
CRS
COMMERCIAL RESU

1
00:00:02,860 --> 00:00:05,850
>>> GOOD AFTERNOON, WELCOME TO
NASA'S KENNEDY SPACE CENTER.

2
00:00:05,850 --> 00:00:09,200
I'M STEPHANIE FROM THE OFFICE OF
COMMUNICATIONS.

3
00:00:09,200 --> 00:00:13,349
WE ARE HERE PREPARING FOR A
LAUNCH SUNDAY MORNING AT 10:21

4
00:00:13,349 --> 00:00:14,349
A.M.

5
00:00:14,349 --> 00:00:15,349
EASTERN TIME.

6
00:00:15,349 --> 00:00:18,180
OF SPACEX'S 7TH COMMERCIAL
RESUPPLY MISSION TO THE

7
00:00:18,180 --> 00:00:19,870
INTERNATIONAL SPACE STATION.

8
00:00:19,870 --> 00:00:23,940
IT WILL CARRY MORE THAN 4,000
POUNDS OF SUPPLIES AND CARGO FOR

9
00:00:23,940 --> 00:00:27,340
SCIENCE INVESTIGATIONS, AND
RECONFIGURING THE SPACE STATION

10
00:00:27,340 --> 00:00:30,490
FOR A NEW ERA OF U.S. COMMERCIAL
CREW SPACECRAFT.

11
00:00:30,490 --> 00:00:33,160
EARLIER TODAY WE HEARD ABOUT

SOME OF THOSE SCIENCE

12
00:00:33,160 --> 00:00:36,370
INVESTIGATIONS, AND TONIGHT
WE'LL HEAR ABOUT PREPARATIONS

13
00:00:36,370 --> 00:00:37,500
FOR THE MISSION ITSELF.

14
00:00:37,500 --> 00:00:41,440
SO JOINING ME TODAY ARE MICHAEL
SUFFREDINI, THE INTERNATIONAL

15
00:00:41,440 --> 00:00:44,050
SPACE STATION PROGRAM MANAGER.

16
00:00:44,050 --> 00:00:48,150
HANS KOENIGSMANN, VICE PRESIDENT
OF MISSION ASSURANCE FOR SPACEX.

17
00:00:48,150 --> 00:00:51,060
AND KATHY WINTERS OUR LAUNCH
WEATHER OFFICER FOR THE 45TH

18
00:00:51,060 --> 00:00:52,540
WEATHER SQUADRON.

19
00:00:52,540 --> 00:00:54,160
SO MIKE, I'LL PASS IT OVER TO
YOU.

20
00:00:54,160 --> 00:00:57,320
TALK ABOUT NASA'S PREPARATIONS
FOR THE LAUNCH.

21
00:00:57,320 --> 00:00:59,790
>> GOOD AFTERNOON, EVERYONE.

22
00:00:59,790 --> 00:01:03,090

ON BOARD TODAY†--
>> MIKE.

23
00:01:03,090 --> 00:01:04,090
MICROPHONE.

24
00:01:04,090 --> 00:01:05,090
>> SORRY.

25
00:01:05,090 --> 00:01:07,210
SORRY ABOUT THAT.

26
00:01:07,210 --> 00:01:10,260
YOU GUYS ALSO WANT TO HEAR, HUH?

27
00:01:10,260 --> 00:01:13,610
WELL, GOOD AFTERNOON, EVERYONE.

28
00:01:13,610 --> 00:01:17,970
THE CREW IS BEING GIVEN A GO BY
THE GROUND TEAM FOR THE ARRIVAL

29
00:01:17,970 --> 00:01:21,710
OF THE DRAGON SPACECRAFT AND SO
THEY'RE READY TO GO.

30
00:01:21,710 --> 00:01:26,830
THIS IS A LITTLE BIT UNIQUE, IN
THAT TYPICALLY WE HAVE TWO U.S.

31
00:01:26,830 --> 00:01:32,750
OS CREW MEMBERS DO THE CAPTURE,
AND THE BERTING ACTIVITIES ALONG

32
00:01:32,750 --> 00:01:34,700
WITH THE GROUND TEAM.

33
00:01:34,700 --> 00:01:38,200
THIS TIME AROUND BECAUSE WE'RE

DOWN TO THREE CREW, WE'LL LET

34
00:01:38,200 --> 00:01:42,110
SCOTT DO IT WITH GANADI AND HE
WILL BE SUPPORTING HIM FOR BOTH

35
00:01:42,110 --> 00:01:47,049
THE CAPTURE ACTIVITIES AND THE
BERTHING SO IT'S AGAIN TRULY AN

36
00:01:47,049 --> 00:01:51,840
INTEGRATED CREW DOING ALL THE
TASKS THAT NEED TO HAPPEN ON

37
00:01:51,840 --> 00:01:52,840
BOARD.

38
00:01:52,840 --> 00:01:56,110
WE TALKED TO YOU EARLIER TODAY
ABOUT THE SCIENCE THAT'S GOING

39
00:01:56,110 --> 00:01:57,110
TO TAKE PLACE.

40
00:01:57,110 --> 00:02:01,200
I'LL TELL YOU A LITTLE BIT ABOUT
THE RECONFIGURATION.

41
00:02:01,200 --> 00:02:04,619
OVER THIS LAST COUPLE OF MONTHS
WE'VE DONE THE FIRST STEPS IN

42
00:02:04,619 --> 00:02:08,429
THE CONFIGURING OF THE
INTERNATIONAL SPACE STATION TO

43
00:02:08,429 --> 00:02:11,819
HAVE COMMERCIAL DOCKING
CAPABILITY FOR AUTONOMOUS

44
00:02:11,819 --> 00:02:14,950
DOCKING CAPABILITY IF NECESSARY.

45
00:02:14,950 --> 00:02:19,900
AND SO WITH THAT WE MOVE THE
WHAT WE CALLED THE PMM, IT'S

46
00:02:19,900 --> 00:02:23,510
BASICALLY OUR STORAGE CLOSET
THAT WAS ON NODE ONE NADIR AND

47
00:02:23,510 --> 00:02:25,840
ATTACHED IT TO NODE THREE
FORWARD.

48
00:02:25,840 --> 00:02:30,870
AND WITH THAT WE CLEARED OUT THE
PORT NECESSARY TO ALLOW BERTHING

49
00:02:30,870 --> 00:02:34,200
TO OCCUR ON NODE ONE NADIR.

50
00:02:34,200 --> 00:02:36,239
THIS IS REALLY THE FIRST STEP IN
THE PROCESS.

51
00:02:36,239 --> 00:02:40,450
THE NEXT STEP IS TO ADD THIS
DOCKING ADAPTOR, THE FIRST

52
00:02:40,450 --> 00:02:43,819
DOCKING ADAPTOR WHICH IS ON
SPACEX 7 SO IT WILL BRING UP THE

53
00:02:43,819 --> 00:02:44,819
DOCKING ADAPTOR.

54
00:02:44,819 --> 00:02:48,690
BECAUSE WE'RE AT THREE CREW

DURING THIS PERIOD, WHICH WASN'T

55
00:02:48,690 --> 00:02:52,520
THE ORIGINAL PLAN, WE'LL STORE
THE DOCKING ADAPTOR ON BOARD

56
00:02:52,520 --> 00:02:53,520
ISS.

57
00:02:53,520 --> 00:02:56,970
AND THEN WHEN WE GET BACK UP TO
SIX CREW WE'LL MOVE THE DOCKING

58
00:02:56,970 --> 00:03:02,420
ADAPTOR ON TO NODE†-- I'M SORRY,
YES NODE 2 FORWARD WHICH IS

59
00:03:02,420 --> 00:03:05,560
WHERE THE SHUTTLE TRADITIONALLY
DOCKED TO SPACE STATION.

60
00:03:05,560 --> 00:03:09,250
SO IT WILL BE ON THE FORWARD
PORT, AND THE VELOCITY VECTOR.

61
00:03:09,250 --> 00:03:14,440
AND THEN AFTER THAT WE HAVE A
COUPLE OF EBAS PLANNED.

62
00:03:14,440 --> 00:03:17,320
ONE WILL BE TO DO THE
ATTACHMENTS FOR THE DOCKING

63
00:03:17,320 --> 00:03:22,370
ADAPTOR, WHICH IS A MANUAL TASK
THAT THE ROBOTIC ARM HELPS US

64
00:03:22,370 --> 00:03:23,370
GET IT THERE.

65
00:03:23,370 --> 00:03:27,590
THEN THE CREW INSTALLS IT
MANUALLY AND CONNECTS THE WIRES.

66
00:03:27,590 --> 00:03:32,599
IN ADDITION TO THAT, WE WILL
DISCONNECT NODE PMA-3, WHICH IS

67
00:03:32,599 --> 00:03:35,550
ON NODE 3 PART RIGHT NOW.

68
00:03:35,550 --> 00:03:38,580
AND THAT WILL PUT US IN THE
PROCESS†-- ALLOW US TO, AT THAT

69
00:03:38,580 --> 00:03:43,140
POINT, MOVE WHENEVER WE'RE READY
TO MOVE THE PMA-3 TO NODE-2

70
00:03:43,140 --> 00:03:46,659
ZENITH WHICH TODAY IS OUR BACKUP
BERTHING PORT.

71
00:03:46,659 --> 00:03:52,290
AND ONCE THAT'S DONE, SPACEX 9
WILL BRING UP THE SECOND IDA,

72
00:03:52,290 --> 00:03:56,780
INTERNATIONAL DOCKING ADAPTOR,
FOR NODE-2 ZENITH THEN TO BE OUR

73
00:03:56,780 --> 00:03:58,569
SECOND DOCKING PORT.

74
00:03:58,569 --> 00:04:01,080
WHEN OUR CONFIGURATION IS
COMPLETE WE'LL HAVE TWO DOCKING

75
00:04:01,080 --> 00:04:04,569

PORTS, NODE-2 FORWARD, NODE-2
ZENITH, AND TWO BERTHING PORTS,

76
00:04:04,569 --> 00:04:07,440
THE ONE WE'VE BEEN USING.

77
00:04:07,440 --> 00:04:11,980
THE NODE-2 WILL BE PRIMARY AND
THE BACKUP WILL BE NODE-1.

78
00:04:11,980 --> 00:04:15,740
THAT'S THE FINAL CONFIGURATION
TO PUT US IN THE RIGHT CONFIG TO

79
00:04:15,740 --> 00:04:18,829
ALLOW DOCKING AGAIN TO THE
INTERNATIONAL SPACE STATION ON

80
00:04:18,829 --> 00:04:21,169
THE U.S. OS SEGMENT.

81
00:04:21,169 --> 00:04:24,229
IN ADDITION TO THAT YOU NEED THE
COMMUNICATIONS ASSET.

82
00:04:24,229 --> 00:04:28,360
WE'VE ALREADY DONE THE
RECONFIGURATION OUTSIDE.

83
00:04:28,360 --> 00:04:33,439
WE PUT THE ANTENNAS, RAN WIRES
NECESSARY TO ALLOW IT TO OCCUR,

84
00:04:33,439 --> 00:04:36,089
AND DID SOME OF THE
RECONFIGURATION INSIDE.

85
00:04:36,089 --> 00:04:39,819
SPACEX-7 WILL BRING WITH IT THE
RADIO ITSELF.

86
00:04:39,819 --> 00:04:44,639
WE CALL IT V2-V2 AND IT WILL BE
INSTALLED SOMETIME AFTER SPACEX

87
00:04:44,639 --> 00:04:45,729
7 AS WELL.

88
00:04:45,729 --> 00:04:49,969
OUR GOAL HAS ALWAYS BEEN TO HAVE
A DOCKING CAPABILITY READY BY

89
00:04:49,969 --> 00:04:51,860
THE END OF 2015.

90
00:04:51,860 --> 00:04:53,539
ALTHOUGH THAT'S PROBABLY A
LITTLE BIT EARLIER THAN WE'LL

91
00:04:53,539 --> 00:04:56,129
SEE IT NEED TO BE USED.

92
00:04:56,129 --> 00:04:59,039
BUT THAT'S ALWAYS BEEN OUR GOAL
AND WE'RE ON TRACK TO ACCOMPLISH

93
00:04:59,039 --> 00:05:00,569
THAT GOAL.

94
00:05:00,569 --> 00:05:03,509
IN ADDITION TO THAT, THERE'S, OF
COURSE, A NUMBER OF IMPORTANT

95
00:05:03,509 --> 00:05:07,770
SPARES THAT ARE COMING UP ON
THIS FLIGHT.

96
00:05:07,770 --> 00:05:13,800
AS WELL AS A FEW EXTRA

PROVISIONS, FOOD, SOME CREW

97
00:05:13,800 --> 00:05:17,909
CLOTHING THAT WE'RE REPLACING
THAT WERE ON THE 59 P-PROGRESS

98
00:05:17,909 --> 00:05:20,789
THAT WAS RECENTLY LOST.

99
00:05:20,789 --> 00:05:25,499
BUT EVEN WITH THAT LOSS, WE HAVE
VERY GOOD LOGISTICS ON BOARD FOR

100
00:05:25,499 --> 00:05:27,080
THE ENTIRE CREW.

101
00:05:27,080 --> 00:05:31,520
WE'RE GOOD TO THE OCTOBER TIME
FRAME IF NO OTHER VEHICLES SHOW

102
00:05:31,520 --> 00:05:32,520
UP.

103
00:05:32,520 --> 00:05:35,639
AND WITH SPACEX-7 WE GET
OURSELVES TO PRETTY MUCH THE END

104
00:05:35,639 --> 00:05:38,089
OF THE YEAR ON MOST OF THE
SUPPLIES.

105
00:05:38,089 --> 00:05:40,059
SO WE'RE IN VERY GOOD SHAPE IN
THAT RESPECT.

106
00:05:40,059 --> 00:05:45,250
SO WE'LL CONTINUE ON WITH
RESEARCH PER OUR NORMAL PLAN AND

107

00:05:45,250 --> 00:05:49,240
THE RECONFIGURATION FOR OUR
NORMAL PLAN, AND SPACEX-7 WILL

108
00:05:49,240 --> 00:05:50,819
KEEP US ON TRACK.

109
00:05:50,819 --> 00:05:51,820
SO THANK YOU VERY MUCH.

110
00:05:51,820 --> 00:05:52,820
>> ALL RIGHT.

111
00:05:52,820 --> 00:05:55,289
WE'LL PASS IT OVER TO YOU, HANS.

112
00:05:55,289 --> 00:05:57,960
>> YEAH, GOOD AFTERNOON AND
THANKS FOR HAVING ME HERE.

113
00:05:57,960 --> 00:05:59,740
OUR TEAM HAS BEEN BUSY.

114
00:05:59,740 --> 00:06:02,490
THE SPACEX TEAM HAS BEEN REALLY
BUSY TO PUT THE VEHICLE

115
00:06:02,490 --> 00:06:07,599
TOGETHER, THE FIRST STAGE AND
SECOND STAGE, AND WITH DRAGON ON

116
00:06:07,599 --> 00:06:11,649
TOP OF IT, LOADED AS MUCH AS
POSSIBLE EXCEPT FOR THE LATE

117
00:06:11,649 --> 00:06:12,649
LOADS.

118
00:06:12,649 --> 00:06:17,669

IN FACT, WE HAVE A STATIC FIRE
VEHICLE BEING HELD DOWN AND THE

119
00:06:17,669 --> 00:06:21,619
FIRST STAGE IS BEING FIRED FOR
AROUND ABOUT TWO SECONDS.

120
00:06:21,619 --> 00:06:27,361
WE JUST HAD THAT AS I WAS
DRIVING UP T-0 WAS AT 4:00 AND I

121
00:06:27,361 --> 00:06:32,509
HEARD IT WAS VERY SUCCESSFUL,
FULL DURATION, AND THAT CLEARS

122
00:06:32,509 --> 00:06:36,259
THE NEXT COMING DAYS UP TO
LAUNCH ON SUNDAY MORNING.

123
00:06:36,259 --> 00:06:42,599
LAUNCH IS AT 10:21:12 SO FAR.

124
00:06:42,599 --> 00:06:48,330
AGAIN, IT'S A ONE-SECOND LAUNCH
WINDOW TO CATCH THE EYE, IN ITS

125
00:06:48,330 --> 00:06:53,529
PLANE AND MAKE SURE THAT WE ARE
IN THE RIGHT ORBIT BEHIND IT.

126
00:06:53,529 --> 00:06:56,039
OR UNDER IT, RATHER.

127
00:06:56,039 --> 00:06:58,860
THE LAUNCH ITSELF WILL BE VERY
SIMILAR TO THE LAST COUPLE

128
00:06:58,860 --> 00:07:04,139
LAUNCHES THAT YOU'VE SEEN AFTER
ALL THIS IS, I CALL IT TR-7,

129
00:07:04,139 --> 00:07:08,620
SPACEX-7, IT'S THE SAME THING
JUST DIFFERENT PERSPECTIVE.

130
00:07:08,620 --> 00:07:10,599
IT'S THE SEVENTH FLIGHT.

131
00:07:10,599 --> 00:07:13,990
WE'VE HAD QUITE A FEW OVER THE
LAST COUPLE YEARS AT THIS POINT

132
00:07:13,990 --> 00:07:15,710
IN TIME.

133
00:07:15,710 --> 00:07:17,909
DRAGON HAS BEEN SUPER RELIABLE.

134
00:07:17,909 --> 00:07:20,409
SO HAS BEEN FALCON-9.

135
00:07:20,409 --> 00:07:23,740
THE PRIMARY MISSION ON THIS ONE
IS OBVIOUSLY GETTING DRAGON AND

136
00:07:23,740 --> 00:07:29,300
ITS PAYLOAD UP INTO ORBIT, AND
PHASE IT INTO AN ORBIT WHERE IT

137
00:07:29,300 --> 00:07:33,740
CAN DOCK WITH THE STATION WITHIN
I THINK THE TIME IS ABOUT 40†1/2

138
00:07:33,740 --> 00:07:37,520
HOURS BETWEEN LIFTOFF AND
DOCKING TO THE STATION.

139
00:07:37,520 --> 00:07:43,699
THE FLIGHT ITSELF AGAIN VERY

SIMILAR.

140
00:07:43,699 --> 00:07:47,300
FIRST STAGE WILL GO ON FOR A
LITTLE LESS THAN THREE MINUTES.

141
00:07:47,300 --> 00:07:48,629
160 SECONDS.

142
00:07:48,629 --> 00:07:49,629
EXACTLY.

143
00:07:49,629 --> 00:07:52,199
MASS CUES AT THE SAME TIME 70
SECONDS.

144
00:07:52,199 --> 00:07:56,330
THOSE DATA ACTUALLY CHANGE VERY
LITTLE FROM FLIGHT TO FLIGHT.

145
00:07:56,330 --> 00:08:00,190
SECOND STAGE WILL BURN TO GET
THE REST OF THE VELOCITY, AND

146
00:08:00,190 --> 00:08:05,419
THEN DRAGON WILL BE DEPLOYED
ABOUT 9†1/2 MINUTES AFTER

147
00:08:05,419 --> 00:08:07,830
LIFTOFF.

148
00:08:07,830 --> 00:08:09,520
THAT'S THE PRIMARY MISSION.

149
00:08:09,520 --> 00:08:13,020
TOP GOAL IS TO GET THIS SAFELY
AND RELIABLY DONE.

150
00:08:13,020 --> 00:08:17,029

I DO WANT TO BRING UP WE DO HAVE
A SECONDARY MISSION COMPLETELY

151
00:08:17,029 --> 00:08:22,509
EXPERIMENTAL WE WILL PERFORM
ANOTHER LANDING ATTEMPT ON A

152
00:08:22,509 --> 00:08:23,699
DRONESHIP.

153
00:08:23,699 --> 00:08:26,580
DRONESHIP IS OUT THERE AT THIS
POINT IN TIME OR ON ITS WAY TO

154
00:08:26,580 --> 00:08:30,479
ITS LANDING POINT.

155
00:08:30,479 --> 00:08:34,909
THE FIRST STAGE OF THE SHUTDOWN
WILL FLIP AROUND PRETTY QUICKLY,

156
00:08:34,909 --> 00:08:37,849
AND THEN PERFORM A BOOST BACK
BURN.

157
00:08:37,849 --> 00:08:42,959
IT WILL THEN COAST FOR AWHILE,
AND THEN PERFORM AN ENTRY BURN.

158
00:08:42,959 --> 00:08:47,010
THE ENTRY BURN BASICALLY LOWERS
SPEED AND PRESSURE DURING THE

159
00:08:47,010 --> 00:08:50,589
ATMOSPHERIC ENTRY AND THEN AT
THE VERY END PERFORM A LANDING

160
00:08:50,589 --> 00:08:59,180
BURN ON THE SINGLE ENGINE, AND
HOPEFULLY GENTLY LAND ON THE

161
00:08:59,180 --> 00:09:01,230
DRONE SHIP.

162
00:09:01,230 --> 00:09:06,870
SO, AGAIN, THIS IS A SECONDARY
EXPERIMENT.

163
00:09:06,870 --> 00:09:10,680
IT DOESN'T†-- THE PRIMARY
MISSION OR FOCUS ON THE LAUNCH

164
00:09:10,680 --> 00:09:12,949
TEAM IS GOING TO BE ON DRAGON.

165
00:09:12,949 --> 00:09:16,579
THE TIMING IS ROUGHLY THE SAME,
HOWEVER, BY THE TIME DRAGON GETS

166
00:09:16,579 --> 00:09:21,610
TO ORBIT THE FIRST STAGE WILL
LAND ON THE DRONE SHIP.

167
00:09:21,610 --> 00:09:27,110
AND I GUESS PENDING FURTHER,
EVERYTHING IS LOOKING VERY GOOD

168
00:09:27,110 --> 00:09:28,380
ON OUR SIDE.

169
00:09:28,380 --> 00:09:32,649
TEAM IS IN EXCELLENT SPIRITS,
AND VEHICLE AND DRAGON ARE IN

170
00:09:32,649 --> 00:09:35,210
EXCELLENT CONDITION AFTER STATIC
FIRE.

171
00:09:35,210 --> 00:09:39,269

THAT'S ALWAYS THE LAST†-- THE
LAST BIG TEST FOR US, STATIC

172
00:09:39,269 --> 00:09:44,450
FIRE GOES WELL, THINGS ARE
LOOKING REALLY GOOD FOR LAUNCH.

173
00:09:44,450 --> 00:09:49,009
HOPEFULLY YOU'RE LOOKING AT A
GOOD LAUNCH ON SUNDAY MORNING.

174
00:09:49,009 --> 00:09:50,009
>> ALL RIGHT.

175
00:09:50,009 --> 00:09:53,440
SO WE'LL HEAR FROM THE WEATHER
OFFICER, KATHY.

176
00:09:53,440 --> 00:09:55,570
>> THE WEATHER IS NOT GOOD AT
THE MOMENT.

177
00:09:55,570 --> 00:09:58,920
BUT IT DOES†-- AS YOU ALL CAN
HEAR OUTSIDE THERE'S LOTS OF

178
00:09:58,920 --> 00:10:02,170
THUNDER ROLLING, AND WE DO HAVE
ACTUALLY A SEVERE THUNDERSTORM

179
00:10:02,170 --> 00:10:04,399
THAT'S MOVING INTO KENNEDY SPACE
CENTER RIGHT NOW.

180
00:10:04,399 --> 00:10:08,509
BUT THE STATIC FIRE IS CLOSER TO
THE COAST, AND ACTUALLY IT

181
00:10:08,509 --> 00:10:10,800
WAS†-- THE WEATHER WAS HOLDING

OFF LONG ENOUGH FOR THEM TO BE

182
00:10:10,800 --> 00:10:12,680
ABLE TO CONTINUE THEIR
OPERATIONS AND IT LOOKS LIKE

183
00:10:12,680 --> 00:10:15,850
THINGS ARE GOING TO HOLD OFF
JUST LONG ENOUGH FOR THEM TO GET

184
00:10:15,850 --> 00:10:17,050
THAT DONE.

185
00:10:17,050 --> 00:10:20,209
BUT WHEN IT COMES TO LAUNCH DAY
WE'RE STILL GOING TO BE OKAY

186
00:10:20,209 --> 00:10:23,649
BECAUSE IT'S A GREAT LAUNCH
TIME, 10:21 IN THE MORNING, AND

187
00:10:23,649 --> 00:10:26,089
SO WITH THAT, THUNDERSTORMS ARE
NOT EXPECTED TO DEVELOP UNTIL

188
00:10:26,089 --> 00:10:27,520
THE AFTERNOON.

189
00:10:27,520 --> 00:10:30,240
WE DID HAVE SOME MORNING†-- MORE
MORNING-ISH THUNDERSTORMS AS WE

190
00:10:30,240 --> 00:10:32,240
WERE YESTERDAY BECAUSE WE HAD A
VERY WEAK FLOW.

191
00:10:32,240 --> 00:10:35,050
OVER THE NEXT FEW DAYS,
INCLUDING TODAY THAT WESTERLY

192
00:10:35,050 --> 00:10:36,829
FLOW IS STARTING TO GET
STRONGER.

193
00:10:36,829 --> 00:10:40,970
WHEN YOU HAVE THAT WESTERLY FLOW
PUSHING HARD ENOUGH, YOU CAN

194
00:10:40,970 --> 00:10:43,279
HOLD OFF THAT EAST COAST SEA
BREEZE WHICH IS WHAT'S CAUSING

195
00:10:43,279 --> 00:10:45,350
OUR WEATHER RIGHT NOW AND THAT'S
TYPICALLY WHAT CAUSES OUR

196
00:10:45,350 --> 00:10:47,220
AFTERNOON WEATHER HERE.

197
00:10:47,220 --> 00:10:51,300
IT WILL MAYBE POSSIBLY FORM
DURING THE DAY, BUT ON THAT DAY

198
00:10:51,300 --> 00:10:53,889
BUT IT'S MORE LIKE 4:00 TO 5:00
IN THE AFTERNOON AND WE MAY EVEN

199
00:10:53,889 --> 00:10:56,069
GET A WEST COAST SEA BREEZE
ACROSS.

200
00:10:56,069 --> 00:10:57,579
THAT WILL ALL BE AFTER LAUNCH
TIME.

201
00:10:57,579 --> 00:11:02,089
RIGHT NOW WE'RE ONLY FORECASTING
A 10% CHANCE OF VIOLATING LAUNCH

202

00:11:02,089 --> 00:11:05,680
CRITERIA ASSOCIATED WITH WEATHER
ON SUNDAY FOR THE LAUNCH DAY.

203
00:11:05,680 --> 00:11:09,190
LET'S GO LOOK AT SOME WEATHER ON
SOME DISPLAYS.

204
00:11:09,190 --> 00:11:10,491
WE DO HAVE THE RADAR PICTURE
HERE.

205
00:11:10,491 --> 00:11:12,519
YOU CAN SEE THE STORM THAT'S
FORMING RIGHT OVER OUR BUILDING

206
00:11:12,519 --> 00:11:15,230
THAT WE'RE IN RIGHT NOW AND THAT
IS A SEVERE STORM THAT HAS

207
00:11:15,230 --> 00:11:17,940
DEVELOPED ALONG OR AT LEAST
WE'RE FORECASTING FOR SEVERE

208
00:11:17,940 --> 00:11:21,660
WEATHER DEVELOPED ALONG THE SEA
BREEZE HERE ON THE EAST COAST,

209
00:11:21,660 --> 00:11:23,860
AND WHAT HAPPENS IS WE TEND TO
GET OUTFLOW BOUNDARIES FROM

210
00:11:23,860 --> 00:11:26,519
THESE STORMS AS WELL AND THEY
MERGE AND WE TEND TO GET MORE

211
00:11:26,519 --> 00:11:27,519
STORMS.

212
00:11:27,519 --> 00:11:30,180

THEY SORT OF START FEEDING EACH
OTHER AND THAT'S WHAT WE'VE BEEN

213
00:11:30,180 --> 00:11:31,600
EXPERIENCING THE LAST FEW DAYS.

214
00:11:31,600 --> 00:11:33,899
WE ARE GOING TO EXPERIENCE MORE
OF THAT THE NEXT FUP DAYS BUT

215
00:11:33,899 --> 00:11:37,680
LATER IN THE AFTERNOON BECAUSE
OF THE STRONGER WESTERLY FLOW.

216
00:11:37,680 --> 00:11:39,250
SO IT'S GOING TO LOOK AT THE
LAUNCH FORECAST.

217
00:11:39,250 --> 00:11:41,839
YOU CAN SEE THAT WE ARE JUST
FORECASTING SCATTERED SKIES FOR

218
00:11:41,839 --> 00:11:43,560
LAUNCH, GOOD WEATHER CONDITIONS.

219
00:11:43,560 --> 00:11:45,970
WINDS FROM THE SOUTHWEST HOLDING
OFF THAT SEA BREEZE, BECAUSE

220
00:11:45,970 --> 00:11:49,290
IT'S A LITTLE BIT STRONG AT 17
KNOTS†-- OR 17 MILES PER HOUR.

221
00:11:49,290 --> 00:11:51,139
AND THAT'S GOOD ACTUALLY FOR US.

222
00:11:51,139 --> 00:11:53,430
THE TEMPERATURE WILL BE 84
DEGREES EVEN THOUGH IT'S ONLY

223
00:11:53,430 --> 00:11:54,430
10:21 IN THE MORNING.

224
00:11:54,430 --> 00:11:55,610
WE'VE BEEN GETTING PRETTY HOT.

225
00:11:55,610 --> 00:11:59,720
JUST A 10% CHANCE OF VIOLATING
LAUNCH WEATHER CONSTRAINTS.

226
00:11:59,720 --> 00:12:02,290
AND OUR PRIMARY CONCERN IS THE
CUMULUS CLOUD ROLL AND THAT'S

227
00:12:02,290 --> 00:12:05,709
THE TYPE OF CLOUDS THAT FORM
ALONG THE SEA BREEZE.

228
00:12:05,709 --> 00:12:09,040
FOR THE LANDING FORECAST,
WEATHER IS LOOKING OVERALL

229
00:12:09,040 --> 00:12:10,040
FAVORABLE.

230
00:12:10,040 --> 00:12:12,079
THE SEAS ARE A LITTLE BIT HIGH,
5 TO 7 FEET BUT NOTHING THAT

231
00:12:12,079 --> 00:12:13,079
VIOLATES CONSTRAINTS.

232
00:12:13,079 --> 00:12:16,301
THE WINDS, THOSE SEAS ARE A
LITTLE BIT HIGH BECAUSE OF THE

233
00:12:16,301 --> 00:12:19,819
WINDS FROM THE SOUTHWEST AT 20
KNOTS NEAR THE SURFACE.

234
00:12:19,819 --> 00:12:23,730
AND THEN IF WE HAPPEN TO DELAY
24 HOURS WE DO HAVE A TROUGH

235
00:12:23,730 --> 00:12:24,730
THAT COMES DOWN.

236
00:12:24,730 --> 00:12:27,279
THAT IS GOING TO CAUSE MORE
CLOUD COVER IN THE AREA, AND

237
00:12:27,279 --> 00:12:30,459
ALSO AS A TRIGGER FOR
THUNDERSTORM DEVELOPMENT THEY

238
00:12:30,459 --> 00:12:32,510
TEND TO FORM A LITTLE BIT
EARLIER.

239
00:12:32,510 --> 00:12:35,439
WITH THOSE CONDITIONS, A LITTLE
BIT MORE POSSIBLE WE DO HAVE A

240
00:12:35,439 --> 00:12:38,270
CONCERN FOR CUMULUS CLOUDS BUT
ALSO THE THICK CLOUD RULE

241
00:12:38,270 --> 00:12:40,610
VIOLATION WHICH IS IF THE CLOUDS
ARE THICK ENOUGH YOU COULD HAVE

242
00:12:40,610 --> 00:12:44,300
AN ELECTRIC FIELD GENERATE
ENOUGH ELECTRIC FIELD TO CAUSE A

243
00:12:44,300 --> 00:12:45,649
TRIGGERED LIGHTNING STRIKE.

244

00:12:45,649 --> 00:12:48,399
AGAIN IT'S A MORNING LAUNCH SO
WE'RE ONLY GOING WITH A 30%

245
00:12:48,399 --> 00:12:50,110
CHANCE OF VIOLATING LAUNCH
CRITERIA.

246
00:12:50,110 --> 00:12:54,870
THE WEATHER WILL CONTINUE TO
DEGRADE AFTER THE LAUNCH TIME.

247
00:12:54,870 --> 00:12:57,070
SO OVERALL, EVEN THOUGH WE DO
HAVE A LOT OF AFTERNOON

248
00:12:57,070 --> 00:12:59,139
THUNDERSTORMS IN THE FORECAST,
THE LAUNCH TIME IS REALLY

249
00:12:59,139 --> 00:13:02,480
FAVORABLE WHEN IT COMES TO
WEATHER, SO JUST A 10% CHANCE OF

250
00:13:02,480 --> 00:13:03,490
VIOLATED CONSTRAINTS.

251
00:13:03,490 --> 00:13:05,519
GOOD WEATHER FOR LAUNCH.

252
00:13:05,519 --> 00:13:06,519
>> GREAT.

253
00:13:06,519 --> 00:13:07,519
THANK YOU.

254
00:13:07,519 --> 00:13:08,760
WE'LL NOW TAKE SOME QUESTIONS.

255

00:13:08,760 --> 00:13:12,290
AND JUST A REMINDER TO RAISE
YOUR HAND, WAIT FOR MICROPHONE

256
00:13:12,290 --> 00:13:15,480
TO COME TO YOU, STATE YOUR NAME,
AND TO WHOM YOU'RE ADDRESSING

257
00:13:15,480 --> 00:13:16,480
YOUR QUESTION.

258
00:13:16,480 --> 00:13:20,380
ALSO, FOR THOSE OF US THOSE WHO
MAY BE FOLLOWING ONLINE IF YOU

259
00:13:20,380 --> 00:13:24,519
WANT TO ASK THE QUESTION, USE
#ASKNASA ON TWITTER AND WE'LL

260
00:13:24,519 --> 00:13:29,749
GET TO YOUR QUESTIONS AS WELL.

261
00:13:29,749 --> 00:13:31,310
>> FOX ORLANDO.

262
00:13:31,310 --> 00:13:34,540
WHAT IS IT ABOUT THIS BOOSTER
LANDING, HANS, THAT YOU FEEL

263
00:13:34,540 --> 00:13:37,820
MORE CONFIDENT THAN THE PRIOR
TWO?

264
00:13:37,820 --> 00:13:44,769
>> WE HAD TWO PRECEDING LANDING
ATTEMPTS THAT WE USED TO LEARN

265
00:13:44,769 --> 00:13:46,240
THINGS.

266
00:13:46,240 --> 00:13:50,730
SPACEX PUSHES INNOVATION, AND
PART OF THAT IS OBVIOUSLY THAT

267
00:13:50,730 --> 00:13:54,390
YOU LEARN FROM YOUR†-- FROM YOUR
I DON'T WANT TO SAY TRIALS, BUT

268
00:13:54,390 --> 00:13:58,749
IT IS AN EXPERIMENT OR A TRIAL
TO SOME EXTENT, AND YOU LOOK AT

269
00:13:58,749 --> 00:14:03,790
THE DATA, YOU EVALUATE THIS AND
YOU MAKE CORRECTION, AND THAT'S

270
00:14:03,790 --> 00:14:07,940
ULTIMATELY HOW YOU SUCCEED IN MY
OPINION.

271
00:14:07,940 --> 00:14:10,910
AND MAKE A SAFE LANDING IN THE
END.

272
00:14:10,910 --> 00:14:16,499
THE FACT THAT WE HAVE TWO SO
FAR, GIVES ME JUST CONFIDENCE WE

273
00:14:16,499 --> 00:14:19,360
HAD TWO PROBLEMS THAT WE SOLVED.

274
00:14:19,360 --> 00:14:22,519
I THINK THE ODDS†-- IT'S HARD TO
SAY WHAT THE ODDS ARE, IF IT'S

275
00:14:22,519 --> 00:14:24,930
BETTER IN THE LAST ONE, OR NOT.

276
00:14:24,930 --> 00:14:28,360

BUT, THERE'S ALWAYS†-- THERE WAS
ALWAYS UNCERTAINTY UNTIL WE

277
00:14:28,360 --> 00:14:32,899
BASICALLY SOLVED THIS PROBLEM,
AND TO END ALWAYS GOING TO BE

278
00:14:32,899 --> 00:14:35,319
SOME UNCERTAINTY ABOUT THE
OUTCOME.

279
00:14:35,319 --> 00:14:40,119
I FEEL A LOT BETTER.

280
00:14:40,119 --> 00:14:45,649
>> HI, KEN KRAMER FOR UNIVERSE
TODAY IN THE NORTHEAST ASTRONOMY

281
00:14:45,649 --> 00:14:46,649
FORUM.

282
00:14:46,649 --> 00:14:49,009
A QUESTION FOR MIKE AND HANS.

283
00:14:49,009 --> 00:14:51,709
QUICK ONE FOR MIKE, CAN YOU
EXPLAIN WHY WE NEED THESE NEW

284
00:14:51,709 --> 00:14:53,399
DOCKING ADAPTORS?

285
00:14:53,399 --> 00:14:56,930
WHAT'S THE DIFFERENCE BETWEEN
THE DOCKING ADAPTOR FOR THE

286
00:14:56,930 --> 00:14:59,499
SHUTTLE, AND THESE NEW IDA
ADAPTORS, WHY DO WE NEED THEM?

287

00:14:59,499 --> 00:15:04,589
AND FOR HANS CAN YOU TALK A
LITTLE BIT ABOUT WHEN YOU MIGHT

288
00:15:04,589 --> 00:15:07,110
LAND THE FALCON ON LAND?

289
00:15:07,110 --> 00:15:09,490
I THINK YOU WERE THINKING ABOUT
IT FOR THIS ONE BUT YOU DECIDED

290
00:15:09,490 --> 00:15:10,690
NOT TO FOR SOME REASON.

291
00:15:10,690 --> 00:15:12,980
WHEN MIGHT WE SEE THAT IN THE
FUTURE?

292
00:15:12,980 --> 00:15:14,019
THANK YOU.

293
00:15:14,019 --> 00:15:16,510
>> SO, THE ANSWER TO THE FIRST
QUESTION, DOCKING ADAPTOR.

294
00:15:16,510 --> 00:15:21,160
THE APASS WAS NOT REALLY
DESIGNED FOR AUTOMATED DOCKING.

295
00:15:21,160 --> 00:15:24,170
WE USE HANDED LOOP FOR
RENDEZVOUS AND DOCKING AND

296
00:15:24,170 --> 00:15:28,839
ALTHOUGH THE ADAPTOR ITSELF
PROBABLY COULD HAVE BEEN MADE TO

297
00:15:28,839 --> 00:15:33,620
WORK FOR US, IT WAS SUCH AN
OLDER TECHNOLOGY THAT WE HAD TO

298
00:15:33,620 --> 00:15:38,230
DESIGN THE MATING HAP ANYWAY,
REDESIGN AND SO WE TOOK THAT

299
00:15:38,230 --> 00:15:41,100
OPPORTUNITY TO WORK WITH THE
INTERNATIONAL PARTNERS, AND IN

300
00:15:41,100 --> 00:15:43,990
FACT SOME COUNTRIES OUTSIDE THE
INTERNATIONAL PARTNERSHIP

301
00:15:43,990 --> 00:15:45,490
PARTICIPATED, AS WELL.

302
00:15:45,490 --> 00:15:50,790
THE DESIGN WHAT WE CALL AN
INTERNATIONAL DOCKING SYSTEM

303
00:15:50,790 --> 00:15:52,250
SPEC.

304
00:15:52,250 --> 00:15:59,149
AND SO OUR DREAM IS TO HAVE ONE
COMMON DOCKING SYSTEM THAT ALL

305
00:15:59,149 --> 00:16:02,449
COUNTRIES WILL USE TO GIVE US
COMMONALITY AS WE REACH FURTHER

306
00:16:02,449 --> 00:16:05,879
AND FURTHER INTO SPACE, TO
ENSURE THAT WE HAVE THE ABILITY

307
00:16:05,879 --> 00:16:10,209
TO SUPPORT ONE ANOTHER AS WE
START TO COLLABORATE IN OTHER

308

00:16:10,209 --> 00:16:13,420
EFFORTS IN LOW-EARTH ORBIT AND
WELL BEYOND.

309
00:16:13,420 --> 00:16:18,689
AND SO INTERNATIONAL DOCKING
ADAPTOR IS REALLY THE FIRST STEP

310
00:16:18,689 --> 00:16:25,779
FOR A SORT OF UNIVERSAL DOCKING
SYSTEM THAT†-- AND REALLY WAS

311
00:16:25,779 --> 00:16:28,370
THE FIRST STEP IN EXPLORATION,
IN BRINGING ALL THE COUNTRIES

312
00:16:28,370 --> 00:16:29,610
TOGETHER IN EXPLORATION.

313
00:16:29,610 --> 00:16:32,070
SO IN THAT RESPECT IT WAS A BIG
SUCCESS.

314
00:16:32,070 --> 00:16:34,670
BUT BASICALLY WE NEEDED A NEW
SYSTEM ANYWAY.

315
00:16:34,670 --> 00:16:38,480
WE COULDN'T USE THE OLD SYSTEM,
AND IN THIS SYSTEM, REALLY

316
00:16:38,480 --> 00:16:42,389
DESIGNED FOR AUTOMATED DOCKING,
IF THAT BECOMES NECESSARY.

317
00:16:42,389 --> 00:16:45,939
>> AND SO REGARDING LANDING ON
LAND.

318
00:16:45,939 --> 00:16:49,519

I HAVE TO ADMIT THAT I FORGOT
WHAT THAT IS THE NEXT ONE.

319
00:16:49,519 --> 00:16:52,420
BUT IT'S NOT DRIVEN NECESSARILY
BY SCHEDULE, IT'S LARGELY DRIVEN

320
00:16:52,420 --> 00:16:53,420
BY PERFORMANCE.

321
00:16:53,420 --> 00:16:57,520
WE HAVE ENOUGH PROPELLANT ON THE
FIRST STAGE TO TURN THE STAGE

322
00:16:57,520 --> 00:17:00,709
AROUND AND THEN FIRE ALL THE WAY
BACK TO LAND.

323
00:17:00,709 --> 00:17:04,220
OBVIOUSLY THAT REQUIRES A LITTLE
BIT MORE PERFORMANCE THAN WHAT

324
00:17:04,220 --> 00:17:05,360
WE DO RIGHT NOW.

325
00:17:05,360 --> 00:17:09,020
AND SO WE WOULD NEED A MISSION
THAT IS LIGHTER, BASICALLY, OR

326
00:17:09,020 --> 00:17:12,900
HAS A LOW EARTH ENERGY ORBIT TO
PERFORM THAT.

327
00:17:12,900 --> 00:17:17,870
I BELIEVE IT IS A MISSION BY THE
END OF THIS YEAR.

328
00:17:17,870 --> 00:17:21,991
IN EITHER CASE WE WANT TO MAKE
SURE THAT IT IS SAFE, AND

329
00:17:21,991 --> 00:17:30,749
RELIABLE, AND THAT'S†-- WHEN
WE'RE READY WE WILL DO THIS.

330
00:17:30,749 --> 00:17:33,029
>> JIM SIEGEL WITH THE
CELEBRATION NEWS AND ALSO SPACE

331
00:17:33,029 --> 00:17:35,020
FLIGHT INSIDER.

332
00:17:35,020 --> 00:17:37,830
FOLLOW-UP QUESTION FOR YOU,
MIKE, REGARDING THE DOCKING

333
00:17:37,830 --> 00:17:39,029
ADAPTOR.

334
00:17:39,029 --> 00:17:44,140
SO, THE ONE YOU'RE GOING TO BE
INSTALLING IS UNIVERSAL DOCKING

335
00:17:44,140 --> 00:17:47,049
ADAPTOR, IF YOU WILL.

336
00:17:47,049 --> 00:17:50,409
HOW MANY OTHER DOCKING AND
BERTHING NODES ARE THERE AND ARE

337
00:17:50,409 --> 00:17:52,190
THOSE ON THE SPACE STATION?

338
00:17:52,190 --> 00:17:56,040
AND ARE THOSE GOING TO STAY IN
PLACE, AS WELL, OR IS THERE

339
00:17:56,040 --> 00:18:00,659
GOING TO ONLY BE THIS SINGLE

EVENTUALLY THIS SINGLE UNIVERSAL

340
00:18:00,659 --> 00:18:02,470
DOCKING SYSTEM?

341
00:18:02,470 --> 00:18:03,529
>> THAT'S A GREAT QUESTION.

342
00:18:03,529 --> 00:18:09,370
OUR RUSSIAN COLLEAGUES HAVE A
NUMBER OF DOCKING OPTIONS.

343
00:18:09,370 --> 00:18:12,680
AND SO, THEY†-- TODAY THEY USE A
PROBE AND CONE.

344
00:18:12,680 --> 00:18:16,430
IT'S A RELATIVELY†-- IT'S A
SMALLER DIAMETER, I WON'T SAY

345
00:18:16,430 --> 00:18:19,800
RELATIVELY SMALL, BUT IT'S A
SMALLER DIAMETER.

346
00:18:19,800 --> 00:18:25,789
IT'S TYPICALLY PROBING CONE IS
SIMPLER SYSTEM, MORE RELIABLE

347
00:18:25,789 --> 00:18:26,789
AND LIGHTER.

348
00:18:26,789 --> 00:18:29,090
PROBABLY MOST IMPORTANT IS
LIGHTER.

349
00:18:29,090 --> 00:18:32,690
HOWEVER, WHEN WE WERE DOING
THE†-- WHEN WE WERE DESIGNING OR

350

00:18:32,690 --> 00:18:37,350
DECIDING WHAT THIS INTERNATIONAL
SPEC WOULD LOOK LIKE WE WANTED

351
00:18:37,350 --> 00:18:41,970
TO KEEP THE ANDROGYNE OF THE
APASS, THAT IS THAT YOU CAN†--

352
00:18:41,970 --> 00:18:44,070
YOU CAN BE EITHER HAP AND COME
IN.

353
00:18:44,070 --> 00:18:48,330
IF YOU NEED TO BRING ANOTHER
SPACECRAFT IN TO DOCK OR ONE

354
00:18:48,330 --> 00:18:54,030
SPACECRAFT NEEDS TO GO TO THE
ONE THAT'S NOT WORKING ANYMORE,

355
00:18:54,030 --> 00:18:57,410
THIS WAS REALLY ABOUT SUPPORTING
EACH OTHER, PARTICULARLY IN

356
00:18:57,410 --> 00:18:58,410
CONTINGENCY CASES.

357
00:18:58,410 --> 00:19:01,580
SO YOU CAN ALWAYS PLAN, HAVE THE
CONE ON ONE SIDE, THE PROBE ON

358
00:19:01,580 --> 00:19:02,580
THE OTHER.

359
00:19:02,580 --> 00:19:04,860
BUT IN THE EVENT THAT YOU HAD A
CONTINGENCY YOU WERE TRYING TO

360
00:19:04,860 --> 00:19:08,110
SAVE A SPACECRAFT AND YOU HADN'T

CONSIDERED THAT, IF YOU HAVE

361
00:19:08,110 --> 00:19:13,179
ANDROGYNE, THEN ANYONE CAN DOCK
TO THE OTHER.

362
00:19:13,179 --> 00:19:16,610
SO HE WE WERE BUILDING THE
DESIGN WE KNEW WE NEEDED DOCKING

363
00:19:16,610 --> 00:19:20,720
CAPABILITY ON STATION FOR THE
NEW VEHICLES THAT WERE GOING TO

364
00:19:20,720 --> 00:19:24,860
COME UP TO ISS AND THE CREW
VEHICLES THAT WOULD COME TO ISS.

365
00:19:24,860 --> 00:19:29,059
WE DECIDED WE WOULD GO OUT AND
DO THIS LOOK INTERNATIONALLY,

366
00:19:29,059 --> 00:19:31,740
FIND OUT WHAT EVERYONE THOUGHT
WAS REASONABLE AND IT CAME OUT

367
00:19:31,740 --> 00:19:34,000
THE IDEA WAS YOU WANT TO TRY TO
HAVE ANDROGYNE.

368
00:19:34,000 --> 00:19:36,580
THAT WAS AN IMPORTANT
REQUIREMENT.

369
00:19:36,580 --> 00:19:40,750
WITH THAT COMES A LITTLE MORE
COMPLICATION IN TERMS OF THE

370
00:19:40,750 --> 00:19:45,159
DESIGN AND WEIGHT ASSOCIATED, AS

WELL.

371
00:19:45,159 --> 00:19:49,620
SO, THAT'S WHY WE CHOSE THOSE
SYSTEMS THAT ON THE U.S. SIDE.

372
00:19:49,620 --> 00:19:53,679
SO WE'LL PUT TWO OF THOSE ON THE
U.S. OS AND THAT'S HOW WE WILL

373
00:19:53,679 --> 00:19:56,850
HAVE DOCKING ON THE U.S. OS
BECAUSE THE INVESTMENT OUR

374
00:19:56,850 --> 00:20:00,330
RUSSIAN COLLEAGUES HAVE MADE,
EVEN THOUGH THEY PARTICIPATED IN

375
00:20:00,330 --> 00:20:04,330
THE INTERNATIONAL DOCKING SPEC,
THEY'RE GOING TO CONTINUE TO USE

376
00:20:04,330 --> 00:20:08,260
PROBE AND CONE ON THE RUSSIAN
SEGMENT AND SO THEY HAVE TODAY

377
00:20:08,260 --> 00:20:10,720
THEY HAVE FOUR DOCKING PORTS.

378
00:20:10,720 --> 00:20:13,770
THAT HAVE PROBE AND CONE DOCKING
CAPABILITY.

379
00:20:13,770 --> 00:20:20,429
AND THEN ON THE U.S. SEGMENT, WE
HAVE BEEN†-- WE HAVE THE CBM

380
00:20:20,429 --> 00:20:23,860
INTERFACE, THE BERTHING
INTERFACE, THAT DRAGON WILL

381
00:20:23,860 --> 00:20:25,120
UTILIZE.

382
00:20:25,120 --> 00:20:29,480
WE†-- WE BUILT THAT TYPE OF
INTERFACE IN ORDER TO HAVE VERY

383
00:20:29,480 --> 00:20:34,059
STRONG STRUCTURAL INTERFACE
BETWEEN ELEMENTS.

384
00:20:34,059 --> 00:20:38,040
AND THEN WHEN WE DECIDED WE WERE
GOING TO USE BERTHING FOR THESE

385
00:20:38,040 --> 00:20:40,610
CARGO VEHICLES, BECAUSE YOU GET
THE MUCH BIGGER HATCH.

386
00:20:40,610 --> 00:20:44,010
I CAN GET MUCH LARGER CARGO
THROUGH THAT THAN I CAN THROUGH

387
00:20:44,010 --> 00:20:48,010
A HATCH EVEN FOR THE†-- EVEN FOR
THE DOCKING†-- NEW DOCKING

388
00:20:48,010 --> 00:20:56,110
ADAPTOR, YOU HAVE NOW THESE 50
INCH HATCHES, AND A VERY STRONG

389
00:20:56,110 --> 00:20:58,899
STRUCTURAL ATTACHMENT AS A
RESULT OF THAT.

390
00:20:58,899 --> 00:21:00,770
SO WHEN WE GOT AROUND TO
BERTHING IT WAS JUST NATURAL TO

391
00:21:00,770 --> 00:21:02,910
GO AHEAD AND CONTINUE TO BERTH
TO THOSE.

392
00:21:02,910 --> 00:21:05,730
SO WE HAVE, WHEN WE'RE DONE WITH
OUR CONFIGURATION WE WILL

393
00:21:05,730 --> 00:21:08,019
PRESERVE TWO BERTHING PORTS LIKE
WE HAVE TODAY.

394
00:21:08,019 --> 00:21:11,960
BUT NOW THEY'LL BE NODE-1 NADIR
AND NODE-2 NADIR.

395
00:21:11,960 --> 00:21:16,779
WE'LL HAVE TWO DOCKING ADAPTORS
ON THE U.S. SEGMENT THAT ARE THE

396
00:21:16,779 --> 00:21:20,360
INTERNATIONAL DOCKING SYSTEM
SPEC STANDARD OR INTERNATIONAL

397
00:21:20,360 --> 00:21:25,350
DOCKING STANDARD, AND THEN WE'LL
HAVE THE FOUR PROBE AND CONES

398
00:21:25,350 --> 00:21:27,429
THAT ARE ON THE RUSSIAN ELEMENT.

399
00:21:27,429 --> 00:21:29,260
THAT'S WHERE WE'RE AT TODAY.

400
00:21:29,260 --> 00:21:33,410
AND AS THE RUSSIANS PLAN TO ADD
A COUPLE MORE ELEMENTS, THEY

401
00:21:33,410 --> 00:21:38,941

WILL PRESERVE THE FOUR DOCKING
PORTS, AND THEY WILL CONTINUE TO

402
00:21:38,941 --> 00:21:41,309
BE PROBE AND CONE JUST BECAUSE
THEIR INVESTMENT.

403
00:21:41,309 --> 00:21:44,720
>> WE'LL GO TO ONE ON THE PHONE.

404
00:21:44,720 --> 00:21:47,610
>> HI, I'M WITH THE NASA SOCIAL
GROUP.

405
00:21:47,610 --> 00:21:48,610
QUESTION FOR HANS.

406
00:21:48,610 --> 00:21:52,640
IF EVERYTHING WORKS OUT WITH THE
LANDING OF THE FIRST STAGE,

407
00:21:52,640 --> 00:21:53,640
WHAT'S GOING TO HAPPEN TO IT?

408
00:21:53,640 --> 00:21:57,229
AND ARE YOU PLANNING TO REPLY
IT?

409
00:21:57,229 --> 00:21:59,620
>> OBVIOUSLY IT WILL BE TOWED
BACK TO THE HARBOR.

410
00:21:59,620 --> 00:22:02,030
IT'S NOT QUITE CLEAR RIGHT NOW
HOW LONG THIS TAKES.

411
00:22:02,030 --> 00:22:06,640
NEEDLESS TO SAY WE NEED TO MAKE
SURE THAT PRESSURE IS OUT,

412
00:22:06,640 --> 00:22:13,899
EVERYTHING IS SAFE, TIED DOWN,
AND THEN BACK TO THE HARBOR.

413
00:22:13,899 --> 00:22:18,730
FROM THE HARBOR, I BELIEVE THE
PLAN WAS TO BRING IT BACK TO

414
00:22:18,730 --> 00:22:21,740
TEXAS, AND THERE WILL BE TESTS.

415
00:22:21,740 --> 00:22:27,110
BUT THE VEHICLES TO MAKE SURE
THAT WE CAN BURN IT AGAIN, FLY

416
00:22:27,110 --> 00:22:28,110
IT AGAIN, BASICALLY.

417
00:22:28,110 --> 00:22:30,799
IT DEPENDS A LITTLE BIT ON WHAT
WE FIND.

418
00:22:30,799 --> 00:22:33,690
SO THAT THE FIRST THING
OBVIOUSLY IS A REALLY THOROUGH

419
00:22:33,690 --> 00:22:36,210
INSPECTION OF THE VEHICLE.

420
00:22:36,210 --> 00:22:41,560
WHERE WE SEE IF THERE'S ANY
DAMAGE TO RE-ENTRY OR HOW WELL

421
00:22:41,560 --> 00:22:45,660
IN SHAPE IT BASICALLY IS AFTER
RE-ENTRY.

422
00:22:45,660 --> 00:22:49,169
GIVEN THE WAY WE RE-ENTER AND

THE DESIGN AND EVERYTHING WE

423
00:22:49,169 --> 00:22:52,490
THINK IT'S GOING TO BE IN VERY
GOOD SHAPE AND WE CAN FLY IT

424
00:22:52,490 --> 00:22:53,980
PRETTY QUICKLY AFTER THAT.

425
00:22:53,980 --> 00:22:57,340
BUT THE VEHICLE IS DESIGNED TO
FLY MULTIPLE TIMES, TO BE

426
00:22:57,340 --> 00:23:01,000
REUSABLE, AND WE'RE GOING TO
TEST THAT.

427
00:23:01,000 --> 00:23:02,909
>> GREAT, THANK YOU.

428
00:23:02,909 --> 00:23:06,510
WE HAVE A QUESTION FROM BILL
HARWOOD FROM CBS ON THE PHONE.

429
00:23:06,510 --> 00:23:07,850
>> YES, HI.

430
00:23:07,850 --> 00:23:10,659
A QUICK QUESTION FOR HANS, IF I
CAN.

431
00:23:10,659 --> 00:23:11,659
COULD YOU GIVE US AN UPDATE ON
THE STATUS OF THE ENHANCED

432
00:23:11,659 --> 00:23:12,659
ENGINES YOU GUYS ARE DEVELOPING.

433
00:23:12,659 --> 00:23:14,340

HOW THE TESTING'S BEEN GOING.

434
00:23:14,340 --> 00:23:16,529
I WAS CURIOUS AS TO HOW MUCH
TESTING IS REQUIRED FOR

435
00:23:16,529 --> 00:23:22,009
CERTIFICATION AND WHEN WE MIGHT
SEE THOSE FIRE?

436
00:23:22,009 --> 00:23:26,230
>> I GUESS YOU'RE PROBABLY
REFERRING TO THE UPGRADE THAT WE

437
00:23:26,230 --> 00:23:28,799
PERFORMED A COUPLE OF VEHICLES
FROM NOW.

438
00:23:28,799 --> 00:23:30,630
THOSE TESTS ARE UNDER WAY.

439
00:23:30,630 --> 00:23:34,120
WE PERFORM ENGINE TESTS AT THIS
POINT, AND MAKE REGULAR OF THE

440
00:23:34,120 --> 00:23:37,299
FLIGHT ENGINES AND WITH THE
QUALIFICATION ENGINES.

441
00:23:37,299 --> 00:23:42,309
SO FAR FROM WHAT I HEAR TESTS
ARE GOING PRETTY WELL.

442
00:23:42,309 --> 00:23:47,010
AND THE TEAM IS ON SCHEDULE FOR
THE UPCOMING LAUNCH ON THIS

443
00:23:47,010 --> 00:23:48,970
PARTICULAR VEHICLE.

444
00:23:48,970 --> 00:23:53,419
I BELIEVE IT IS FLIGHT 21 IF I'M
NOT MISTAKEN.

445
00:23:53,419 --> 00:23:54,730
>> THANK YOU.

446
00:23:54,730 --> 00:23:56,210
>> I HAVE A QUESTION.

447
00:23:56,210 --> 00:24:01,520
>> I'M ELIZABETH FROM VANCOUVER,
BRITISH COLUMBIA, WITH NASA

448
00:24:01,520 --> 00:24:02,750
SOCIAL.

449
00:24:02,750 --> 00:24:06,159
I'M SERIOUS ABOUT THIS
ONE-SECOND WINDOW SITUATION,

450
00:24:06,159 --> 00:24:07,659
SUPER FASCINATING.

451
00:24:07,659 --> 00:24:08,659
WHAT WOULD HAPPEN IF WE MISSED
IT?

452
00:24:08,659 --> 00:24:12,179
>> ESSENTIALLY NOT THAT BIG A
DEAL IF YOU WOULD MISS IT BY A

453
00:24:12,179 --> 00:24:13,299
COUPLE OF SECONDS.

454
00:24:13,299 --> 00:24:16,210
IF YOU MISS IT BY LIKE A MINUTE
THAT WOULD BE BAD.

455
00:24:16,210 --> 00:24:18,980
WHAT HAPPENS IS BASICALLY THE
ORBITAL PLANE OF THE SPACE

456
00:24:18,980 --> 00:24:22,260
STATION, AND THE EARTH ROTATES
UNDER IT BASICALLY.

457
00:24:22,260 --> 00:24:27,010
SO WE BASICALLY CALCULATE THE
OFFSET BASED ON THE BURN TIME

458
00:24:27,010 --> 00:24:28,010
THAT WE HAVE.

459
00:24:28,010 --> 00:24:32,969
WHICH IS JUST NINE MINUTES, AND
I THINK IT'S LIKE 40 SECONDS.

460
00:24:32,969 --> 00:24:36,549
AND SO THE GOAL IS THE
VELOCITY†-- TO HAVE THE VELOCITY

461
00:24:36,549 --> 00:24:38,339
EXACTLY IN THAT PLANE.

462
00:24:38,339 --> 00:24:40,820
AND THE REASON THIS IS IMPORTANT
IS BECAUSE THIS IS A PRETTY LONG

463
00:24:40,820 --> 00:24:45,760
VELOCITY VECTOR.

464
00:24:45,760 --> 00:24:47,669
IT'S 7.88 KILOMETERS PER SECOND.

465
00:24:47,669 --> 00:24:50,659
SO IN ORDER TO MOVE THAT
VELOCITY VECTOR A LITTLE BIT TO

466
00:24:50,659 --> 00:24:53,010
THE LEFT OR A LITTLE BIT TO THE
RIGHT, WE NEED A LOT OF PER

467
00:24:53,010 --> 00:24:56,279
POUNDS AND BY THAT TIME DRAGON
IS ON ITS OWN.

468
00:24:56,279 --> 00:24:59,130
SO IF DRAGON HAS A LOT OF
PROPELLANT YOU CAN CORRECT FOR

469
00:24:59,130 --> 00:25:05,460
THOSE INCLINATION OR NODE
ERRORS, BASICALLY, WE'RE TRYING

470
00:25:05,460 --> 00:25:09,059
TO PRESERVE AS MUCH PROPELLANT
AS WE CAN FOR THE ACTUAL

471
00:25:09,059 --> 00:25:13,559
RENDEZVOUS AND DOCKING, AND,
YEAH ON THE SPACE STATION AND SO

472
00:25:13,559 --> 00:25:17,030
WE'RE TRYING TO REALLY HIT THE
ORB IT VERY WELL.

473
00:25:17,030 --> 00:25:20,299
BUT AS I SAID YOU KNOW, IF YOU
MISS IT BY TEN SECONDS YOU PAY A

474
00:25:20,299 --> 00:25:23,260
CERTAIN AMOUNT OF PROPELLANT, A
COUPLE KILOGRAMS.

475
00:25:23,260 --> 00:25:27,290
IF YOU MISS IT BY 30 SECONDS,
IT'S GOING TO BE MORE, AND IF

476
00:25:27,290 --> 00:25:31,159
YOU MISS IT BY A MINUTE THAT
MIGHT BE A LOT ALREADY.

477
00:25:31,159 --> 00:25:33,799
AT THE END OF THE DAY IT'S NOT
THAT DIFFICULT FOR US.

478
00:25:33,799 --> 00:25:37,250
WE AUTOMATE A LOT ON THE GROUND
SYSTEM.

479
00:25:37,250 --> 00:25:41,049
IT'S AN AUTO SEQUENCE, A
COMPUTER THAT TAKES OVER ON THE

480
00:25:41,049 --> 00:25:42,049
GROUND.

481
00:25:42,049 --> 00:25:43,910
YOU PUSH THE BUTTON.

482
00:25:43,910 --> 00:25:49,100
THE COMPUTER SIN KRON SIZES AT
T-MINUS 10 THE LAUNCH TIME SO AT

483
00:25:49,100 --> 00:25:52,770
THAT MOMENT WE'RE HANDS OFF.

484
00:25:52,770 --> 00:25:54,542
AND IT COUNTS DOWN, AND IT
LAUNCHES AT THAT EXACT SECOND.

485
00:25:54,542 --> 00:25:56,630
IT'S NOT THAT DIFFICULT.

486
00:25:56,630 --> 00:26:01,080
AND TEN SECONDS LATER, THERE

WOULD BE NO BENEFIT FOR US TO

487
00:26:01,080 --> 00:26:03,860
HAVE THE ABILITY TO STOP AND
SAY, NO I WANT TO GO THIS TEN

488
00:26:03,860 --> 00:26:05,789
SECONDS LATER, I WANT TO DO THIS
TEN SECONDS EARLIER.

489
00:26:05,789 --> 00:26:09,120
IT'S JUST AT THAT POINT IN TIME
IT'S AUTOMATIC BASICALLY.

490
00:26:09,120 --> 00:26:12,250
IT SOUNDS DRAMATIC, HOWEVER.

491
00:26:12,250 --> 00:26:13,250
>> OKAY.

492
00:26:13,250 --> 00:26:14,250
>> IT'S VERY COMMON.

493
00:26:14,250 --> 00:26:17,880
ALL OF THE VEHICLES THAT FLY TO
A POINT IN†-- THEY'RE TRYING TO

494
00:26:17,880 --> 00:26:22,559
CHASE SOMETHING THAT'S MOVING IN
SPACE, BECAUSE YOU DON'T HAVE

495
00:26:22,559 --> 00:26:26,000
INFINITE PERFORMANCE AND YOU
TYPICALLY LOAD UP YOUR VEHICLE

496
00:26:26,000 --> 00:26:29,370
AS MUCH AS YOU CAN, SO IN
SHUTTLE WE HAD FIVE†-- ABOUT A

497

00:26:29,370 --> 00:26:30,370
FIVE MINUTE WINDOW.

498
00:26:30,370 --> 00:26:32,130
THE SOYUZ HAS A 10-SECOND
WINDOW.

499
00:26:32,130 --> 00:26:34,399
THEY'RE VERY, VERY SHORT WINDOWS
WHEN YOU'RE TRYING TO

500
00:26:34,399 --> 00:26:35,509
RENDEZVOUS.

501
00:26:35,509 --> 00:26:40,280
>> WE HAVE A QUESTION BACK HERE?

502
00:26:40,280 --> 00:26:43,580
>> I'M DAVID LEE WITH NASA
SOCIAL, AND MY QUESTION IS WHERE

503
00:26:43,580 --> 00:26:49,600
KATHY, REGARDING THE WEATHER
AROUND THE BARGE FOR TRYING TO

504
00:26:49,600 --> 00:26:53,760
LAND FIRST STAGE, DO YOU KNOW
WHAT WE CAN EXPECT FOR THAT DAY?

505
00:26:53,760 --> 00:26:56,850
>> WE†--
>> AN ISSUE?

506
00:26:56,850 --> 00:26:58,529
>> WE'RE NOT LOOKING FOR ISSUES.

507
00:26:58,529 --> 00:27:01,440
WE MAY SEE SOME ISOLATED SHOWERS
IN THE AREA BUT THOSE WON'T BE

508
00:27:01,440 --> 00:27:05,559
AN ISSUE AND WE DO EXPECT WINDS
TO BE FROM THE SOUTHWEST,

509
00:27:05,559 --> 00:27:08,280
GUSTING AT 20 MILES PER HOUR.

510
00:27:08,280 --> 00:27:11,850
THE ONLY THING THAT CAUSES IT IS
FIVE TO SEVEN FOOT SEAS BUT NONE

511
00:27:11,850 --> 00:27:16,619
OF THOSE ARE CONSTRAINTS FOR
LANDING.

512
00:27:16,619 --> 00:27:20,190
>> THE MAXIMUM WEATHER IS REALLY
PRETTY HIGH ON THAT DRONE SHIP.

513
00:27:20,190 --> 00:27:25,679
KEEP IN MIND THE PRIMARY MISSION
IS DRAGON SPACE STATION SUPPLY,

514
00:27:25,679 --> 00:27:26,880
AND THAT IS ON THE SIDE.

515
00:27:26,880 --> 00:27:29,950
SO OBVIOUSLY THE WEATHER FOR A
LAUNCH IS MUCH MORE IMPORTANT

516
00:27:29,950 --> 00:27:32,429
THAN THE WEATHER FOR LANDING.

517
00:27:32,429 --> 00:27:33,429
>> OKAY.

518
00:27:33,429 --> 00:27:35,190
WE HAVE ANOTHER QUESTION ON THE
PHONE.

519
00:27:35,190 --> 00:27:39,649
FROM STEVEN CLARK OF NASA SPACE
FLIGHT NOW.

520
00:27:39,649 --> 00:27:43,120
>> HI, STEVEN CLARK WITH SPACE
FLIGHT NOW.

521
00:27:43,120 --> 00:27:44,289
A COUPLE OF QUESTIONS.

522
00:27:44,289 --> 00:27:49,870
FIRST, FOR HANS, WHAT'S NEXT
AFTER THIS MISSION?

523
00:27:49,870 --> 00:27:51,980
I KNOW YOU HAVE JASON 3, BUT
WHAT ARE YOUR NEXT COUPLE OF

524
00:27:51,980 --> 00:27:54,409
LAUNCHES AT THE CAPE?

525
00:27:54,409 --> 00:27:55,669
AND FOR MR.†SUFFREDINI, A
COUPLE, FIRST DO YOU HAVE THE

526
00:27:55,669 --> 00:28:01,490
COST OF THE IDA OR BOTH IDAS,
AND ALSO, YOU HAVE TWO CARGO

527
00:28:01,490 --> 00:28:03,649
MISSIONS GOING UP TO THE STATION
THIS WEEK.

528
00:28:03,649 --> 00:28:06,450
HOW MUCH DOES THIS RELIEVE THE
PRESSURE ON YOUR SUPPLY CHAIN

529

00:28:06,450 --> 00:28:08,220
AFTER LOSING ORBIT THREE IN THE
PROCESS.

530
00:28:08,220 --> 00:28:09,971
I KNOW YOU HAVE CONSUMABLES
UNTIL OCTOBER BUT YOU'RE TRYING

531
00:28:09,971 --> 00:28:13,110
TO GET BACK TO A SIX-MONTH
PADDING IF I UNDERSTAND.

532
00:28:13,110 --> 00:28:19,960
WHERE DOES THIS GET YOU WITH
THESE TWO DELIVERIES COMING UP?

533
00:28:19,960 --> 00:28:23,390
THANKS A LOT.

534
00:28:23,390 --> 00:28:31,049
>> SO, IN TERMS OF THE UPCOMING
LAUNCHES, I†-- YOU KNOW, I'M

535
00:28:31,049 --> 00:28:34,840
ACTUALLY WORKING VERY HARD ON
THIS ONE ON SUNDAY.

536
00:28:34,840 --> 00:28:39,330
SO FOR ME, IT IS HARD TO LOOK
MUCH BEYOND THAT.

537
00:28:39,330 --> 00:28:43,460
BUT, THIS IS†-- THE NUMBERS ARE
OUT OF ORDER.

538
00:28:43,460 --> 00:28:45,700
BUT RIGHT NOW THE NUMBERS
PRESENT AND THE VEHICLE LEAVES

539
00:28:45,700 --> 00:28:49,740

THE FACTORY, BASICALLY, AFTER
THAT YOU'RE RIGHT, IT'S 19 OR

540
00:28:49,740 --> 00:28:52,539
JASON 3 FROM BRANDENBURG IS
GOING TO BE EXCITING.

541
00:28:52,539 --> 00:28:55,300
MUCH FURTHER COMMUTE FOR ME.

542
00:28:55,300 --> 00:29:06,130
AND THEN WE HAVE THE NEXT ONE IS
21, IS STS-9, WHICH IS ONE OF

543
00:29:06,130 --> 00:29:08,990
OUR STANDARD LAUNCH PROFILES BY
NOW.

544
00:29:08,990 --> 00:29:16,649
AND THEN AFTER THAT COMES CRS-8
OR SPACEX-8 OR I BELIEVE CRS-9

545
00:29:16,649 --> 00:29:18,049
SHORTLY AFTER THAT.

546
00:29:18,049 --> 00:29:21,480
SO IT'S GOING TO BE A WHOLE
SLOT†-- A WHOLE BUNCH OF

547
00:29:21,480 --> 00:29:23,059
LAUNCHES LATER THIS YEAR.

548
00:29:23,059 --> 00:29:24,990
YOU'RE GOING TO BE VERY BUSINESS
IS.

549
00:29:24,990 --> 00:29:29,100
AND I'M CERTAINLY LOOKING
FORWARD TO MANY, MANY FLIGHTS

550
00:29:29,100 --> 00:29:34,869
OVER HERE, AND LAUNCHES FROM THE
CAPE.

551
00:29:34,869 --> 00:29:36,200
>> THE COST TO IDA.

552
00:29:36,200 --> 00:29:38,669
I DON'T REMEMBER IDA OFF THE TOP
OF MY HEAD.

553
00:29:38,669 --> 00:29:43,389
WE HAD TO DESIGN BOTH THE
DOCKING SYSTEM, WHICH IS OF

554
00:29:43,389 --> 00:29:48,450
COURSE MUCH MORE COMPLICATED
THAN THE DOCKING ADAPTOR ON ISS,

555
00:29:48,450 --> 00:29:52,230
WHICH DOESN'T HAVE TO HAVE THE
SAME FUNCTIONALITY AS RECEIVING

556
00:29:52,230 --> 00:29:57,360
A DOCKING SYSTEM, WHICH ABSORBS
THE SHOCK AND PULLS THE

557
00:29:57,360 --> 00:29:59,870
SPACECRAFT IN FOR THE HARD DOCK.

558
00:29:59,870 --> 00:30:01,299
SO IT'S MUCH SIMPLER.

559
00:30:01,299 --> 00:30:05,399
THE ENTIRE SYSTEM HAS BEEN OVER
$100 MILLION IN TERMS OF

560
00:30:05,399 --> 00:30:06,490
DEVELOPMENT.

561
00:30:06,490 --> 00:30:08,019
BUT I COULDN'T TELL YOU WHAT
PART OF THAT.

562
00:30:08,019 --> 00:30:12,809
A MUCH SMALLER PART IS THE COST
OF THE IDA ITSELF.

563
00:30:12,809 --> 00:30:16,049
IN TERMS OF LOGISTICS, YOU SAID
IT RIGHT.

564
00:30:16,049 --> 00:30:17,679
WE'RE GOOD TO OCTOBER.

565
00:30:17,679 --> 00:30:21,649
SPACEX-7 GETS US TOWARDS THE END
OF THE YEAR.

566
00:30:21,649 --> 00:30:23,370
WE'RE GETTING PRETTY CLOSE TO
SIX MONTHS.

567
00:30:23,370 --> 00:30:25,950
SIX MONTHS ISN'T A REQUIREMENT.

568
00:30:25,950 --> 00:30:28,100
IT'S NOT A HARD REQUIREMENT.

569
00:30:28,100 --> 00:30:32,389
WE DON'T STOP BRINGING OTHER
SUPPLIES TO ISS IN ORDER TO GET

570
00:30:32,389 --> 00:30:33,389
BACK UP TO SIX MONTHS.

571
00:30:33,389 --> 00:30:36,519
WE'RE TRYING TO GET THERE WHILE

STILL CARRYING THE SPARE PARTS

572
00:30:36,519 --> 00:30:40,649
WE NEED, AND OF COURSE ALL THE
RESEARCH WE NEED TO FLY.

573
00:30:40,649 --> 00:30:43,940
BUT I THINK BY THE END OF THE
YEAR, THAT WE'LL BE KIND OF

574
00:30:43,940 --> 00:30:47,759
CLOSER TO WHERE WE'D LIKE TO BE,
WHICH IS CLOSER TO ABOUT FIVE OR

575
00:30:47,759 --> 00:30:49,350
SIX MONTHS.

576
00:30:49,350 --> 00:30:52,360
AND WE'LL TRY TO STAY THERE, AND
GRADUALLY GET OURSELVES ALL THE

577
00:30:52,360 --> 00:30:53,669
WAY BACK UP TO SIX MONTHS.

578
00:30:53,669 --> 00:30:55,970
BUT YOU CAN SEE WHY WE DO THAT.

579
00:30:55,970 --> 00:31:01,070
WE'VE HAD REALLY NO IMPACT TO
RESEARCH AT ALL.

580
00:31:01,070 --> 00:31:04,840
GIVEN BOTH THE ORB 3 ANOMALY AND
THIS RECENT PROGRESS ANOMALY.

581
00:31:04,840 --> 00:31:07,860
SO THAT'S THE POINT WHY WE DO
THIS.

582

00:31:07,860 --> 00:31:09,230
SPACE FLIGHT IS VERY, VERY
CHALLENGING.

583
00:31:09,230 --> 00:31:13,019
WE EXPECT OCCASIONALLY THAT
THINGS WON'T GO QUITE RIGHT.

584
00:31:13,019 --> 00:31:14,179
THAT'S NOT TOMORROW.

585
00:31:14,179 --> 00:31:16,559
BUT IN GENERAL THAT CAN HAPPEN.

586
00:31:16,559 --> 00:31:20,150
SO WE TRY TO PROTECT OURSELVES
FROM THAT.

587
00:31:20,150 --> 00:31:22,809
>> JARED WITH THE MARS SOCIETY
AND SPACE FLIGHT INSIDER.

588
00:31:22,809 --> 00:31:24,419
I HAVE A QUESTION FOR HANS.

589
00:31:24,419 --> 00:31:26,570
COULD YOU TALK TO US A LITTLE
BIT ABOUT THE CHALLENGES OR

590
00:31:26,570 --> 00:31:29,539
CONCERNS IN BRINGING THE
FALCON-9 FIRST STAGE BACK IN TO

591
00:31:29,539 --> 00:31:32,170
JACKSONVILLE HARBOR,
PARTICULARLY SINCE THE DRONE

592
00:31:32,170 --> 00:31:35,230
SHIP DOCKS NEAR A FAIRLY ACTIVE
CRUISE SHIP PORT?

593
00:31:35,230 --> 00:31:40,830
>> I DON'T THINK I CAN TALK A
LOT TO THAT, FRANKLY.

594
00:31:40,830 --> 00:31:43,580
PART OF THIS, IT GOES BACK TO
PRIMARY MISSION, SECONDARY

595
00:31:43,580 --> 00:31:44,580
MISSION, RIGHT?

596
00:31:44,580 --> 00:31:50,190
SO I DEDICATE 100% OF MY TIME TO
THE PRIMARY MISSION.

597
00:31:50,190 --> 00:31:54,509
AND I'M WITH MISSION ASSURANCE
SO THAT IS MY MAIN JOB.

598
00:31:54,509 --> 00:31:58,270
I'VE BEEN PAYING MORE AND MORE
ATTENTION TO THE LANDING

599
00:31:58,270 --> 00:32:02,399
ATTEMPTS, TOO, BECAUSE THAT
OBVIOUSLY YOU WANT TO GET THIS

600
00:32:02,399 --> 00:32:04,889
DONE IN THE LONG RUN, SO IT IS
IMPORTANT.

601
00:32:04,889 --> 00:32:08,019
BUT I HAVEN'T LOOKED TOO MUCH AT
THE DETAILS IN TERMS OF TOWING

602
00:32:08,019 --> 00:32:11,990
IT BACK TO OR BRINGING IT BACK
TO JACKSONVILLE.

603
00:32:11,990 --> 00:32:17,000
I'M PRETTY SURE WE WILL DO THIS
SUCH THAT IT DOESN'T COLLIDE

604
00:32:17,000 --> 00:32:26,490
WITH CRUISE SHIPS, OR ANYTHING
ELSE.

605
00:32:26,490 --> 00:32:29,419
I KNOW THAT THE CRUISE SHIPS ARE
NEXT TO IT AND THEY'RE REALLY

606
00:32:29,419 --> 00:32:31,210
WATCHING.

607
00:32:31,210 --> 00:32:36,010
I DON'T THINK THAT WILL BE THE
CASE WHEN THE DRONE SHIP COMES

608
00:32:36,010 --> 00:32:39,159
BACK.

609
00:32:39,159 --> 00:32:41,620
>> THIS IS A BRIEF QUESTION FOR
KATHY.

610
00:32:41,620 --> 00:32:44,440
COMING FROM SOUTHERN CALIFORNIA,
I'M STRUCK BY THE WEATHER HERE.

611
00:32:44,440 --> 00:32:47,889
YOU MUST HAVE A REALLY DIFFICULT
JOB.

612
00:32:47,889 --> 00:32:51,029
I KNOW THAT THE LAUNCH SITE WAS
HISTORICALLY SELECTED FOR MANY

613
00:32:51,029 --> 00:32:52,029

DIFFERENT REASONS.

614
00:32:52,029 --> 00:32:55,200
IF YOU COULD MOVE IT ANYWHERE
ELSE, WHERE WOULD YOU MOVE IT?

615
00:32:55,200 --> 00:32:59,049
>> WELL, ACTUALLY, YOU KNOW,
THIS ISN'T AS BAD OF A LOCATION

616
00:32:59,049 --> 00:33:00,049
AS IT SOUNDS.

617
00:33:00,049 --> 00:33:04,259
BECAUSE COLD TEMPERATURES ARE
REALLY BAD FOR†-- ARE NOT VERY

618
00:33:04,259 --> 00:33:07,970
GOOD FOR ROCKET FUEL, AND ROCKET
COMPONENTS.

619
00:33:07,970 --> 00:33:11,940
SO IN ACTUALITY WE DO HAVE TO
PROTECT FOR LIGHTNING AROUND

620
00:33:11,940 --> 00:33:12,940
HERE.

621
00:33:12,940 --> 00:33:15,570
BUT WE ALSO GET THE BENEFIT OF
NOT HAVING THE COLD TEMPERATURES

622
00:33:15,570 --> 00:33:17,340
THAT YOU CAN HAVE IN OTHER
LOCATIONS.

623
00:33:17,340 --> 00:33:20,880
SO IF YOU COULD FIND A PLACE
THAT WAS WARM, WITH NO

624
00:33:20,880 --> 00:33:22,740
LIGHTNING, THEN YOU'D BE GREAT.

625
00:33:22,740 --> 00:33:24,399
BUT, YOU KNOW, YOU HAVE TO
STRIKE THAT BALANCE.

626
00:33:24,399 --> 00:33:26,960
AND THEN ALSO STILL BE ABLE TO
HAVE THE ACCESS THAT YOU HAVE

627
00:33:26,960 --> 00:33:31,889
HERE AT THE CAPE AND KSC FROM
WATER AND LAND.

628
00:33:31,889 --> 00:33:35,429
I KNOW PEOPLE TALK ABOUT OUR
HURRICANES AND OUR THUNDERSTORMS

629
00:33:35,429 --> 00:33:37,690
AND WE CERTAINLY, YOU CAN SEE IT
WHEN YOU DRIVE AROUND THE LAUNCH

630
00:33:37,690 --> 00:33:40,370
PAD, YOU SEE THE LIGHTNING
PROTECTIONS THAT WE HAVE, AND WE

631
00:33:40,370 --> 00:33:43,399
DO A LOT OF MITIGATE THAT AND WE
ALSO PROVIDE LIGHTNING REPORTS

632
00:33:43,399 --> 00:33:47,570
AFTER LIGHTNING EVENTS SO THAT
THE†-- OUR CUSTOMERS KNOW WHAT

633
00:33:47,570 --> 00:33:50,419
ACTUALLY OCCURRED,
CLOUD-TO-GROUND STROKEWISE WHEN

634

00:33:50,419 --> 00:33:51,720
IT COMES TO LIGHTNING.

635
00:33:51,720 --> 00:33:53,370
SO WE DO A LOT TO MITIGATE.

636
00:33:53,370 --> 00:34:02,870
BUT OUR WARM TEMPERATURES, I
THINK, OFFSET ALL OF THAT.

637
00:34:02,870 --> 00:34:06,350
>> BACK THERE AND THEN NEXT TO
YOU.

638
00:34:06,350 --> 00:34:10,310
>> HI, I'M BRENDA FROM WESTERN
AUSTRALIA, PERTH.

639
00:34:10,310 --> 00:34:13,360
I WORK WITH KIDS AND I'VE GOT A
BUNCH OF QUESTIONS THEY'VE ASKED

640
00:34:13,360 --> 00:34:14,360
ME TO ASK.

641
00:34:14,360 --> 00:34:16,950
THIS ONE IS FOR YOU, KATHY.

642
00:34:16,950 --> 00:34:19,930
ONE OF THE GREAT EIGHT WANTS TO
KNOW WHAT IS A MAXIMUM TIME

643
00:34:19,930 --> 00:34:22,950
FRAME THAT YOU WOULD BE ABLE TO
DETERMINE A LAUNCH?

644
00:34:22,950 --> 00:34:26,660
SO HOW MANY DAYS OUT CAN YOU
ACTUALLY DETERMINE WHEN A LAUNCH

645
00:34:26,660 --> 00:34:30,960
IS, AND IS THERE ANYTHING THAT
CAN GO WRONG IN THAT PROCESS?

646
00:34:30,960 --> 00:34:34,170
>> WELL, THAT'S A GREAT QUESTION
FROM THEM.

647
00:34:34,170 --> 00:34:37,370
WE USUALLY FEEL PRETTY GOOD
WITHIN THE FIRST THREE DAYS WE

648
00:34:37,370 --> 00:34:40,220
FEEL REALLY GOOD FORECASTING
THREE DAYS OUT.

649
00:34:40,220 --> 00:34:42,170
WE FEEL CONFIDENT GOING OUT TO
FIVE DAYS.

650
00:34:42,170 --> 00:34:45,370
ONCE YOU START GETTING BEYOND
FIVE DAYS WE PUT A LOT OF

651
00:34:45,370 --> 00:34:47,640
CAVEATS INTO THAT FORECAST.

652
00:34:47,640 --> 00:34:51,260
IF SOMEBODY WANTS TO KNOW ABOUT
NEXT YEAR, OR YOU KNOW, A

653
00:34:51,260 --> 00:34:53,890
CERTAIN TIME OF YEAR, WE HAVE A
LOT OF GOOD CLIMATOLOGY

654
00:34:53,890 --> 00:34:55,940
INFORMATION THAT WE CAN PROVIDE.

655
00:34:55,940 --> 00:34:58,270

SO WE CAN TELL THEM THE BEST
TIME OF YEAR TO LAUNCH, THE BEST

656
00:34:58,270 --> 00:34:59,440
TIME OF DAY TO LAUNCH.

657
00:34:59,440 --> 00:35:02,310
WE EVEN HAVE HOURLY DATA THAT
SAYS WHEN IS THE MOST LIKELY

658
00:35:02,310 --> 00:35:03,310
TIME.

659
00:35:03,310 --> 00:35:04,740
THIS TIME OF YEAR WE'RE GOING TO
SEE THUNDERSTORMS OR LIGHTNING

660
00:35:04,740 --> 00:35:06,000
IN THE AREA.

661
00:35:06,000 --> 00:35:09,400
SO FOR IMMEDIATE FORECASTS,
THOUGH, I USUALLY TELL PEOPLE,

662
00:35:09,400 --> 00:35:12,050
WE CAN GIVE YOU A REAL DETAILED
FORECAST OUT THREE DAYS, EVEN

663
00:35:12,050 --> 00:35:13,350
DOWN TO HOURS.

664
00:35:13,350 --> 00:35:17,270
BUT THEN OUT TO FIVE DAYS, WE
KIND OF LIKE TO GO, MORNING IS

665
00:35:17,270 --> 00:35:20,121
GOOD, AFTERNOON IS GOOD, AND
THEN BEYOND THAT WE SORT OF JUST

666

00:35:20,121 --> 00:35:22,790
START GETTING MORE INTO
CLIMATOLOGY OR OVERALL GENERAL

667
00:35:22,790 --> 00:35:25,850
WEATHER PATTERNS FOR THIS AREA.

668
00:35:25,850 --> 00:35:27,840
>> HI.

669
00:35:27,840 --> 00:35:31,000
I WAS HOPING YOU COULD DESCRIBE
THE DIFFERENCE BETWEEN BERTHING

670
00:35:31,000 --> 00:35:33,130
AND DOCKING ON THE SPACE
STATION.

671
00:35:33,130 --> 00:35:35,461
SOME OF THE ADVANTAGES,
DISADVANTAGES, ASSOCIATED WITH

672
00:35:35,461 --> 00:35:36,461
EACH METHOD.

673
00:35:36,461 --> 00:35:37,461
WHAT THEY MIGHT BE USED FOR.

674
00:35:37,461 --> 00:35:39,970
AND HANS, I'M FROM JACKSONVILLE,
IT'S A VERY SMALL CRUISE SHIP SO

675
00:35:39,970 --> 00:35:41,750
YOU GUYS SHOULD BE FINE.

676
00:35:41,750 --> 00:35:43,810
>> THANK YOU.

677
00:35:43,810 --> 00:35:46,890

>> ADVANTAGES AND DISADVANTAGES.

678
00:35:46,890 --> 00:35:52,200
WELL THEY BOTH HAVE ADVANTAGES
AND DISADVANTAGES.

679
00:35:52,200 --> 00:35:55,880
SO WE HAVE THIS CONVERSATION ALL
THE TIME.

680
00:35:55,880 --> 00:36:01,050
FROM A LOGISTICS STANDPOINT THE
BIGGEST HOLE I CAN GET TO BRING

681
00:36:01,050 --> 00:36:03,840
SPARE PARTS THROUGH IS WHAT I
LIKE THE BEST.

682
00:36:03,840 --> 00:36:06,650
AND SO BERTHING REALLY BRINGS US
THAT BIG ADVANTAGE.

683
00:36:06,650 --> 00:36:11,130
THAT'S A MUCH LARGER HOLE TO GET
OBJECTS THROUGH THAN IF YOU DOCK

684
00:36:11,130 --> 00:36:12,860
BY THE VERY NATURE OF THE BEAST.

685
00:36:12,860 --> 00:36:17,011
BERTHING, ALSO, FROM A BLOOD
PRESSURE STANDPOINT FOR A

686
00:36:17,011 --> 00:36:19,460
PROGRAM MANAGER BERTHING IS A
LITTLE BETTER BECAUSE THE

687
00:36:19,460 --> 00:36:22,690
SPACECRAFT JUST SNEAKS UP AND
SNEAKS UP AND ABOUT TEN METERS

688
00:36:22,690 --> 00:36:23,690
AWAY IT STOPS.

689
00:36:23,690 --> 00:36:25,990
AND YOU'RE JUST SITTING THERE
STARING AT IT GOING OH, GOOD

690
00:36:25,990 --> 00:36:28,270
IT'S NOT COMING ANY CLOSER AND
YOU GRAB IT WITH THE ARM AND

691
00:36:28,270 --> 00:36:29,800
ATTACH IT AND IT'S ALL GOOD.

692
00:36:29,800 --> 00:36:31,230
DOCKING YOU GOT TO FLY IT RIGHT
IN.

693
00:36:31,230 --> 00:36:35,140
IN FACT IF YOU GO TOO SLOW
THAT'S NOT GOOD EITHER BECAUSE

694
00:36:35,140 --> 00:36:38,200
YOU'VE GOT TO KEEP THE RIGHT
BASICALLY ENERGY ON THE

695
00:36:38,200 --> 00:36:40,700
SPACECRAFT SO IT FOLLOWS THE
PATH YOU WANT IT TO FOLLOW.

696
00:36:40,700 --> 00:36:44,140
SO IT DOES HAVE TO APPROACH AT
SOME SPEED AND AT SOME POINT YOU

697
00:36:44,140 --> 00:36:46,350
DON'T HAVE ANY OTHER CHOICE
YOU'VE GOT TO KEEP GOING THE

698

00:36:46,350 --> 00:36:47,900
REST OF THE WAY.

699
00:36:47,900 --> 00:36:50,210
NOW I SAY THAT SORT OF
FACETIOUSLY.

700
00:36:50,210 --> 00:36:53,050
THE WAY THE SYSTEMS ARE SET UP
BY THE TIME YOU GET TO THE POINT

701
00:36:53,050 --> 00:36:56,710
WHERE IT'S REALLY A POINT OF NO
RETURN THE ODDS ARE VERY, VERY

702
00:36:56,710 --> 00:36:59,630
SMALL THAT ANYTHING CAN GO BAD
ENOUGH WRONG THAT YOU WON'T

703
00:36:59,630 --> 00:37:01,080
COMPLETE YOUR DOCKING.

704
00:37:01,080 --> 00:37:02,960
BUT YOU DO HAVE MORE ENERGY IN
THAT CASE.

705
00:37:02,960 --> 00:37:07,010
IN A BERTHING CASE, YOU'RE
BASICALLY YOU'RE DEALT THE

706
00:37:07,010 --> 00:37:11,490
VELOCITY IS ZERO BY THE TIME YOU
GET TO TEN METERS AWAY.

707
00:37:11,490 --> 00:37:14,770
AND FOR DOCKING YOU HAVE TO HAVE
A DELTA VELOCITY IN ORDER TO

708
00:37:14,770 --> 00:37:17,560
ACTUALLY DOCK.

709
00:37:17,560 --> 00:37:20,650
THE ADVANTAGE OF DOCKING CAN BE
DONE IN AUTOMATED FASHION.

710
00:37:20,650 --> 00:37:23,640
SO IF YOU HAVE A NEED TO GET A
SPACECRAFT THERE FIRST, WHICH

711
00:37:23,640 --> 00:37:29,840
THERE ARE A LOT OF SCENARIOS,
PARTICULARLY WITH FUTURE WORK

712
00:37:29,840 --> 00:37:32,430
WE'RE CONSIDERING FOR MARS AND
WHATNOT, YOU WANT TO PUT YOUR

713
00:37:32,430 --> 00:37:35,070
LOGISTICS THERE IN ADVANCE AND
THINGS LIKE THAT, YOU'RE GOING

714
00:37:35,070 --> 00:37:36,070
TO WANT TO DOCK.

715
00:37:36,070 --> 00:37:39,150
YOU'RE GOING TO WANT TO HAVE
THIS WAY TO DOCK AUTONOMOUSLY,

716
00:37:39,150 --> 00:37:41,300
AND TODAY WE DON'T KNOW HOW
TO†-- I DON'T WANT TO SAY WE

717
00:37:41,300 --> 00:37:42,320
DON'T KNOW HOW TO.

718
00:37:42,320 --> 00:37:46,400
WE HAVEN'T DEVISED A WAY TO DO
BERTHING IN AN AUTOMATED FASHION

719

00:37:46,400 --> 00:37:48,650
ALTHOUGH IT'S SOMETHING THAT
WE'RE TALKING ABOUT.

720
00:37:48,650 --> 00:37:51,460
THOSE ARE THE BIG TWOES.

721
00:37:51,460 --> 00:37:56,030
>> DO WE HAVE ANY MORE QUESTIONS
IN THE ROOM?

722
00:37:56,030 --> 00:38:00,060
ANOTHER QUESTION FROM THE
STUDENTS?

723
00:38:00,060 --> 00:38:01,430
>> SURE.

724
00:38:01,430 --> 00:38:02,890
>> THIS ONE IS FOR HANS.

725
00:38:02,890 --> 00:38:04,870
I'M GOING TO TAKE A CHANCE.

726
00:38:04,870 --> 00:38:09,890
ONE OF THE KIDS HAVE ASKED IN
REGARDS TO SPACEX DO YOU GUYS DO

727
00:38:09,890 --> 00:38:15,030
INTERNSHIP FOR YOUNG KIDS TO
COME THROUGH TO EXPERIENCE SPACE

728
00:38:15,030 --> 00:38:16,030
TRAVEL PROGRAMS?

729
00:38:16,030 --> 00:38:17,980
DO YOU HAVE SOMETHING LIKE THAT
IN PLACE?

730

00:38:17,980 --> 00:38:20,120
IS THAT SOMETHING YOU ARE GOING
TO HAVE IN THE FUTURE?

731
00:38:20,120 --> 00:38:22,980
>> I WOULD REFER THEM TO THE VET
SIDE FRANKLY.

732
00:38:22,980 --> 00:38:26,520
I KNOW WE SOMETIMES DO SPECIAL
PROGRAMS.

733
00:38:26,520 --> 00:38:30,850
GENERALLY WE WANT OUR INTERNS TO
HAVE SOME BASIC KNOWLEDGE IN

734
00:38:30,850 --> 00:38:32,880
MATH AND SCIENCE.

735
00:38:32,880 --> 00:38:36,020
I KNOW WE HAVE SOME SPECIAL
PROGRAMS.

736
00:38:36,020 --> 00:38:41,270
I WOULD REFER TO THE SIDE AND
SEE WHAT'S ON THERE OR SEND AN

737
00:38:41,270 --> 00:38:43,020
E-MAIL TO EMILY.

738
00:38:43,020 --> 00:38:50,180
>> NOS IS AHAS LOTS AND LOTS OF
EDUCATION PROGRAMS IF YOU GO TO

739
00:38:50,180 --> 00:38:52,010
NASA.GOV, SPECIAL EDUCATION.

740
00:38:52,010 --> 00:38:53,110
QUESTION HERE?

741
00:38:53,110 --> 00:38:54,210
>>> HI.

742
00:38:54,210 --> 00:38:58,090
KYLE BROWN U.S. LAUNCH REPORT.

743
00:38:58,090 --> 00:38:59,180
THIS ONE IS FOR HANS.

744
00:38:59,180 --> 00:39:02,630
CAN YOU SPEAK ABOUT THE
DIFFICULTIES YOU INCURRED WHEN

745
00:39:02,630 --> 00:39:05,240
INSTALLING THE INTERNATIONAL
DOCKING BATCH ONTO THE DRAGON

746
00:39:05,240 --> 00:39:07,170
CAPSULE?

747
00:39:07,170 --> 00:39:11,340
>> I DON'T THINK THERE WERE ANY.

748
00:39:11,340 --> 00:39:14,860
I MEAN, I GOT LOTS OF REPORTS.

749
00:39:14,860 --> 00:39:21,260
I DON'T RECALL, THERE WAS NO
EVENT RELATED TO THE ADAPTOR.

750
00:39:21,260 --> 00:39:26,400
SO MY ASSUMPTION RIGHT NOW IS IT
WENT PRETTY FLAWLESS.

751
00:39:26,400 --> 00:39:29,930
I MUST SAY, REGARDING THE
DOCKING ADOPTER, THIS IS

752

00:39:29,930 --> 00:39:31,069
ACTUALLY PRETTY COOL.

753
00:39:31,069 --> 00:39:35,570
BECAUSE IT DOES PLAY RIGHT IN TO
OUR NEXT CREW DRAGON PROGRAM.

754
00:39:35,570 --> 00:39:39,000
IT IS SOMETHING WE BRING UP FOR
OUR OWN FUTURE.

755
00:39:39,000 --> 00:39:41,740
AND SO WE'RE REALLY MOTIVATED TO
BRING THIS UP.

756
00:39:41,740 --> 00:39:46,110
I PERSONALLY HAVE BEEN PUSHING
EXTERNAL PAYLOADS A LOT.

757
00:39:46,110 --> 00:39:48,140
BIG PIECES THAT BUILD UP A
STATION.

758
00:39:48,140 --> 00:39:53,880
SO I REALLY THINK IT'S PRETTY
EXCITING TO DO THIS.

759
00:39:53,880 --> 00:39:55,750
>> ANOTHER QUESTION HERE?

760
00:39:55,750 --> 00:39:59,800
>> HANS, YOU MENTIONED, WELL I
JUST HEARD ONE COMMENT ABOUT

761
00:39:59,800 --> 00:40:00,800
BLOOD PRESSURE.

762
00:40:00,800 --> 00:40:04,610
BUT WITH EACH ONE OF THESE
SPECIFIC MISSIONS HAVING A†--

763
00:40:04,610 --> 00:40:06,980
YOU HAVE A REAL SPECIFIC ASPECT
TO THE MISSION, BUT EACH ONE IS

764
00:40:06,980 --> 00:40:10,100
ALSO EXPERIMENTAL AND JUST SPACE
TRAVEL IN GENERAL, AND GETTING

765
00:40:10,100 --> 00:40:13,300
THINGS UP, AND HOW THEY'RE
COMING DOWN, WHAT'S YOUR ANXIETY

766
00:40:13,300 --> 00:40:19,290
LEVEL LIKE GOING IN TO EACH AND
EVERY LAUNCH?

767
00:40:19,290 --> 00:40:25,860
>> I THINK MY ANXIETY LEVEL†--
YOU KNOW, THIS IS THE SEVENTH

768
00:40:25,860 --> 00:40:31,390
TIME, 20 LAUNCHES, I'VE BEEN ON
EVERY LAUNCH AT SPACEX SO FAR.

769
00:40:31,390 --> 00:40:33,310
I'M STILL EXCITED ABOUT IT.

770
00:40:33,310 --> 00:40:36,620
I'M STILL†-- I STILL GO THROUGH
A LOT OF DATA.

771
00:40:36,620 --> 00:40:38,760
I WOULD USE VERY CAREFULLY.

772
00:40:38,760 --> 00:40:43,960
BUT MY OVERALL BLOOD PRESSURE
DID GO DOWN OVER TIME.

773

00:40:43,960 --> 00:40:47,920
ON THIS ONE IN PARTICULAR, I
HAVE A FAIRLY HEALTHY BLOOD

774
00:40:47,920 --> 00:40:49,330
PRESSURE OVERALL.

775
00:40:49,330 --> 00:40:52,140
>> ONE FINAL QUESTION.

776
00:40:52,140 --> 00:40:53,140
>> HI.

777
00:40:53,140 --> 00:40:57,050
JANET HEATON WITH THE NASA
SOCIAL GROUP, J.K.

778
00:40:57,050 --> 00:40:58,050
HEATON ON
TWITTER.

779
00:40:58,050 --> 00:41:01,620
I HAD A QUESTION FROM A TWITTER
FRIEND AND I THINK YOU TOUCHED

780
00:41:01,620 --> 00:41:04,930
ON THIS A LITTLE BIT MIKE, BUT
HE'S ASKING IS THERE A DESIGN

781
00:41:04,930 --> 00:41:08,490
BOARD PROGRESS TOWARDS THE
UNIVERSAL DOCKING APERTURE WHERE

782
00:41:08,490 --> 00:41:11,130
THERE WILL BE NO MORE ADAPTORS?

783
00:41:11,130 --> 00:41:18,280
>> OKAY I'M NOT SURE I
UNDERSTOOD THE QUESTION.

784
00:41:18,280 --> 00:41:24,310
BUT, I THINK I MIGHT BE ABLE TO
ANSWER IT.

785
00:41:24,310 --> 00:41:26,270
BY THE WAY, THIS IS A FAVORITE
TECHNIQUE, RIGHT?

786
00:41:26,270 --> 00:41:29,340
WHEN YOU TAKE THIS TRAINING FOR
MEDIA TRAINING THEY SAY ANSWER

787
00:41:29,340 --> 00:41:34,620
THE QUESTION YOU WANT TO ANSWER.

788
00:41:34,620 --> 00:41:37,430
SO I PROBABLY SHOULD HAVE TOLD
YOU THAT.

789
00:41:37,430 --> 00:41:42,780
AND I ACTUALLY NEVER HAD MEDIA
TRAINING, SO THERE YOU GO.

790
00:41:42,780 --> 00:41:45,300
I REFER TO IT AS THE
INTERNATIONAL DOCKING ADAPTOR

791
00:41:45,300 --> 00:41:48,610
AND WE CALL IT THAT BECAUSE
WE'RE ADAPTING THE APASS TO THIS

792
00:41:48,610 --> 00:41:52,770
NEW ADAPTOR RING AND ESSENTIALLY
IT HAS AN APASS ON ONE SIDE AND

793
00:41:52,770 --> 00:41:57,370
IT HAS THIS NEW INTERFACE THAT
IS COMPATIBLE WITH THE

794

00:41:57,370 --> 00:41:59,920
INTERNATIONAL DOCKING SYSTEM
SPECIFICATION.

795
00:41:59,920 --> 00:42:02,370
SO THAT'S WHY WE CALL AN
ADAPTOR.

796
00:42:02,370 --> 00:42:06,090
WE'RE ADAPTING OUR DOCKING
SYSTEM.

797
00:42:06,090 --> 00:42:10,581
THE FUTURE DOCKING SYSTEMS THAT
WILL DOCK THE SPACE STATION, AND

798
00:42:10,581 --> 00:42:14,860
ANYBODY CAN BUILD I SUSPECT IS
FOR EVERYBODY'S USE IN SPACEX IS

799
00:42:14,860 --> 00:42:19,740
USING IT TO BUILD THEIRS, WE
DESIGNED AND BUILT ONE, AS WELL,

800
00:42:19,740 --> 00:42:23,060
THAT WE'VE†-- THAT WE INTEND TO
USE IN THE FUTURE, AND IT'S

801
00:42:23,060 --> 00:42:25,500
DESIGNED THAT ANYBODY CAN BUILD.

802
00:42:25,500 --> 00:42:28,940
BUT THESE THEN ARE THE DOCKING
SYSTEMS THAT NOT ONLY WILL DOCK

803
00:42:28,940 --> 00:42:32,100
TO STATION, AND WE CALL IT THE
ADAPTOR, BUT CAN DOCK TO OTHER

804
00:42:32,100 --> 00:42:34,000

DOCKING SYSTEMS ON OTHER
SPACECRAFT.

805
00:42:34,000 --> 00:42:37,290
SO WE CALL OURS, THE THING
THAT'S FLYING UP NOW IS VERY

806
00:42:37,290 --> 00:42:39,600
SIMPLE, WE CALL IT AN ADAPTOR
BECAUSE WE'RE ADAPTING WHAT WE

807
00:42:39,600 --> 00:42:42,180
HAVE ON SPACIOUS TO MEET THAT
SPEC.

808
00:42:42,180 --> 00:42:45,000
BUT THE DOCKING SYSTEMS
THEMSELVES ARE MADE TO DOCK WITH

809
00:42:45,000 --> 00:42:46,240
EACH OTHER.

810
00:42:46,240 --> 00:42:48,070
SO MAYBE THAT'S THE CONFUSION.

811
00:42:48,070 --> 00:42:49,110
>> OKAY.

812
00:42:49,110 --> 00:42:52,650
THANK YOU ALL FOR JOINING US
TODAY TO TALK ABOUT PRELAUNCH

813
00:42:52,650 --> 00:42:56,080
PREPARATIONS FOR SUNDAY'S 10:21
A.M.

814
00:42:56,080 --> 00:42:58,150
EASTERN TIME LAUNCH.

815

00:42:58,150 --> 00:43:01,360
PREPARATIONS WILL CONTINUE AND
OUR BRIEFINGS WILL CONTINUE.

816
00:43:01,360 --> 00:43:03,870
WE HAVE ANOTHER BRIEFING
SCHEDULED FOR 2:00 P.M.

817
00:43:03,870 --> 00:43:04,950
TOMORROW
ON SATURDAY.

818
00:43:04,950 --> 00:43:06,400
THAT'S 2:00 P.M.

819
00:43:06,400 --> 00:43:07,400
EASTERN TIME.

820
00:43:07,400 --> 00:43:09,660
WE'LL BE TALKING ABOUT THE
FUTURE OF THE INTERNATIONAL

821
00:43:09,660 --> 00:43:12,360
SPACE STATION, STUDENT SCIENCE,
AND COMMERCIAL CREW.

822
00:43:12,360 --> 00:43:15,850
WE'LL HAVE TWO STUDENTS WHO HAVE
EXPERIMENTS FLYING ABOARD.

823
00:43:15,850 --> 00:43:17,930
THEY'RE MIDDLE SCHOOL STUDENTS
WHO WILL BE JOINING US TO TALK

824
00:43:17,930 --> 00:43:21,750
ABOUT THEIR INVESTIGATION THAT
WILL BE FLYING TO SPACE.

825
00:43:21,750 --> 00:43:23,940
AND WE'LL HAVE MEMBERS OF THE

INTERNATIONAL SPACE STATION

826
00:43:23,940 --> 00:43:27,140
PROGRAM, COMMERCIAL CREW
PROGRAM, AS WELL AS BOEING AND

827
00:43:27,140 --> 00:43:31,760
SPACEX TO TALK ABOUT COMMERCIAL
CREW AND PREPARING FOR U.S.

828
00:43:31,760 --> 00:43:32,760
COMMERCIAL CREW.

829
00:43:32,760 --> 00:43:34,550
SO, JOIN US AT 2:00 P.M.

830
00:43:34,550 --> 00:43:36,610
EASTERN
TIME TOMORROW, AND FOLLOW ALONG