOW

992
00:48:22,940 --> 00:48:23,940
EXISTED IS JUST -- IT'S A REAL
HONOR.

993
00:48:23,940 --> 00:48:24,940
>> IT'S BEEN A PLEASURE TO BE
INVOLVED WITH THIS PROJECT.

994
00:48:24,940 --> 00:48:25,940
I DON'T SAY ENOUGH FOR THE TEAM
THAT PUT THIS TOGETHER.

995
00:48:25,940 --> 00:48:26,940
>> I'M PRIVILEGED TO WORK THIS
PROGRAM.

996
00:48:26,940 --> 00:48:27,940
I THINK MOST PEOPLE WHO WORK IT
TODAY FEEL THE SAME WAY.

997
00:48:27,940 --> 00:48:28,940
>> I CAN'T BELIEVE THEY PAY ME
FOR THIS JOB.