1
00:00:04,200 --> 00:00:05,200
>>> GOOD AFTERNOON.

2
00:00:05,200 --> 00:00:08,760
THIS IS IS THE PRELAUNCH NEWS
CONFERENCE FOR CRS-8.

3
00:00:08,760 --> 00:00:18,650
THE MISSION TO BE LAUNCHED ON
FRIDAY AFTERNOON AT 4:43 P.M.

4
00:00:18,650 --> 00:00:20,950
TO
THE INTERNATIONAL SPACE STATION.

5
00:00:20,950 --> 00:00:26,300
HERE TO DISCUSS THE UPCOMING
LAUNCH AND THE MISSION IS KIRK

6
00:00:26,300 --> 00:00:29,640
SHIREMAN, THE INTERNATIONAL
SPACE STATION PROGRAM MANAGER

7
00:00:29,640 --> 00:00:32,590
FROM NASA'S JOHNSON SPACE
CENTER.

8
00:00:32,590 --> 00:00:36,540
HANS KOENIGSMANN, THE
VICE-PRESIDENT OF FLIGHT

9
00:00:36,540 --> 00:00:41,120
RELIABILITY FOR SPACEX.

10
00:00:41,120 --> 00:00:51,050
KIRT COSTELLO AT NASA'S SPACE
CENTER AND KATHY WINTERS, LAUNCH

11
00:00:51,050 --> 00:00:54,320

WEATHER OFFICER FOR THE 45th
WEATHER SQUADRON.

12
00:00:54,320 --> 00:00:58,469
WE'LL BEGIN FIRST WITH KIRK
SHIREMAN.

13
00:00:58,469 --> 00:00:59,950
>> THANK YOU FOR BEING HERE.

14
00:00:59,950 --> 00:01:01,830
IT'S GREAT TO BE BACK HERE IN
FLORIDA.

15
00:01:01,830 --> 00:01:07,490
I'M REALLY LOOKING FORWARD TO
THE LAUNCH TOMORROW AFTERNOON.

16
00:01:07,490 --> 00:01:10,130
THIS VEHICLE, DRAGON VEHICLE, IS
REALLY IMPORTANT FOR THE

17
00:01:10,130 --> 00:01:11,130
INTERNATIONAL SPACE STATION.

18
00:01:11,130 --> 00:01:14,939
IT BRINGS SOME VERY UNIQUE
CAPABILITIES TO ISS THAT ARE

19
00:01:14,939 --> 00:01:15,939
IMPORTANT.

20
00:01:15,939 --> 00:01:19,609
IT HAS AN EXTERNAL CARGO
CAPABILITY WHICH IS IMPORTANT

21
00:01:19,609 --> 00:01:24,700
AND AS YOU KNOW WILL BE LAUNCHED
ON THE BIGELOW EXPANDABLE MODULE

22
00:01:24,700 --> 00:01:27,590
ON THIS FLIGHT SO WE'RE REALLY
LOOKING FORWARD TO HAVING THAT

23
00:01:27,590 --> 00:01:29,850
ON BOARD ISS.

24
00:01:29,850 --> 00:01:33,380
ANOTHER KEY FEATURE THAT THIS
VEHICLE BRINGS IS THE ABILITY TO

25
00:01:33,380 --> 00:01:34,380
RETURN CARGO.

26
00:01:34,380 --> 00:01:37,439
NOT ONLY WILL WE BE CARRYING AN
ENORMOUS AMOUNT OF CARGO TO THE

27
00:01:37,439 --> 00:01:40,399
INTERNATIONAL SPACE STATION BUT
WE BRING DOWN CRITICAL SCIENCE

28
00:01:40,399 --> 00:01:47,149
SAMPLES AS WELL AS FAILED
HARDWARE FROM THE ISS AS WELL AS

29
00:01:47,149 --> 00:01:48,450
REMOVING SOME TRASH.

30
00:01:48,450 --> 00:01:51,049
SO THE ABILITY TO BRING THAT
CARGO BACK DOWN TO THE GROUND

31
00:01:51,049 --> 00:01:55,610
AND GET THOSE RESULTS AND THAT
HARDWARE SO WE CAN REPAIR IT IS

32
00:01:55,610 --> 00:02:00,799
REALLY A KEY CAPABILITY IN

ALLOWING ISS TO CONTINUE ITS

33
00:02:00,799 --> 00:02:04,999
FUNCTION AS AN OUTSTANDING, ONE
OF A KIND RESEARCH LABORATORY IN

34
00:02:04,999 --> 00:02:10,429
SPACE.

35
00:02:10,429 --> 00:02:14,099
THIS WEEK, THIS LAUNCH REALLY
CULMINATES A VERY BUSY SEASON ON

36
00:02:14,099 --> 00:02:15,319
BOARD ISS.

37
00:02:15,319 --> 00:02:19,599
THERE'S SOME UNIQUE THINGS ABOUT
THIS ONE.

38
00:02:19,599 --> 00:02:23,290
WHEN DRAGON GETS ON BOARD, WE'LL
HAVE THE FIRST TIME EVER TWO

39
00:02:23,290 --> 00:02:28,470
USOS VISITING VEHICLES AT THE
INTERNATIONAL SPACE STATION AT A

40
00:02:28,470 --> 00:02:34,770
SINGLE TIME, THE FIRST OF MANY I
HOPE.

41
00:02:34,770 --> 00:02:37,680
WE'RE LOOKING FORWARD TO THAT.

42
00:02:37,680 --> 00:02:40,500
ONE OF THE BIGGEST THINGS FROM
AN ORBIT OPERATIONS POINT OF

43

00:02:40,500 --> 00:02:44,250
VIEW THOUGH IS THE FACT THAT
THIS WILL BRING TO A CLOSE A

44
00:02:44,250 --> 00:02:47,290
VERY BUSY SEASON OF VISITING
VEHICLES.

45
00:02:47,290 --> 00:02:52,160
WHEN DRAGON ARRIVES ON SUNDAY
MORNING, IT WILL CLOSE A PERIOD

46
00:02:52,160 --> 00:02:55,880
OF FOUR VISITING VEHICLES IN
FOUR CONSECUTIVE WEEKS, SO WE

47
00:02:55,880 --> 00:03:04,189
HAD THE SOYUZ LAUNCH, THE CYGNUS
AND NOW THE DRAGON LAUNCH.

48
00:03:04,189 --> 00:03:07,440
A VERY BUSY TIME ON ORBIT.

49
00:03:07,440 --> 00:03:11,250
WE'RE LOOKING FORWARD TO THAT.

50
00:03:11,250 --> 00:03:13,269
THE CONSUMABLES ON BOARD THE
INTERNATIONAL SPACE STATION

51
00:03:13,269 --> 00:03:15,329
BECAUSE OF THE VISITING VEHICLES
THAT WE HAVE ARE ACTUALLY IN

52
00:03:15,329 --> 00:03:16,379
GREAT SHAPE.

53
00:03:16,379 --> 00:03:20,989
A VERY ROBUST SHAPE, AND IN FACT
THE BEST SHAPE SINCE WE'VE HAD

54
00:03:20,989 --> 00:03:25,920
THE DISRUPTION IN OUR SUPPLY
CHAIN HERE LAST YEAR.

55
00:03:25,920 --> 00:03:30,859
SO IT'S REALLY IMPORTANT TO HAVE
A VERY REGULAR SUPPLY CHAIN, NOT

56
00:03:30,859 --> 00:03:33,310
ONLY FROM A CONSUMABLES
STANDPOINT BUT EVEN MORE

57
00:03:33,310 --> 00:03:36,400
IMPORTANTLY FROM A STANDPOINT OF
RESEARCH AND UTILIZATION.

58
00:03:36,400 --> 00:03:40,690
IN ORDER TO DO THE RESEARCH THAT
WE DO ON ISS, IT'S CRITICAL THAT

59
00:03:40,690 --> 00:03:44,250
WE HAVE A CONSTANT SUPPLY CHAIN
COMING UP AND COMING BACK DOWN.

60
00:03:44,250 --> 00:03:47,749
SO AGAIN, WE'RE LOOKING FORWARD
TO THIS FLIGHT TO SET THE TONE

61
00:03:47,749 --> 00:03:53,609
AND GET US BACK INTO FLYING ON A
REGULAR PACE.

62
00:03:53,609 --> 00:03:58,700
FINALLY, THE ON ORBIT ACTIVITIES
THAT WE HAVE PLANNED COMING UP,

63
00:03:58,700 --> 00:04:02,819
OF COURSE THIS WEEK ACTUALLY
MARKS THE†-- I SHOULD SAY NEXT

64
00:04:02,819 --> 00:04:05,599
WEEK ACTUALLY MARKS THE SECOND
BIGGEST WEEK IN TERMS OF CREW

65
00:04:05,599 --> 00:04:09,239
TIME FOR UTILIZATION THAT WE
WILL HAVE HAD.

66
00:04:09,239 --> 00:04:12,540
IT'S REALLY ASSOCIATED WITH
BRINGING UP THE EXPERIMENTS HERE

67
00:04:12,540 --> 00:04:13,870
ON SPACEX.

68
00:04:13,870 --> 00:04:16,650
SO WE'RE LOOKING FORWARD TO
SETTING NEW RECORDS AS WE GO

69
00:04:16,650 --> 00:04:19,930
FORWARD IN TERMS OF CREW TIME
USED FOR UTILIZATION.

70
00:04:19,930 --> 00:04:24,370
WITH THAT I'LL HAND IT BACK OVER
TO YOU.

71
00:04:24,370 --> 00:04:25,990
>> THANK YOU, KIRK.

72
00:04:25,990 --> 00:04:29,940
NOW TO HANS KOENIGSMANN, THE
VICE-PRESIDENT FOR SPACEX.

73
00:04:29,940 --> 00:04:30,950
>> THANK YOU.

74
00:04:30,950 --> 00:04:36,780

I'M GLAD TO BE BACK IN FLORIDA
ON CRS-8 LAUNCHES.

75
00:04:36,780 --> 00:04:42,360
THIS IS IMPORTANT FOR US BECAUSE
IT IS THE FIRST LAUNCH WITH CRS

76
00:04:42,360 --> 00:04:44,240
ON AN UPGRADED VEHICLE.

77
00:04:44,240 --> 00:04:48,470
I DO HAVE TO POINT OUT THE
VEHICLE ITSELF HAS FLOWN BEFORE.

78
00:04:48,470 --> 00:04:57,780
WE HAD TWO SUCCESSFUL LAUNCHES,
ONE IN DECEMBER AND ONE IN

79
00:04:57,780 --> 00:05:01,000
MARCH, EARLY MARCH.

80
00:05:01,000 --> 00:05:03,510
SO WE KNOW THE VEHICLE VERY
WELL.

81
00:05:03,510 --> 00:05:07,430
THIS IS THE FIRST TIME WE'LL
LAUNCH A DRAGON ON THIS

82
00:05:07,430 --> 00:05:11,640
PARTICULAR VEHICLE.

83
00:05:11,640 --> 00:05:16,760
IT IS A TRAJECTORY LIKE THE
PREVIOUS LAUNCHES GOING INTO 200

84
00:05:16,760 --> 00:05:21,340
BY 360 KILOMETER ORBIT THAT'S
UNDER THE SPACE STATION,

85
00:05:21,340 --> 00:05:22,660
OBVIOUSLY THE SAME.

86
00:05:22,660 --> 00:05:28,500
DRAGON WILL BE DEPLOYED AND WORK
ITS WAY UP TO THE STATION WITHIN

87
00:05:28,500 --> 00:05:32,550
THE NEXT TWO DAYS AROUND ABOUT.

88
00:05:32,550 --> 00:05:38,530
THE FIRST STAGE LANDING IS GOING
TO COME BACK PARTIALLY.

89
00:05:38,530 --> 00:05:45,750
IN OTHER WORDS, THE DRONE SHIP
IS KIND OF LIKE WHERE THE FLASH

90
00:05:45,750 --> 00:05:47,900
POINT WOULD BE.

91
00:05:47,900 --> 00:05:51,540
AND I CERTAINLY HOPE WE'RE GOING
TO NAIL THE LANDING THIS TIME.

92
00:05:51,540 --> 00:05:56,660
ON THE DRAGON FRONT, AS KIRK
POINTED OUT, THE DRAGON IS

93
00:05:56,660 --> 00:05:57,660
PRETTY FULL.

94
00:05:57,660 --> 00:06:02,640
IT'S 3800 POUNDS IN THE PRESSURE
SECTION FULL OF SCIENCE AND

95
00:06:02,640 --> 00:06:05,380
CARGO FOR THE SPACE STATION.

96
00:06:05,380 --> 00:06:10,510
THEN IN THE TRUNK SECTION, THE
UNPRESSURIZED PART OF DRAGON IS

97
00:06:10,510 --> 00:06:16,670
GOING TO BE†-- THE EXPERIMENT IS
CALLED BEAM, BIGELOW, EXPENDABLE

98
00:06:16,670 --> 00:06:18,150
ACTIVITY MODULE.

99
00:06:18,150 --> 00:06:23,650
IT'S A MINI INFLATABLE SPACE
STATION WHICH I THINK IS VERY

100
00:06:23,650 --> 00:06:24,650
EXCITING.

101
00:06:24,650 --> 00:06:28,060
I'M REALLY GLAD THAT ANOTHER
COMMERCIAL COMPANY IS DOING

102
00:06:28,060 --> 00:06:32,780
EXPERIMENTS WITH†-- GOING TO
SPACE AND I THINK THIS

103
00:06:32,780 --> 00:06:37,470
PARTICULAR EXPERIMENT HAS GREAT
POTENTIAL FOR BUILDING NEW SPACE

104
00:06:37,470 --> 00:06:41,081
STATION EXTENDING THE CURRENT
SPACE STATION AND SO ON AND SO

105
00:06:41,081 --> 00:06:42,081
FORTH.

106
00:06:42,081 --> 00:06:43,800
IT'S A REALLY EXCITING

EXPERIMENT.

107
00:06:43,800 --> 00:06:48,380
WE JUST COMPLETED A STATIC FIRE
YESTERDAY.

108
00:06:48,380 --> 00:06:51,070
IT'S DONE VERY WELL.

109
00:06:51,070 --> 00:06:56,330
WE JUST HAD OUR LAUNCH RANGE OF
VIEW AND EVERYTHING IS GOOD TO

110
00:06:56,330 --> 00:06:59,280
GO AT THIS POINT IN TIME, SO
THINGS ARE LOOKING GOOD.

111
00:06:59,280 --> 00:07:03,650
I DO WANT TO POINT OUT LOTS OF
PEOPLE WORK ON THIS.

112
00:07:03,650 --> 00:07:08,450
FOR US IT'S THE CREW HERE AND AT
THE CAPE THAT, YOU KNOW, PERFORM

113
00:07:08,450 --> 00:07:13,410
MARVELOUS AND THUS BASICALLY THE
VEHICLE INTEGRATION AND TROUBLE

114
00:07:13,410 --> 00:07:18,710
SHOOTING AND THE STATIC FIRE AND
THE LAUNCH SO SHOUTOUT TO THAT

115
00:07:18,710 --> 00:07:19,710
TEAM.

116
00:07:19,710 --> 00:07:22,510
ALSO THE TEXAS CREW THAT
DELIVERS THE VEHICLE THAT'S BEEN

117
00:07:22,510 --> 00:07:25,730
VERY WELL TESTED AND READY TO
LAUNCH.

118
00:07:25,730 --> 00:07:28,520
THEN AS ALWAYS, I WANT TO TAKE
THE OPPORTUNITY TO THANK OUR

119
00:07:28,520 --> 00:07:32,520
PARTNER, NASA, AND ALSO THE FAA
AND THE 45th SPACE WING FOR

120
00:07:32,520 --> 00:07:33,960
THEIR SUPPORT.

121
00:07:33,960 --> 00:07:36,130
>> THANK YOU, HANS.

122
00:07:36,130 --> 00:07:39,860
NOW TO KIRT COSTELLO, THE
INTERNATIONAL SPACE STATION

123
00:07:39,860 --> 00:07:43,650
PROGRAM SCIENCE OFFICE AT NASA'S
JOHNSON SPACE CENTER.

124
00:07:43,650 --> 00:07:44,820
KIRT?

125
00:07:44,820 --> 00:07:45,990
>> THANKS.

126
00:07:45,990 --> 00:07:50,090
AS KIRK POINTED OUT EARLIER,
THERE'S A HUGE AMOUNT OF CARGO

127
00:07:50,090 --> 00:07:53,570
AND PARTICULARLY UTILIZATION
COMING UP TO THE SPACE STATION

128
00:07:53,570 --> 00:07:57,620
ON THE SPACEX DRAGON CRS-8
MISSION AND WE'RE VERY EXCITED

129
00:07:57,620 --> 00:08:00,090
TO HAVE THAT CAPABILITY THERE.

130
00:08:00,090 --> 00:08:04,670
WE HAVE OVER 4300 POUNDS OF
UTILIZATION CARGO FLYING TO

131
00:08:04,670 --> 00:08:09,510
STATION.
3100 POUNDS OF THAT IS THE B

132
00:08:09,510 --> 00:08:11,010
MODULE.

133
00:08:11,010 --> 00:08:15,340
VERY IMPORTANTLY, THE SPACEX
GIVES US THE RETURN CAPABILITY

134
00:08:15,340 --> 00:08:19,360
WE NEED TO GET SAMPLES OFF OF
SPACE STATION, SAMPLES THAT HAVE

135
00:08:19,360 --> 00:08:23,650
BEEN COLLECTING AND CONTAIN THE
REMAINDER OF THE ONE-YEAR

136
00:08:23,650 --> 00:08:28,320
MISSION SAMPLES THAT SCOTT KELLY
JUST COMPLETED ON ORBIT.

137
00:08:28,320 --> 00:08:31,860
WE'RE VERY EXCITED TO HAVE THOSE
BACK AND BEGIN THE ANALYSIS FOR

138

00:08:31,860 --> 00:08:34,140
THOSE SAMPLES.

139
00:08:34,140 --> 00:08:37,450
TO START OFF WITH, I'D LIKE TO
TALK ABOUT SOME OF THE

140
00:08:37,450 --> 00:08:41,120
INVESTIGATIONS, THAT WE'RE VERY
PROUD THAT SPACEX, THE NATIONAL

141
00:08:41,120 --> 00:08:45,500
LAB AND NASA WERE ABLE TO
CONTINUE TO GET MANIFESTED AND

142
00:08:45,500 --> 00:08:50,450
REFLY AS THEY WERE INVESTIGATES
THAT WERE LOST ON THE SPACEX 7

143
00:08:50,450 --> 00:08:52,320
AND ORB THREE MISSIONS.

144
00:08:52,320 --> 00:08:59,630
WE HAVE MICRO CHANNEL DIFFUSION
WHICH WILL BE FLYING A

145
00:08:59,630 --> 00:09:05,590
FUNDAMENTAL FLUID PHYSIC, NANO
PARTICLE DELIVERY SYSTEM TO

146
00:09:05,590 --> 00:09:11,450
EXAMINE THE FLUID PHYSICS OF HOW
DRUG IMPLANT DELIVERY SYSTEMS

147
00:09:11,450 --> 00:09:14,210
CAN BE USED IN MICROGRAVITY.

148
00:09:14,210 --> 00:09:18,210
WET LAB TWO, JULIA SHOENFELD.

149
00:09:18,210 --> 00:09:23,670
THIS IS A DNA/RNA AMPLIFICATION
SYSTEM AND A SAMPLE ANALYSIS

150
00:09:23,670 --> 00:09:27,830
SYSTEM THAT REDUCES THE OVERALL
CREW TIME ASSOCIATED WITH THESE

151
00:09:27,830 --> 00:09:34,280
AND ALSO RELIES ON QPCR TO BE
ABLE TO DO GENE EXPRESSION

152
00:09:34,280 --> 00:09:36,500
ANALYSIS.

153
00:09:36,500 --> 00:09:38,780
WE'RE VERY EXCITED TO HAVE THAT
ON BOARD.

154
00:09:38,780 --> 00:09:43,170
LAST BUT NOT LEAST, ONE OF OUR
STUDENT INVESTIGATIONS FROM THE

155
00:09:43,170 --> 00:09:46,550
NATIONAL CENTER FOR EARTH AND
SPACE SCIENCE EDUCATION, IS

156
00:09:46,550 --> 00:09:51,090
FLYING†-- IT WAS ORIGINALLY
SCHEDULED ON ORB THREE.

157
00:09:51,090 --> 00:09:54,860
IT WAS ALSO ON ORB SEVEN AND NOW
WE FINALLY GET TO LAUNCH IT ON

158
00:09:54,860 --> 00:09:56,030
SPACEX 8.

159
00:09:56,030 --> 00:10:00,320

WE'RE VERY HAPPY THEY'LL BE
FLYING WITH US, AND THEY'RE

160
00:10:00,320 --> 00:10:05,520
DOING AN INVESTIGATION INTO THE
FORMATION OF TIN WHISKERS ON NON

161
00:10:05,520 --> 00:10:09,530
LED-BASED SOLDERS IN SPACE.

162
00:10:09,530 --> 00:10:13,610
WE'LL BE INTERESTED IN THEM
GETTING THEIR INVESTIGATION

163
00:10:13,610 --> 00:10:14,610
BACK.

164
00:10:14,610 --> 00:10:19,230
THOSE ARE THE STUDENTS FROM THE
SCHOLARS ACADEMY IN SOUTH

165
00:10:19,230 --> 00:10:20,230
CAROLINA.

166
00:10:20,230 --> 00:10:24,250
WE HAVE THE BEAM MODULE FLYING
IN THE DRAGON TRUNK AND THAT

167
00:10:24,250 --> 00:10:26,130
WILL BE ATTACHED TO STATION.

168
00:10:26,130 --> 00:10:31,130
WHEN EXPANDED IT WILL HAVE 565
CUBIC FEET AND WE'LL BE

169
00:10:31,130 --> 00:10:34,870
OUTFITTING IT WITH FOUR
DIFFERENT TYPES OF SENSORS.

170

00:10:34,870 --> 00:10:39,260
SENSORS WILL HELP US DETERMINE
THE LOAD DURING DEPLOYMENT,

171
00:10:39,260 --> 00:10:45,180
RADIATION SENSORS, TEMPERATURE
SENSORS AND DISTRIBUTED IMPACT

172
00:10:45,180 --> 00:10:57,070
SENSORS TO UNDERSTAND HOW MICRO
METEOROIDS MIGHT EFFECT IT.

173
00:10:57,070 --> 00:11:02,180
IF YOU LOOK AT THE BIOLOGICAL
SCIENCES INVOLVED IN THE SPACEX

174
00:11:02,180 --> 00:11:06,690
8, CARGO MANIFEST, WE'LL
BRINGING NEW COMMERCIAL

175
00:11:06,690 --> 00:11:08,560
COMPANIES THROUGH THE NATIONAL
LAB.

176
00:11:08,560 --> 00:11:12,750
WE'RE BRINGING RESEARCH LINES
THAT ARE VERY CRITICAL TO THE

177
00:11:12,750 --> 00:11:14,110
SPACE STATION.

178
00:11:14,110 --> 00:11:18,340
PHILOSOPHY SUCH AS RODENT
RESEARCH ASSOCIATED WITH ELI

179
00:11:18,340 --> 00:11:19,460
LILY.

180
00:11:19,460 --> 00:11:20,570
DR.

181
00:11:20,570 --> 00:11:24,740
ROSEMAN SMITH WILL BE
LOOKING AT MYOSTATIN ANTIBODIES

182
00:11:24,740 --> 00:11:28,310
AND HOW THEY CAN REDUCE MUSCLE
WASTING THAT OCCURS IN THE

183
00:11:28,310 --> 00:11:35,520
MICROGRAVITY ENVIRONMENT AND HOW
THAT MAY HELP THE SKELETAL LOSS

184
00:11:35,520 --> 00:11:39,620
OF BONE THAT OCCURS IN THOSE
SITUATIONS.

185
00:11:39,620 --> 00:11:44,820
THEY'LL ALSO BE DOING PROTEIN
CRYSTALLIZATION EXPERIMENTS BY

186
00:11:44,820 --> 00:11:51,850
ELI LILY AND THESE INVOLVE SOME
NEW PARTNERS IN TERMS OF THE

187
00:11:51,850 --> 00:11:56,250
PROTEIN CRYSTALLIZATION CARDS
THAT WE'LL BE FLYING.

188
00:11:56,250 --> 00:12:02,160
THE CARDS THEMSELVES ARE CALLED
THE MIGHTY JEN PLATES AND

189
00:12:02,160 --> 00:12:07,080
THEY'RE COMMERCIALLY AVAILABLE
PLATES AND HOPEFULLY WILL OFFER

190
00:12:07,080 --> 00:12:11,900
A BETTER, MORE COMMERCIAL ACCESS
TO PROTEIN CRYSTALLIZATION

191
00:12:11,900 --> 00:12:14,150
FACILITIES ON BOARD THE STATION.

192
00:12:14,150 --> 00:12:17,250
THEY'LL BE LOOKING PARTICULARLY
AT HOW SOME OF THE MEMBRANE

193
00:12:17,250 --> 00:12:21,770
PROTEINS ASSOCIATED WITH CERTAIN
CANCER LINES, WHEN GROWN IN THE

194
00:12:21,770 --> 00:12:25,730
PRESENCE OF MEDICALLY RELEVANT
MOLECULES, CRYSTALLIZE AND

195
00:12:25,730 --> 00:12:28,980
HOPEFULLY BE ABLE TO BRING THOSE
BACK DOWN TO THE GROUND AND GET

196
00:12:28,980 --> 00:12:34,690
BETTER DEFRACTION MAPS OF THOSE
PROTEINS.

197
00:12:34,690 --> 00:12:38,310
WE ALSO HAVE ANOTHER STUDENT
COMPETITION THAT IS FLYING THIS

198
00:12:38,310 --> 00:12:42,580
TIME, THE BOEING COMPANY
SPONSORED THE GENES IN SPACE

199
00:12:42,580 --> 00:12:43,710
COMPETITION.

200
00:12:43,710 --> 00:12:47,100
THE FIRST WINNER FROM THAT
COMPETITION WILL BE FLYING.

201

00:12:47,100 --> 00:12:50,950
HOPEFULLY YOU SAW HER EARLIER
TODAY IN THE WHAT'S ON BOARD

202
00:12:50,950 --> 00:12:52,770
SECTION THAT WE HAD.

203
00:12:52,770 --> 00:13:00,450
ANNA SOPHIA IS FLYING HER
EXPERIMENT.

204
00:13:00,450 --> 00:13:03,010
IT'S A TWO-PHASE INVESTIGATION
THAT WE'LL BE DOING.

205
00:13:03,010 --> 00:13:06,320
FIRST WE'LL BE TRYING TO
VALIDATE SOME HARDWARE AND MINI

206
00:13:06,320 --> 00:13:12,390
PCR SYSTEM THAT DOES CHANGE
REACTIONS FOR GENETIC ACCESS ON

207
00:13:12,390 --> 00:13:13,390
BOARD.

208
00:13:13,390 --> 00:13:17,930
ONCE THAT'S VALIDATED SHE'LL BE
LOOKING INTO HER HYPOTHESIS IS

209
00:13:17,930 --> 00:13:25,450
THAT EPI GENETIC CHANGES CAN BE
TRACKED ON BOARD USING THIS

210
00:13:25,450 --> 00:13:26,450
DEVICE.

211
00:13:26,450 --> 00:13:29,560
WE'RE VERY EXCITED TO HAVE HER
AND SHE'S AN EXCELLENT PRESENTER

212
00:13:29,560 --> 00:13:32,779
AND WE HAD HER HERE EARLIER
TODAY.

213
00:13:32,779 --> 00:13:36,300
LAST BUT NOT LEAST, WE'VE GOT A
NUMBER OF OTHER BIOLOGICAL

214
00:13:36,300 --> 00:13:38,190
INVESTIGATIONS GOING ON.

215
00:13:38,190 --> 00:13:39,540
THE VEGO 3 EXPERIMENT.

216
00:13:39,540 --> 00:13:43,800
WE'LL BE LOOKING AT HOW WE CAN
GROW NEW PLANTS ON BOARD AND

217
00:13:43,800 --> 00:13:46,010
HELP US IN OUR JOURNEY TO MARS.

218
00:13:46,010 --> 00:13:49,770
WE'LL LOOKING SPECIFICALLY AT
HOW TO GROW A CHINESE CABBAGE

219
00:13:49,770 --> 00:13:51,600
VARIANT.

220
00:13:51,600 --> 00:13:56,760
MICRO NINE AND MICRO TEN ARE
BOTH MICROBIOLOGY EXPERIMENTS.

221
00:13:56,760 --> 00:14:00,550
ONE IS A YEAST COLONY SURVIVAL
EXPERIMENT AND THE OTHER IS

222
00:14:00,550 --> 00:14:11,120
USING A CERTAIN TYPE OF FUNGI TO

GROW A SECONDARY MET TAB LIGHT

223
00:14:11,120 --> 00:14:17,420
THAT CAN POSSIBLY BE USED FOR
THE PRODUCTION OF DRUGS.

224
00:14:17,420 --> 00:14:22,240
FINALLY, MICROBIAL OBSERVATORY
ONE IS COMPLETING ITS

225
00:14:22,240 --> 00:14:26,040
INVESTIGATION WITH THIS SPACEX 8
LAUNCH AND RETURN, AND WE'LL BE

226
00:14:26,040 --> 00:14:32,350
BRINGING BACK SAMPLES OF THE
MICROBIAL CONTENTS OF THE SPACE

227
00:14:32,350 --> 00:14:35,430
STATION AND ANALYZING THE CHANGE
OVER TIME.

228
00:14:38,890 --> 00:14:37,160
THANK YOU.

229
00:14:38,890 --> 00:14:44,920
A LOOK NOW AT THE WEATHER
FORECAST FOR FRIDAY AFTERNOON.

230
00:14:44,920 --> 00:14:46,100
KATHY WINTERS.

231
00:14:46,100 --> 00:14:50,550
>> THE WEATHER LOOKS GREAT FOR
LAUNCH.

232
00:14:50,550 --> 00:14:52,779
IT'S JUST GOING TO BE A
BEAUTIFUL DAY BOTH FOR LAUNCHING

233
00:14:52,779 --> 00:14:55,160
AND ALSO FOR VIEWING A LAUNCH.

234
00:14:55,160 --> 00:14:57,970
WE DO HAVE JUST A FRONT THAT'S
ROLLING THROUGH TODAY, BUT

235
00:14:57,970 --> 00:15:04,029
TOMORROW IS GOING TO BE A LITTLE
BREEZY WITH MOSTLY CLEAR SKIES.

236
00:15:04,029 --> 00:15:06,460
TEMPERATURES WILL BE IN THE MID
70s SO IT WILL BE A GREAT DAY TO

237
00:15:06,460 --> 00:15:07,779
LAUNCH A ROCKET.

238
00:15:07,779 --> 00:15:09,800
LET'S LOOK AT THE SATELLITE
PICTURE.

239
00:15:09,800 --> 00:15:13,220
YOU CAN SEE THAT WE HAD A FRONT
ROLL THROUGH.

240
00:15:13,220 --> 00:15:15,290
IT'S ROLLING THROUGH CENTRAL
FLORIDA TODAY.

241
00:15:15,290 --> 00:15:17,940
THERE WERE SOME ISOLATED SHOWERS
IN THE AREA THIS MORNING BUT

242
00:15:17,940 --> 00:15:20,440
THEY'RE PUSHING OFF TO THE SOUTH
AND EAST.

243
00:15:20,440 --> 00:15:22,450

BEHIND THAT THERE'S ACTUALLY
GOING TO BE ANOTHER PUSH OF COLD

244
00:15:22,450 --> 00:15:25,640
AIR THAT COMES IN TOMORROW
AFTERNOON, BUT IT'S GOING TO BE

245
00:15:25,640 --> 00:15:28,660
VERY DRY WITH NO SIGNIFICANT
WEATHER FOR LAUNCH.

246
00:15:28,660 --> 00:15:31,260
SO JUST A LITTLE BREEZY OUT
THERE AND MOSTLY CLEAR SKIES.

247
00:15:31,260 --> 00:15:35,750
LOOKING AT OUR LAUNCH FORECAST
YOU CAN SEE THAT WE DO HAVE JUST

248
00:15:35,750 --> 00:15:38,220
WINDS EXPECTED TO BE FROM THE
WEST, AGAIN A LITTLE BREEZY,

249
00:15:38,220 --> 00:15:39,970
GUSTING UP TO 20 MILE PER HOUR.

250
00:15:39,970 --> 00:15:43,490
THE TEMPERATURE WILL BE AROUND
75 DEGREES AT THE LAUNCH PAD AND

251
00:15:43,490 --> 00:15:47,860
ABOUT A 20% CLOUD COVER IN THE
AREA, SO AGAIN, A GREAT DAY TO

252
00:15:47,860 --> 00:15:49,649
VIEW A LAUNCH AS WELL.

253
00:15:49,649 --> 00:15:52,959
WE ONLY HAVE A 10% CHANCE OF
LAUNCH CONSTRAINTS ONLY DUE TO

254
00:15:52,959 --> 00:15:53,959
LIFTOFF WINDS.

255
00:15:53,959 --> 00:15:56,390
WE AREN'T CONCERNED ABOUT
VIOLATING ANY OF THE LAUNCH

256
00:15:56,390 --> 00:15:58,190
CRITERIA.

257
00:15:58,190 --> 00:16:01,649
IF WE HAPPEN TO DELAY 24 HOURS,
THE WEATHER LOOKS GREAT THIS

258
00:16:01,649 --> 00:16:03,770
WEEKEND TO LAUNCH A ROCKET.

259
00:16:03,770 --> 00:16:08,350
THE WIND IS ABOUT 18 MILES PER
HOUR WITH TEMPERATURES A LITTLE

260
00:16:08,350 --> 00:16:13,970
COOLER, 70 DEGREES AND CLOUD
PERCENTAGE INCREASING JUST

261
00:16:13,970 --> 00:16:16,140
SLIGHTLY TO A 30% CHANCE BUT
THEY'LL BE VERY THIN.

262
00:16:16,140 --> 00:16:18,779
WE'RE NOT LOOKING FOR ANY
SIGNIFICANT DEVELOPMENT WITH

263
00:16:18,779 --> 00:16:20,029
CLOUDS.

264
00:16:20,029 --> 00:16:24,360
WE HAVE A 10% CHANCE OF

VIOLATING LAUNCH CRITERIA DUE TO

265
00:16:24,360 --> 00:16:28,600
WEATHER AND THAT IS THE ONLY
CONCERN IS A CUMULUS CLOUD RULE

266
00:16:28,600 --> 00:16:29,920
FOR SATURDAY.

267
00:16:29,920 --> 00:16:32,060
OVERALL IT'S A GREAT DAY TO
LAUNCH.

268
00:16:32,060 --> 00:16:35,450
THE LAUNCH WEATHER OFFICER IS
GOING TO BE CAPTAIN LAURA GADOY

269
00:16:35,450 --> 00:16:40,220
AND WE'RE LOOKING FORWARD TO IT
AS A TEAM.

270
00:16:40,220 --> 00:16:42,140
>> THANK YOU, KATHY.

271
00:16:42,140 --> 00:16:44,140
WE'RE READY NOW TO TAKE
QUESTIONS.

272
00:16:44,140 --> 00:16:47,000
SO PLEASE GIVE YOUR NAME AND
AFFILIATION WHEN THE MICROPHONE

273
00:16:47,000 --> 00:16:48,000
COMES TO YOU.

274
00:16:48,000 --> 00:16:51,690
WE'LL START HERE IN THE ROOM AND
THEN WE'LL GO TO SOCIAL MEDIA.

275

00:16:51,690 --> 00:16:52,810
MARCIA?

276
00:16:52,810 --> 00:16:55,950
>> MARCIA DENNIS, ASSOCIATED
PRESS.

277
00:16:55,950 --> 00:16:56,950
TWO QUICK QUESTIONS.

278
00:16:56,950 --> 00:16:57,950
FIRST FOR KIRK SHIREMAN.

279
00:16:57,950 --> 00:17:00,990
COULD YOU TOUCH ON THE
HISTORICAL SIGNIFICANCE OF THE

280
00:17:00,990 --> 00:17:05,020
FIRST EXPANDIBLE MODULE
LAUNCHING FOR ASTRONAUT USE.

281
00:17:05,020 --> 00:17:08,589
AND FOR HANS, WHY TRY FOR A
DRONE SHIP?

282
00:17:08,589 --> 00:17:16,360
WHY NOT JUST COME BACK TO THE
LOAD LANDING?

283
00:17:16,360 --> 00:17:20,110
>> WE'VE BEEN LOOKING AT†-- WE
AND I SAY WE, NASA BUT REALLY

284
00:17:20,110 --> 00:17:24,059
THE SPACE WORLD HAS BEEN LOOKING
AT EXPANDIBLES FOR QUITE SOME

285
00:17:24,059 --> 00:17:25,539
TIME.

286
00:17:25,539 --> 00:17:27,929
EARLY ON IN THE SPACE STATION
PROGRAM BACK IN THE '90s WE

287
00:17:27,929 --> 00:17:30,309
STARTED TALKING ABOUT IT.

288
00:17:30,309 --> 00:17:31,549
YOU CAN LAUNCH IT.

289
00:17:31,549 --> 00:17:35,039
THE TWO BIG ISSUES WITH
LAUNCHING TO LOWER ORBIT ARE

290
00:17:35,039 --> 00:17:38,179
MASS BUT PROBABLY EVEN MORE SO
THAN MASS IS VOLUME.

291
00:17:38,179 --> 00:17:42,480
HOW CAN YOU PACKAGE SOMETHING IN
A SMALL VOLUME TO FIT INSIDE A

292
00:17:42,480 --> 00:17:45,169
FAIRING ON A ROCKET, GET IT
THROUGH THE ATMOSPHERE AND HAVE

293
00:17:45,169 --> 00:17:50,019
IT EXPAND TO BE A LARGER VOLUME
TO LIVE AND WORK IN?

294
00:17:50,019 --> 00:17:53,200
EXPANDIBLES IS THE ANSWER TO
THAT QUESTION.

295
00:17:53,200 --> 00:17:56,519
IT'S REALLY GREAT TO ACTUALLY
HAVE ONE FLY UP AND BE PART OF

296
00:17:56,519 --> 00:17:57,519

THE INTERNATIONAL SPACE STATION.

297
00:17:57,519 --> 00:18:00,140
I UNDERSTAND THAT BIGELOW HAS
FLOWN A COUPLE OF THOSE IN THE

298
00:18:00,140 --> 00:18:04,420
PAST ON EXPENDABLE LAUNCH
VEHICLES BUT THIS WILL BE THE

299
00:18:04,420 --> 00:18:07,059
FIRST ONE WHERE WE ACTUALLY HAVE
HUMANS INTERACTING WITH THAT

300
00:18:07,059 --> 00:18:08,940
MODULE.

301
00:18:08,940 --> 00:18:12,640
SO IT'S GREAT.

302
00:18:12,640 --> 00:18:14,780
THE DEVIL IS IN THE DETAILS SO
THERE'S ALL THESE DETAILS

303
00:18:14,780 --> 00:18:19,210
ASSOCIATED WITH ACTUALLY
EXPANDING A MODULE AND ACTUALLY

304
00:18:19,210 --> 00:18:20,210
USING IT.

305
00:18:20,210 --> 00:18:23,879
THE BEAUTY IS THAT'S WHAT WE'RE
GOING TO BE DOING AND WHAT WE'LL

306
00:18:23,879 --> 00:18:25,659
BE LEARN.

307
00:18:25,659 --> 00:18:26,659

IT IS THE FUTURE.

308
00:18:26,659 --> 00:18:27,659
WE'LL BE USING THESE.

309
00:18:27,659 --> 00:18:32,169
HUMANS WILL BE USING THESE KINDS
OF MODULES AS WE MOVE FURTHER

310
00:18:32,169 --> 00:18:34,970
AND FURTHER OFF THE PLANET AND
ACTUALLY AS WE INHABIT LOWER

311
00:18:34,970 --> 00:18:35,970
EARTH ORBIT.

312
00:18:35,970 --> 00:18:41,570
I THINK IT IS THE NEXT LOGICAL
STEP IN HUMANS GETTING OFF THE

313
00:18:41,570 --> 00:18:43,110
PLANET.

314
00:18:43,110 --> 00:18:47,879
>> THE DRONE SHIP VERSUS LAND, I
PROBABLY HAVE TO EXPLAIN A

315
00:18:47,879 --> 00:18:54,550
LITTLE BIT THAT THE LANDING ON
THE DRONE SHIP IS HARDER TO LAND

316
00:18:54,550 --> 00:18:58,210
BUT IT'S EASIER FOR THE ROCKET
TO GET BACK TO THE SHIP.

317
00:18:58,210 --> 00:19:04,960
YOU CAN PUT THE SHIP IN ANYPLACE
THAT IS SAFE AND SO OVER ALL

318

00:19:04,960 --> 00:19:07,830
THIS IS A LITTLE BIT OF A TRADE.

319
00:19:07,830 --> 00:19:10,679
LANDING ON LAND ON THE OTHER
SIDE IS EASIER FOR THE LANDING

320
00:19:10,679 --> 00:19:14,629
ITSELF BECAUSE YOU HAVE MORE
SPACE AND IT DOESN'T MOVE THAT

321
00:19:14,629 --> 00:19:15,629
MUCH.

322
00:19:15,629 --> 00:19:18,400
ON THE OTHER SIDE, FOR THE
TRAJECTORY, IT'S THE HARDER PART

323
00:19:18,400 --> 00:19:19,400
TO GET BACK TO LAND.

324
00:19:19,400 --> 00:19:22,500
SO ON THIS PARTICULAR FLIGHT WE
DECIDED WE WANT TO GO TO THE

325
00:19:22,500 --> 00:19:27,049
DRONE SHIP AND SEE IF IT CAN GET
A SUCCESSFUL LANDING ON THE

326
00:19:27,049 --> 00:19:31,980
DRONE SHIP, PARTLY ALSO BECAUSE
THE NEXT FLIGHTS, NEXT TWO OR

327
00:19:31,980 --> 00:19:35,360
THREE FLIGHTS, ARE GOING TO BE
DRONE SHIP LANDINGS.

328
00:19:35,360 --> 00:19:38,860
THERE'S NO CHOICE THERE BECAUSE
WE CAN'T GET TO LAND.

329
00:19:38,860 --> 00:19:43,509
SO IT'S A GOOD OPPORTUNITY FOR
US TO REFINE OUR DRONE SHIP

330
00:19:43,509 --> 00:19:46,830
LANDING CAPABILITIES AND GET
THIS DONE.

331
00:19:46,830 --> 00:19:50,299
IN THE LONG RUN THAT'S CERTAINLY
SOMETHING THAT WE NEED TO

332
00:19:50,299 --> 00:19:59,549
DEMONSTRATE OVER AND OVER AGAIN
TO GET THE SPACE SHIP BACK.

333
00:19:59,549 --> 00:20:01,679
>> QUESTION FOR HANS.

334
00:20:01,679 --> 00:20:06,039
WHAT KIND OF CHANGES DID YOU
MAKE TO THE FALCON NINE SINCE

335
00:20:06,039 --> 00:20:08,951
CRS-7, THE MOST IMPORTANT
CHANGES, AND WHAT'S YOUR

336
00:20:08,951 --> 00:20:12,679
CONFIDENCE LEVEL GOING INTO
LAUNCHING THIS DRAGON SPACECRAFT

337
00:20:12,679 --> 00:20:16,759
WITH THAT ROCKET FOR THE FIRST
TIME?

338
00:20:16,759 --> 00:20:24,830
>> FOLLOWING CRS-7 WE MADE A
CHANGE INSIDE THE TANK.

339
00:20:24,830 --> 00:20:27,830
I'M ACTUALLY VERY CONFIDENT THAT
THAT WAS THE PROBLEM THAT

340
00:20:27,830 --> 00:20:31,940
ADDRESSED EVERYTHING SINCE WE
LAUNCHED TWICE†-- TECHNICALLY

341
00:20:31,940 --> 00:20:33,980
THREE TIMES.

342
00:20:33,980 --> 00:20:41,320
AFTER THAT CHANGE WAS MADE, THAT
PRETTY MUCH SUMS IT UP.

343
00:20:41,320 --> 00:20:45,870
MINOR CHANGES ON THE NUTS AND
BOLTS LEVEL, BUT THAT IS

344
00:20:45,870 --> 00:20:48,860
BASICALLY ALL THE CHANGES WE
DID.

345
00:20:48,860 --> 00:20:53,340
NOW, YOU DO NEED TO UNDERSTAND
THE CRS-7 WAS WHAT WE CALL THE

346
00:20:53,340 --> 00:20:54,460
1.1 VERSION.

347
00:20:54,460 --> 00:20:59,070
THIS IS THE UPGRADED VERSION SO
THERE ARE ADDITIONAL CHANGES AS

348
00:20:59,070 --> 00:21:06,030
A BLOCK UPGRADE AND THAT'S
HIGHER THRUST.

349
00:21:06,030 --> 00:21:10,220

THE VEHICLE IS SLIGHTLY, A
COUPLE FEET LONGER THAN THE 1.1

350
00:21:10,220 --> 00:21:11,220
VERSION.

351
00:21:11,220 --> 00:21:17,269
SO THERE'S TWO REASONS TO MAKE
CHANGES HERE BASICALLY AND THOSE

352
00:21:17,269 --> 00:21:18,499
ARE COMBINED.

353
00:21:18,499 --> 00:21:19,629
>> BILL?

354
00:21:19,629 --> 00:21:21,889
>> BILL HARWOOD.

355
00:21:21,889 --> 00:21:26,220
HANS, A REALLY QUICK QUESTION.

356
00:21:26,220 --> 00:21:28,490
THE UPGRADED ROCKET, IS THAT ALL
YOU'RE GOING TO DO FROM HERE ON

357
00:21:28,490 --> 00:21:31,220
IN FOR THE FALCON OR DO YOU
STILL PLAN TO FLY THE 1.1

358
00:21:31,220 --> 00:21:32,220
VARIANT?

359
00:21:32,220 --> 00:21:33,220
>> YEAH, THAT'S CORRECT.

360
00:21:33,220 --> 00:21:37,190
IT'S GOING TO BE THE UPGRADED
VERSION FROM HERE ON.

361
00:21:37,190 --> 00:21:42,690
>> DOES THE DENSIFIED PROPELLENT
DO ANYTHING TO HELP YOU ON THE

362
00:21:42,690 --> 00:21:45,940
CRS MISSION?

363
00:21:45,940 --> 00:21:50,669
>> IN TERMS OF NUMBERS, A COUPLE
PERCENT BASICALLY IN TERMS OF

364
00:21:50,669 --> 00:21:54,739
PAYLOAD CAPABILITY OR
PROBABILITY TO GET BACK TO LAND

365
00:21:54,739 --> 00:21:58,639
OR PROBABILITY TO GET A GOOD
LANDING ON THE DRONE SHIP.

366
00:21:58,639 --> 00:22:02,830
IT BASICALLY MEANS YOU GET FROM
THE SAME ROCKET YOU GET MORE PER

367
00:22:02,830 --> 00:22:03,830
POUND.

368
00:22:03,830 --> 00:22:05,769
IT'S PRETTY SIGNIFICANT.

369
00:22:05,769 --> 00:22:09,200
IT'S FIVE, SIX PERCENT,
SOMETHING LIKE THAT, MAYBE EVEN

370
00:22:09,200 --> 00:22:10,200
MORE.

371
00:22:10,200 --> 00:22:13,239
I HAVEN'T LOOKED AT THE NUMBERS

MYSELF, BUT IT'S A SUBSTANTIAL

372
00:22:13,239 --> 00:22:16,679
IMPROVEMENT, WORTH THE EFFORT.

373
00:22:16,679 --> 00:22:17,690
>> JAMES?

374
00:22:17,690 --> 00:22:18,690
>> THANKS.

375
00:22:18,690 --> 00:22:22,710
JAMES DEAN, FLORIDA TODAY.

376
00:22:22,710 --> 00:22:25,990
HANS, THAT DENSIFIED PROPELLENT,
I KNOW YOU LAUNCHED IT

377
00:22:25,990 --> 00:22:28,379
SUCCESSFULLY A COUPLE TIMES NOW
BUT IT HAS SEEMED TO GIVE YOU

378
00:22:28,379 --> 00:22:31,860
SOME TROUBLE DURING SEVERAL
COUNTDOWNS, NOT GETTING THE

379
00:22:31,860 --> 00:22:34,559
RIGHT TEMPERATURE.

380
00:22:34,559 --> 00:22:38,320
IT SEEMS TO HAVE LOST THE
ABILITY TO TAKE ADVANTAGE OF

381
00:22:38,320 --> 00:22:41,080
LONGER WINDOWS WHEN YOU HAVE
THEM.

382
00:22:41,080 --> 00:22:45,989
CAN YOU DESCRIBE WHERE YOU'RE AT

WITH THAT, HOW MUCH†-- DO YOU

383
00:22:45,989 --> 00:22:49,210
HAVE THIS THING DOWN OR IS THERE
STILL THINGS YOU HAVE TO LEARN

384
00:22:49,210 --> 00:22:50,210
ABOUT THIS?

385
00:22:50,210 --> 00:22:54,840
I'M ALSO CURIOUS, KIRK, FROM
NASA'S POINT OF VIEW, IF YOU HAD

386
00:22:54,840 --> 00:22:58,090
TO SEE THIS ROCKET LAUNCH A
COUPLE TIMES BEFORE YOU WERE

387
00:22:58,090 --> 00:23:01,490
WILLING TO GET ANOTHER CRS
MISSION GOING OR WHATEVER REVIEW

388
00:23:01,490 --> 00:23:04,929
OF THIS ROCKET YOU DID.

389
00:23:04,929 --> 00:23:09,169
>> FOR CRS ACTUALLY, WHAT
HAPPENS IS ONCE YOU LOAD THE

390
00:23:09,169 --> 00:23:14,649
PROPELLENTS THEY WARM UP AND YOU
HAVE A LIMITED TIME TO KEEP IT

391
00:23:14,649 --> 00:23:19,529
IN THE EFFECT BEFORE YOU MUST GO
OR IT GETS TOO WARM.

392
00:23:19,529 --> 00:23:22,899
FOR CRS MISSIONS, THAT DOESN'T
MAKE A DIFFERENCE BECAUSE WE USE

393
00:23:22,899 --> 00:23:26,909
INSTANTANEOUS LAUNCH WINDOWS TO
CATCH UP WITH THE ISS.

394
00:23:26,909 --> 00:23:31,039
IT'S BASICALLY TRANSPARENT FOR
THESE MISSIONS.

395
00:23:31,039 --> 00:23:35,350
FOR OTHER MISSIONS WE ARE
WORKING HOW TO RECYCLE AND HOW

396
00:23:35,350 --> 00:23:39,999
TO MAKE SURE THAT WE HAVE THE
RIGHT TEMPERATURE PROPELLENT ON

397
00:23:39,999 --> 00:23:40,999
BOARD.

398
00:23:40,999 --> 00:23:44,049
GENERALLY YOU'RE RIGHT, YOU'RE
WORKING THROUGH SOME OF THOSE

399
00:23:44,049 --> 00:23:45,820
ISSUES ON THE GROUND SIDE.

400
00:23:45,820 --> 00:23:50,210
THE GROUND SIDE NOW NEEDS TO
CHILL AT VERY LOW TEMPERATURES

401
00:23:50,210 --> 00:23:53,570
AND THAT OBVIOUSLY IS SOMETHING
THAT IT IS DIFFICULT TO TEST

402
00:23:53,570 --> 00:23:54,830
WITHOUT A ROCKET.

403
00:23:54,830 --> 00:23:57,570
SO WHEN YOU PUT THE ROCKET THE

FIRST TIME ON THE LAUNCH PAD FOR

404
00:23:57,570 --> 00:24:02,220
STATIC FIRE AND THEN FOR LAUNCH,
YOU LEARN THINGS THAT YOU'RE

405
00:24:02,220 --> 00:24:05,399
GOING TO IMPROVE ON THE NEXT
TIME.

406
00:24:05,399 --> 00:24:08,700
I'M PRETTY SURE WE HAVE LEARNED
MOST OF IT.

407
00:24:08,700 --> 00:24:12,090
I CAN'T PROMISE YOU WE LEARNED
ALL OF IT.

408
00:24:12,090 --> 00:24:15,559
THAT WOULD BE NOT CORRECT TO
SAY, I THINK.

409
00:24:15,559 --> 00:24:20,919
BUT WE LEARNED A LOT AND I FEEL
LIKE WE GOT THIS RELATIVELY WELL

410
00:24:20,919 --> 00:24:24,230
UNDER CONTROL AT THIS POINT IN
TIME.

411
00:24:24,230 --> 00:24:29,019
>> SO YOU WERE ASKING ABOUT WHAT
NASA DID IN TERMS OF REVIEWING

412
00:24:29,019 --> 00:24:31,799
THE PREPARATIONS FOR THIS LAUNCH
AND WHETHER OR NOT WE WANTED TO

413
00:24:31,799 --> 00:24:33,460
SEE MULTIPLE LAUNCHES.

414
00:24:33,460 --> 00:24:39,779
IN ONE SENSE THE STATISTICIAN IN
US ALL WOULD LOVE TO SEE

415
00:24:39,779 --> 00:24:42,970
LAUNCHES BEFORE YOU CAN
ESTABLISH KIND OF WHAT THE

416
00:24:42,970 --> 00:24:44,779
PROBABILITY OF SUCCESS IS.

417
00:24:44,779 --> 00:24:47,960
BUT THE WORK DONE TO REALLY
ASSURE THAT WE'RE COMFORTABLE IS

418
00:24:47,960 --> 00:24:51,619
THE SAME WHETHER IT'S THE FIRST
ROCKET OR THE THIRD ROCKET.

419
00:24:51,619 --> 00:24:55,520
SO WE'VE BEEN PARTICIPATING VERY
CLOSELY WITH SPACEX THROUGHOUT

420
00:24:55,520 --> 00:24:57,840
THE WHOLE PROCESS, THROUGH THE
MANUFACTURE, THE TEST IN

421
00:24:57,840 --> 00:25:03,950
McGREGOR, TEXAS, ALL THE ISSUES
THAT WERE FOUND ALONG THE WAY

422
00:25:03,950 --> 00:25:08,950
AND HOW SPACEX MITIGATED THOSE
RISKS, WE'VE BEEN WORKING VERY

423
00:25:08,950 --> 00:25:11,759
CLOSELY WITH THEM AND SPACEX HAS
BEEN VERY OPEN.

424
00:25:11,759 --> 00:25:14,720
WE WOULD DO THAT IF THIS WAS THE
FIRST ROCKET OR IF, IN THIS

425
00:25:14,720 --> 00:25:17,980
CASE, IT'S THE THIRD FULL THRUST
VARIANT.

426
00:25:17,980 --> 00:25:19,929
WE DO THE EXACT SAME THING.

427
00:25:19,929 --> 00:25:22,580
TECHNICALLY WE DO THAT SAME
WORK.

428
00:25:22,580 --> 00:25:27,399
THE QUESTION IS WHAT ARE THE
UNKNOWN UNKNOWNS, WHAT DON'T YOU

429
00:25:27,399 --> 00:25:28,619
KNOW.

430
00:25:28,619 --> 00:25:31,019
THAT'S WHY IF YOU'RE THE SECOND
OR THE THIRD GUY YOU GET TO SEE

431
00:25:31,019 --> 00:25:33,480
A LITTLE BIT OF THAT.

432
00:25:33,480 --> 00:25:40,619
WE WOULD HAVE BEEN HAPPY TO BE
THE FIRST ONE, AND AS YOU'LL SEE

433
00:25:40,619 --> 00:25:42,559
IN A LAUNCH LATER IN THIS
CALENDAR YEAR, WE'LL BE THE

434
00:25:42,559 --> 00:25:44,419
FIRST PERSON ON A NEW ROCKET.

435
00:25:44,419 --> 00:25:47,720
SO YOU JUST HAVE TO DO THE
TECHNICAL WORK.

436
00:25:47,720 --> 00:25:52,269
IF YOU DO THAT WORK, THEN NASA
WILL BE COMFORTABLE IN

437
00:25:52,269 --> 00:25:53,690
LAUNCHING.

438
00:25:53,690 --> 00:25:56,529
>> RIGHT HERE?

439
00:25:56,529 --> 00:25:59,850
>> MARK, HISTORICAL SPACE
IMAGERY.

440
00:25:59,850 --> 00:26:01,279
THIS QUESTION IS FOR HANS.

441
00:26:01,279 --> 00:26:07,710
HANS, CAN YOU TELL ME, THE
FALCON NINE ROCKET IN TERMS OF

442
00:26:07,710 --> 00:26:12,470
WITH THE DRAGON, CAN YOU FULLY
EXPLAIN THE CHANGES THAT WERE

443
00:26:12,470 --> 00:26:16,309
NEEDED TO INCORPORATE IT BEING
USED ON IT.

444
00:26:16,309 --> 00:26:20,940
ALSO, CAN YOU TELL ME, WHY WAS
THE FALCON NINE NEVER USED

445
00:26:20,940 --> 00:26:24,830

BEFORE IN COOPERATION WITH THE
DRAGON.

446
00:26:24,830 --> 00:26:31,039
CAN YOU ALSO TELL ME THIS, THAT
THE SES MISSION THAT SPACEX HAD

447
00:26:31,039 --> 00:26:35,950
IN THAT LAUNCH, WE NOTICED ONE
THING AND THAT WAS WHEN THE

448
00:26:35,950 --> 00:26:40,419
SEPARATION DID COME HEADING FOR
THE BARGE PLATFORM, WE ACTUALLY

449
00:26:40,419 --> 00:26:44,630
DID GET TO VIEW IT GOING ACROSS
RATHER LOW.

450
00:26:44,630 --> 00:26:50,859
ATYPICALLY, HOW HIGH WOULD THE
BARGE LANDING ATTEMPT MOVING

451
00:26:50,859 --> 00:26:55,169
OVER FROM SEPARATION BE AND
AGAIN, IT IS COMPUTER

452
00:26:55,169 --> 00:26:58,130
CONTROLLED, THEREFORE WE WERE
WONDERING WHY DID WE SEE IT MUCH

453
00:26:58,130 --> 00:26:59,130
LOWER?

454
00:26:59,130 --> 00:27:01,749
>> THAT WAS A LOT OF QUESTIONS.

455
00:27:01,749 --> 00:27:04,159
I'LL TRY TO ANSWER ALL OF THEM.

456
00:27:04,159 --> 00:27:10,070
FIRST OF ALL, THERE'S THE DRAGON
VERSION AND THE SATELLITE

457
00:27:10,070 --> 00:27:13,799
VERSION ARE BASICALLY IDENTICAL
WITH THE EXCEPTION OF THE FRONT

458
00:27:13,799 --> 00:27:14,799
PART.

459
00:27:14,799 --> 00:27:18,539
THERE'S A PART THAT HOLDS DRAGON
TO THE VEHICLE BASICALLY AND HAS

460
00:27:18,539 --> 00:27:23,019
A DEPLOY MECHANISM AND TAKES
CARE OF SOME OF THOSE

461
00:27:23,019 --> 00:27:28,009
DRAGON-SPECIFIC INTEGRATION
THINGS BASICALLY.

462
00:27:28,009 --> 00:27:31,159
THEN THERE'S THE SATELLITE
VERSION WHERE THE SATELLITE IS

463
00:27:31,159 --> 00:27:37,480
MOUNTED INSIDE AND THEN YOU HAVE
IT ENCAPSULATING IT.

464
00:27:37,480 --> 00:27:41,749
THOSE ARE THE MAIN DIFFERENCES
FROM THE VEHICLE.

465
00:27:41,749 --> 00:27:44,179
EVERYTHING ELSE IS THE SAME.

466
00:27:44,179 --> 00:27:48,009

THEN OF COURSE THE SOFTWARE OR
THE CONFIGURATION GOING TO

467
00:27:48,009 --> 00:27:51,620
DIFFERENT PLACES IS ALSO A
SLIGHT DIFFERENCE.

468
00:27:51,620 --> 00:27:55,309
IN TERMS OF†-- SO WHEN I SAID
THIS IS THE FIRST FLIGHT OF THIS

469
00:27:55,309 --> 00:27:58,529
YEAR ON THE UP GRADED VEHICLE, I
WAS SPECIFICALLY REFERRING TO

470
00:27:58,529 --> 00:28:00,220
THE UPGRADED PART HERE.

471
00:28:00,220 --> 00:28:04,149
IT'S THE FIRST TIME TO FLY THE
DENSIFIED PROPELLENT, SLIGHTLY

472
00:28:04,149 --> 00:28:07,570
LONGER VEHICLE COMPARED TO THE
1.1 VERSION.

473
00:28:07,570 --> 00:28:12,009
HOWEVER, WE'VE FLOWN THE 1.1†--
IT'S HARD TO TELL FROM THE

474
00:28:12,009 --> 00:28:13,840
OUTSIDE WHAT CHANGED ON THE
VEHICLE.

475
00:28:13,840 --> 00:28:16,019
THEY LOOK VERY SIMILAR.

476
00:28:16,019 --> 00:28:21,159
WE'VE FLOWN THAT VERSION SIX
TIMES ON CRS AND A COUPLE TIMES

477
00:28:21,159 --> 00:28:23,070
ON THE OTHER MISSION.

478
00:28:23,070 --> 00:28:25,899
FROM THAT PERSPECTIVE, I DIDN'T
WANT TO SAY THAT THIS WAS BRAND

479
00:28:25,899 --> 00:28:28,730
NEW OR THERE'S ANYTHING
SIGNIFICANTLY DIFFERENT HERE.

480
00:28:28,730 --> 00:28:34,200
I WANTED TO POINT OUT IT'S AN
UPGRADED VERSION AND IT HAS MORE

481
00:28:34,200 --> 00:28:35,889
PERFORMANCE OVERALL.

482
00:28:35,889 --> 00:28:39,470
IN TERMS OF COMPARISON TO SES
MISSION, I'M NOT QUITE SURE WHAT

483
00:28:39,470 --> 00:28:41,649
YOU'RE REFERRING TO.

484
00:28:41,649 --> 00:28:46,620
YOU MEAN THE STAGES FLIPPING
AROUND OR THE TRAJECTORY ITSELF?

485
00:28:46,620 --> 00:28:51,999
>> WHAT I AM REFERRING TO IS WE
DID SEE THE TRAJECTORY AFTER

486
00:28:51,999 --> 00:28:56,570
SEPARATION OF IT HEADING TO THE
DRONE SHIP.

487
00:28:56,570 --> 00:28:57,900

IT WAS RATHER LOW.

488
00:28:57,900 --> 00:28:59,879
ATYPICALLY IT WOULD BE HIGHER.

489
00:28:59,879 --> 00:29:02,159
AM I INCORRECT IN MY ASSUMPTION?

490
00:29:02,159 --> 00:29:08,039
>> I THINK YOU HAVE A POINT IN A
SENSE THAT THE GEO STATIONARY

491
00:29:08,039 --> 00:29:13,419
TRAJECTORIES ARE REALLY LOW AND
OBVIOUSLY THE HIGHER YOU GO WITH

492
00:29:13,419 --> 00:29:17,009
PAIR G, THE MORE WORK YOU HAVE
TO PUT IN THERE.

493
00:29:17,009 --> 00:29:22,919
THE GOAL IS YOU HAVE A REALLY
HIGH VELOCITY VECTOR.

494
00:29:22,919 --> 00:29:30,090
OBVIOUSLY I'VE NEVER SEEN A
LAUNCH FROM THE OUTSIDE SO I

495
00:29:30,090 --> 00:29:32,529
CAN'T TELL.

496
00:29:32,529 --> 00:29:35,259
DRAGON ON THE OTHER SIDE HAS A
HIGHER PAIR AGEE.

497
00:29:35,259 --> 00:29:41,770
YOU MIGHT BE AT SEPARATION IT
LOOKS LIKE TRAJECTORY IS LOWER.

498

00:29:41,770 --> 00:29:46,179
I'M PRETTY SURE THE GEO TRANSFER
ORBITS ARE AS LOW AS IT GETS IN

499
00:29:46,179 --> 00:29:49,499
GENERAL, SO THAT'S PROBABLY THE
LOWEST YOU WILL EVER SEE.

500
00:29:49,499 --> 00:29:50,659
IT'S STILL PRETTY HIGH.

501
00:29:50,659 --> 00:29:57,549
IT STILL REACHES AN APOGEE OF A
COUPLE HUNDRED KILOMETERS.

502
00:29:57,549 --> 00:30:02,659
FROM THAT PERSPECTIVE, I'M
SURPRISED YOU CAN SEE IT FROM

503
00:30:02,659 --> 00:30:04,780
THE GROUND ACTUALLY.

504
00:30:04,780 --> 00:30:10,210
>> IRENE WITH REUTERS.

505
00:30:10,210 --> 00:30:15,840
TWO QUICK CLARIFICATIONS FOR
YOU, HANS, AND THEN A QUESTION.

506
00:30:15,840 --> 00:30:19,279
IS IT CORRECT THEN THAT YOU ARE
CHARACTERIZING THE DRONE SHIP

507
00:30:19,279 --> 00:30:24,690
LANDING AS A TEST AND THIS
ROCKET COULD RETURN TO LAND IF

508
00:30:24,690 --> 00:30:29,730
YOU HAD CHOSEN NOT TO DO THE
DRONE SHIP TEST?

509
00:30:29,730 --> 00:30:30,880
>> I'M NOT SURE HONESTLY.

510
00:30:30,880 --> 00:30:32,250
I THINK IT'S PRETTY CLOSE.

511
00:30:32,250 --> 00:30:37,010
IT SHOULD BE ABLE TO GET BACK TO
HAND, BUT I HAVEN'T RUN THE

512
00:30:37,010 --> 00:30:38,010
NUMBERS.

513
00:30:38,010 --> 00:30:39,879
I THINK THE DRONE SHIP LANDING
ITSELF IS THE MORE BENIGN

514
00:30:39,879 --> 00:30:43,919
TRAJECTORY SO PEOPLE MIGHT HAVE
CHOSEN ON OUR SIDE TO MAKE A

515
00:30:43,919 --> 00:30:48,169
SAFE DRONE SHIP LANDING BECAUSE
THIS IS THE TIME WE NEED TO

516
00:30:48,169 --> 00:30:52,369
VERIFY THAT WE CAN DO THE DRONE
SHIP LANDINGS.

517
00:30:52,369 --> 00:30:55,059
IT'S STILL AN EXPERIMENT, NO
QUESTION ABOUT IT.

518
00:30:55,059 --> 00:31:01,909
IT IS STILL, YOU KNOW, HAS
ALWAYS BEEN A FAIRLY HIGH RISK

519
00:31:01,909 --> 00:31:03,340

TO LANDING ITSELF.

520
00:31:03,340 --> 00:31:04,789
OBVIOUSLY NOT THE MAIN MISSION.

521
00:31:04,789 --> 00:31:08,610
I WANT TO POINT OUT THAT THOSE
TWO PARTS ARE COMPLETELY

522
00:31:08,610 --> 00:31:09,610
SEPARATE.

523
00:31:09,610 --> 00:31:12,159
WE PUT A LOT OF EFFORT IN THE
MAIN MISSION TO MAKE SURE THAT

524
00:31:12,159 --> 00:31:17,200
CRS IS PROUD OF THE MISSION, IS
FLAWLESS, AND THE DRONE SHIP

525
00:31:17,200 --> 00:31:21,769
LANDING IS TAKING RISK ON OUR
SIDE AS YOU HAVE SEEN IN THE

526
00:31:21,769 --> 00:31:24,659
PAST.

527
00:31:24,659 --> 00:31:26,190
>> LET'S TAKE ONE MORE QUESTION
HERE.

528
00:31:26,190 --> 00:31:27,619
GO AHEAD, IRENE.

529
00:31:27,619 --> 00:31:28,619
FINISH UP.

530
00:31:28,619 --> 00:31:33,049
>> ON THE FUEL DENSIFICATION,

YOU SAID YOU DON'T THINK YOU'RE

531
00:31:33,049 --> 00:31:38,309
GOING TO GET INTO THE ISSUES
THAT YOU HAD ON THE LAST FLIGHT.

532
00:31:38,309 --> 00:31:42,929
THEN GWEN HAD SAID THAT WITH
THIS FLIGHT, SPACEX, TENDS TO

533
00:31:42,929 --> 00:31:45,979
REALLY STEP UP ITS PACE OF
LAUNCHES.

534
00:31:45,979 --> 00:31:50,460
CAN YOU ADDRESS I GUESS FROM
YOUR PERSPECTIVE AND I DON'T

535
00:31:50,460 --> 00:31:54,940
KNOW IF YOU HAVE A NEW JOB TITLE
RELATED TO THAT BUT WHAT SPACEX

536
00:31:54,940 --> 00:32:00,519
IS LOOKING AT FROM HERE ON OUT.

537
00:32:00,519 --> 00:32:03,179
>> THE NEW JOB TITLE IS
BASICALLY TRANSPARENT.

538
00:32:03,179 --> 00:32:06,479
I USED TO BE MISSION ASSURANCE,
FLIGHT RELIABILITY.

539
00:32:06,479 --> 00:32:07,869
THE TEAM IS THE SAME.

540
00:32:07,869 --> 00:32:15,299
I FEEL FLY RELIABILITY ADDRESSES
BETTER WHAT WE DO ACTUALLY.

541
00:32:15,299 --> 00:32:19,879
IT'S EASIER TO EXPLAIN.

542
00:32:19,879 --> 00:32:23,129
IN TERMS OF PACE, IT'S TRUE WE
HAVE TO PICK UP THE PACE AND WE

543
00:32:23,129 --> 00:32:27,469
WILL PICK UP THE PACE.

544
00:32:27,469 --> 00:32:31,409
HONESTLY, I'M NEAR SIGHTED IN
TERMS OF WHAT THE MISSION

545
00:32:31,409 --> 00:32:34,659
MANIFESTS AS I SEE THE NEXT TWO
OR THREE.

546
00:32:34,659 --> 00:32:38,710
THE ONE AFTER THIS IS CURRENTLY
BY THE END OF APRIL AND I

547
00:32:38,710 --> 00:32:42,559
BELIEVE THERE'S ANOTHER ONE IN
MAY SHORTLY THEREAFTER.

548
00:32:42,559 --> 00:32:47,880
SO THE TIME BETWEEN THE MISSIONS
WILL GET SHORTER AND SHORTER.

549
00:32:47,880 --> 00:32:54,149
SOMETHING WE'VE SEEN THAT THE
1.1 VERSION WHEN YOU PHASE AN

550
00:32:54,149 --> 00:32:58,249
UPGRADE YOU NEED A LITTLE BIT OF
TIME BETWEEN THE LAUNCHES AND

551
00:32:58,249 --> 00:33:00,999

THEN AFTER A WHILE YOU PICK UP
THE PACE.

552
00:33:00,999 --> 00:33:03,899
WE HOPE WE'RE GOING TO BE ABLE
TO LAUNCH BASICALLY EVERY OTHER

553
00:33:03,899 --> 00:33:06,019
WEEK.

554
00:33:06,019 --> 00:33:09,349
BY THE END OF THIS YEAR, MAYBE
EVEN INCREASE THE PACE OVERALL.

555
00:33:09,349 --> 00:33:14,129
>> WE'LL TAKE ONE MORE QUESTION
BEFORE WE GO TO SOCIAL MEDIA.

556
00:33:14,129 --> 00:33:15,129
>> HELLO.

557
00:33:15,129 --> 00:33:17,469
KYLE BROWN WITH U.S. LAUNCH
REPORT.

558
00:33:17,469 --> 00:33:20,309
THIS QUESTION IS FOR HANS.

559
00:33:20,309 --> 00:33:23,639
LOOKING TOWARDS THE FUTURE, WILL
THE FALCON HEAVY MAIDEN LAUNCH

560
00:33:23,639 --> 00:33:29,179
BE CARRYING A MODULATED PAYLOAD,
AND ALSO, WILL SPACEX BE

561
00:33:29,179 --> 00:33:31,941
CARRYING UP THE NEXT
INTERNATIONAL DOCKING AND IF SO

562
00:33:31,941 --> 00:33:35,899
HOW HAS THAT BEEN PLANNED AHEAD?

563
00:33:35,899 --> 00:33:38,950
>> THE DOCKING ADAPTER IS
PROBABLY A QUESTION FOR†--

564
00:33:38,950 --> 00:33:40,789
>> THAT'S SPACEX 9.

565
00:33:40,789 --> 00:33:46,249
SO THE VERY NEXT SPACEX FLIGHT
TO ISS WILL BE CARRYING UP THE

566
00:33:46,249 --> 00:33:47,460
INTERNATIONAL DOCKING ADAPTER.

567
00:33:47,460 --> 00:33:52,019
THE FIRST INTERNATIONAL DOCKING
ADAPTER TO BE INSTALLED ON ISS.

568
00:33:52,019 --> 00:33:56,679
THERE IS ANOTHER ONE PLANNED FOR
NEXT YEAR.

569
00:33:56,679 --> 00:34:00,549
SO WE'LL HAVE TWO TO SUPPORT
COMMERCIAL CREW.

570
00:34:00,549 --> 00:34:04,889
>> I GOT TO DISAPPOINT YOU ON
THE OTHER QUESTION.

571
00:34:04,889 --> 00:34:07,729
I DON'T HAVE ANY INFORMATION
RELATED TO FALCON.

572
00:34:07,729 --> 00:34:13,319
CERTAINLY IT'S CAPABLE OF

RUNNING BIGGER PAYLOADS, BUT I

573
00:34:13,319 --> 00:34:18,780
HAVE NO INFORMATION REGARDING
THAT.

574
00:34:18,780 --> 00:34:22,669
>> LET'S GO TO SOCIAL MEDIA AND
THEN WE'LL COME BACK HERE.

575
00:34:22,669 --> 00:34:24,839
#ASKNASA.

576
00:34:24,839 --> 00:34:28,270
>> WE HAVE SEVERAL QUESTIONS.

577
00:34:28,270 --> 00:34:34,240
THE FIRST ONE, WHAT ARE THE
CHALLENGES TO LAND NOW, AND MORE

578
00:34:34,240 --> 00:34:37,310
SPECIFICALLY, IS SPACEX MORE
CONFIDENT IN THE LANDING LEGS,

579
00:34:37,310 --> 00:34:41,600
AND ARE THERE ANY DIFFERENCES
FROM THE JASON 3 LANDING LEGS?

580
00:34:41,600 --> 00:34:45,149
>> I GUESS THAT GOES TO ME.

581
00:34:45,149 --> 00:34:49,000
YES, WE ARE MORE CONFIDENT AND
WE HAVE MORE CONFIDENCE IN THIS

582
00:34:49,000 --> 00:34:50,879
LANDING THAN THE JASON 3 LANDING
LEG.

583

00:34:50,879 --> 00:34:57,840
I GOT TO BE CAREFUL TO KEEP MY
MISSIONS STRAIGHT HERE.

584
00:34:57,840 --> 00:35:05,250
OBVIOUSLY WE LEARNED AT JASON 3
HOW TO IMPROVE THE LANDING LEG.

585
00:35:05,250 --> 00:35:07,810
WE DIDN'T GET A CHANCE TO TEST
IT OUT ON SES 9 BUT WE'RE PRETTY

586
00:35:07,810 --> 00:35:10,420
SURE THAT WE FOUND THE PROBLEM.

587
00:35:10,420 --> 00:35:16,690
ONE OF THE ADVANTAGES IS THAT
YOU GET THE HARDWARE BACK SO YOU

588
00:35:16,690 --> 00:35:20,060
CAN ACTUALLY LOOK AT IT AND SEE
WHAT BROKE, WHAT WAS THE ISSUE,

589
00:35:20,060 --> 00:35:23,160
AND THEN GO FIX IT AND TEST IT.

590
00:35:23,160 --> 00:35:27,089
I'M FAIRLY CONFIDENT THAT WE
FIXED THAT PARTICULAR ISSUE THAT

591
00:35:27,089 --> 00:35:33,690
WE HAD WITH JASON 3.

592
00:35:33,690 --> 00:35:37,210
>> THE NEXT QUESTION IS ALSO FOR
HANS.

593
00:35:37,210 --> 00:35:41,940
THE QUESTION IS, WILL YOU BE
REUSING THE DRAGON SPACECRAFT IN

594
00:35:41,940 --> 00:35:45,539
THE FUTURE?

595
00:35:45,539 --> 00:35:49,160
>> I THINK THERE'S AN EFFORT
UNDER WAY TO DO THIS.

596
00:35:49,160 --> 00:35:53,230
IT'S SOMETHING THAT WE BASICALLY
HAVEN'T WORKED ON AT THIS POINT

597
00:35:53,230 --> 00:35:54,230
IN TIME.

598
00:35:54,230 --> 00:35:55,880
THERE ARE CERTAIN THINGS THAT
COME WITH IT.

599
00:35:55,880 --> 00:35:59,850
YOU HAVE TO OBVIOUSLY SHOW THAT
YOU CAN SURVIVE THE LAUNCH

600
00:35:59,850 --> 00:36:04,119
TWICE, THREE TIMES, FOUR TIMES
AND SO ON AND SO FORTH.

601
00:36:04,119 --> 00:36:14,380
>> THE LAST ONE, YOU MENTIONED
THE SPACEX 9 IS GOING TO LAUNCH

602
00:36:14,380 --> 00:36:15,380
THE DOCKING ADAPTER.

603
00:36:15,380 --> 00:36:16,880
DO YOU HAVE A TENTATIVE DATE
TIME FRAME FOR THAT?

604
00:36:16,880 --> 00:36:17,880

>> YES, I DO.

605
00:36:17,880 --> 00:36:24,920
LET ME LOOK IT UP HERE THOUGH TO
TELL YOU SO I'LL GET IT RIGHT.

606
00:36:24,920 --> 00:36:28,980
LET'S SEE.

607
00:36:28,980 --> 00:36:33,040
WRONG PAGE.

608
00:36:33,040 --> 00:36:36,460
WE'RE LOOKING IN THE JUNE TIME
FRAME, LATE JUNE.

609
00:36:36,460 --> 00:36:40,040
SO I DON'T KNOW THAT SPACEX HAS
ANNOUNCED THE ACTUAL LAUNCH DATE

610
00:36:40,040 --> 00:36:42,279
BUT WE'RE LOOKING AT THE LATE
JUNE TIME FRAME.

611
00:36:42,279 --> 00:36:44,829
>> ALL RIGHT, LET'S COME BACK
HERE AND TAKE SOME MORE

612
00:36:44,829 --> 00:36:48,040
QUESTIONS IN THE ROOM.

613
00:36:48,040 --> 00:36:51,820
>> HI, I'M WITH THE ORBITAL DOT
SPACE.

614
00:36:51,820 --> 00:36:54,470
IF THE LANDING ON THE BARGE IS
SUCCESSFUL FOR THE FIRST STAGE,

615

00:36:54,470 --> 00:36:59,309
IS THERE ANY PLAN TO REFLY THAT
STAGE, AND IF NOT, WHEN WILL WE

616
00:36:59,309 --> 00:37:04,000
SEE IT REFLOWN?

617
00:37:04,000 --> 00:37:07,970
>> IT DEPENDS A LITTLE BIT AGAIN
ON HOW IT LOOKS WHEN IT COMES

618
00:37:07,970 --> 00:37:09,940
BACK FROM THE BARGE.

619
00:37:09,940 --> 00:37:18,400
SO WE HAVE TO TAKE A LOOK AT THE
VEHICLE AGAIN AND MAKE SURE IT'S

620
00:37:18,400 --> 00:37:20,869
FLIGHT WORTHY.

621
00:37:20,869 --> 00:37:24,349
THERE ARE PLANS BUT IT'S NOT
GOING TO BE IMMEDIATELY.

622
00:37:24,349 --> 00:37:31,260
IT'S GOING TO BE A COUPLE MONTHS
UNTIL WE'LL SEE WHAT WE DO WITH

623
00:37:31,260 --> 00:37:32,260
THE STATION.

624
00:37:32,260 --> 00:37:33,260
>> OUT OF CURIOSITY, WHAT'S THE
NAME OF THE DRONE SHIP?

625
00:37:33,260 --> 00:37:36,299
>> THIS IS "OF COURSE I STILL
LOVE YOU".

626
00:37:36,299 --> 00:37:44,470
>> ALL RIGHT, WE HAVE A QUESTION HERE IN THE FRONT.

627
00:37:44,470 --> 00:37:47,349
>> I WAS HOPING TO SPEAK TO THE DRAGON'S CREW CARRYING

628
00:37:47,349 --> 00:37:50,329
CAPABILITIES AND WHAT WE CAN COME TO EXPECT WITH THE

629
00:37:50,329 --> 00:37:51,670
COMMERCIAL CREW PROGRAM.

630
00:37:51,670 --> 00:37:55,140
AS A FOLLOWUP, IF WE CAN TRY TO DO A COMPARE AND CONTRAST OF

631
00:37:55,140 --> 00:38:00,920
SOYUZ AND THE DRAGON.

632
00:38:00,920 --> 00:38:02,390
>> I GUESS THAT GOES TO ME.

633
00:38:02,390 --> 00:38:03,779
>> GO AHEAD.

634
00:38:03,779 --> 00:38:08,640
>> I CAN TALK, TOO, BUT GO AHEAD.

635
00:38:08,640 --> 00:38:13,690
>> I KNOW DRAGON CREW IS AT WORK.

636
00:38:13,690 --> 00:38:18,490
IT'S VERY INTENSE WORK RIGHT NOW.

637
00:38:18,490 --> 00:38:24,250
THE FIRST LAUNCHES ARE PLANNED
FOR SOME TIME IN 2017 AND WE ARE

638
00:38:24,250 --> 00:38:29,480
TRACKING THE LAUNCH DATE AT THIS
POINT IN TIME.

639
00:38:29,480 --> 00:38:34,049
I DON'T THINK I HAVE ANYTHING
MORE OTHER THAN IN TERMS OF THE

640
00:38:34,049 --> 00:38:36,309
INTERIOR AND HOW IT LOOKS.

641
00:38:36,309 --> 00:38:45,180
IT'S A LOT MORE ROOMY AND BIGGER
THAN SOYUZ.

642
00:38:45,180 --> 00:38:46,180
>> WE HAVE REQUIREMENTS.

643
00:38:46,180 --> 00:38:48,990
NASA HAD REQUIREMENTS THAT WERE
PLACED ON THE COMMERCIAL CREW

644
00:38:48,990 --> 00:38:49,990
VEHICLES.

645
00:38:49,990 --> 00:38:51,779
IT'S TO CARRY FOUR CREW MEMBERS.

646
00:38:51,779 --> 00:38:55,549
THE SOYUZ CARRIES THREE.

647
00:38:55,549 --> 00:38:59,049
THE LENGTH OF STAY IT NEEDS TO
HAVE ON ORBIT, ITS ALTITUDES

648
00:38:59,049 --> 00:39:06,700
THAT IT HAS TO PERFORM ARE VERY
SIMILAR TO THE SOYUZ VEHICLE.

649
00:39:06,700 --> 00:39:09,900
THE MISSION IS THE SAME BUT AS
HANS SAID IT WILL BE A LARGER

650
00:39:09,900 --> 00:39:17,160
VEHICLE BECAUSE IT'S GOING TO
CARRY FOUR CREW MEMBERS TO ISS.

651
00:39:17,160 --> 00:39:20,760
>> STEVEN?

652
00:39:20,760 --> 00:39:22,150
>> STEVEN CLARK, SPACE FLIGHT
NOW.

653
00:39:22,150 --> 00:39:23,770
A COUPLE OF QUESTIONS FOR HANS.

654
00:39:23,770 --> 00:39:28,549
I'M CURIOUS, YOU MENTIONED IN
THE COMING MONTHS YOU HOPE TO

655
00:39:28,549 --> 00:39:31,800
PACE YOUR LAUNCHES TWO WEEKS
APART APPROXIMATELY.

656
00:39:31,800 --> 00:39:35,030
WHAT'S THE CONSTRAINT ON THAT?

657
00:39:35,030 --> 00:39:38,520
IS IT FACILITIES, PERSONNEL THAT
DETERMINED YOUR TWO-WEEK

658
00:39:38,520 --> 00:39:39,770

TURNAROUND GOAL?

659
00:39:39,770 --> 00:39:43,150
AND I HAVE ONE MORE, THANKS.

660
00:39:43,150 --> 00:39:45,500
>> IT'S A LITTLE BIT ALL OF THE
ABOVE I WOULD SAY.

661
00:39:45,500 --> 00:39:51,250
IT TAKES ABOUT†-- WHEN YOU LOOK
AT HOW COMPANIES DEVELOP, WE GET

662
00:39:51,250 --> 00:39:53,760
FROM THIS DEVELOP AND RESEARCH
YOU GET THE ROCKET GOING

663
00:39:53,760 --> 00:39:57,170
BASICALLY AND TURN AROUND AND
HAVE TO PRODUCE THIS ROCKET NOW

664
00:39:57,170 --> 00:39:59,720
AT A CERTAIN PACE.

665
00:39:59,720 --> 00:40:01,569
THAT IN ITSELF IS A CHALLENGE.

666
00:40:01,569 --> 00:40:07,099
PRETTY MUCH A GOOD SPOT THERE
AND THE SECOND COMES IN THE

667
00:40:07,099 --> 00:40:08,099
OPERATIONS.

668
00:40:08,099 --> 00:40:11,660
YOU GOT TO MAKE SURE THAT YOU
TEST IT ON TIME, THAT YOU YOUR

669
00:40:11,660 --> 00:40:15,359

HARDWARE IS TESTED AND ALL OF
THOSE THINGS HAVE BEEN DEVELOPED

670
00:40:15,359 --> 00:40:18,180
OVER THE YEARS.

671
00:40:18,180 --> 00:40:23,230
THE LAST PART THEN OF COURSE IS
THE LAUNCH SITE AND YOU GOT TO

672
00:40:23,230 --> 00:40:26,859
INTEGRATE, YOU NEED ENOUGH ROOM,
ENOUGH VOLUME AND ENOUGH

673
00:40:26,859 --> 00:40:32,730
CAPABILITY HERE AT THE CAPE AND
THEN ALSO IN VANDENBERG.

674
00:40:32,730 --> 00:40:39,770
WE HAVE THESE TWO LAUNCH SITES,
TECHNICALLY THREE, AND SO WE'RE

675
00:40:39,770 --> 00:40:41,859
GOING TO BUILD THEM UP BASICALLY
AND USE THEM TO THEIR FULL

676
00:40:41,859 --> 00:40:46,230
CAPABILITY, AND THAT'S PART OF
WHAT ALLOWS US TO INCREASE THE

677
00:40:46,230 --> 00:40:51,609
LAUNCH RACE, BY USING BASICALLY
ALL LAUNCH SITES.

678
00:40:51,609 --> 00:40:54,820
>> ONE MORE FOR HANS.

679
00:40:54,820 --> 00:40:57,710
THE DECISION BETWEEN GOING FOR
LANDING ON SHORE VERSUS ON THE

680
00:40:57,710 --> 00:41:02,190
DRONE SHIP, HOW MANY MISSIONS
GOING FORWARD, IF YOU HAD TO PUT

681
00:41:02,190 --> 00:41:05,310
A PERCENTAGE ON IT, WHAT TYPES
OF MISSIONS ACTUALLY HAVE THE

682
00:41:05,310 --> 00:41:10,480
PERFORMANCE MARGIN TO COME BACK
TO LANDING NEAR THE LAUNCH SITE?

683
00:41:10,480 --> 00:41:13,500
>> GOOD QUESTION ACTUALLY.

684
00:41:13,500 --> 00:41:15,990
LET ME SEE.

685
00:41:15,990 --> 00:41:18,420
OFF THE TOP OF MY HEAD, I WOULD
SAY MAYBE A THIRD.

686
00:41:18,420 --> 00:41:21,500
IT GETS BETTER WHEN WE START
FLYING HEAVY BECAUSE THE SIDE

687
00:41:21,500 --> 00:41:25,170
BOOSTERS CAN ALWAYS COME BACK.

688
00:41:25,170 --> 00:41:29,269
SO IT DEPENDS A LITTLE BIT ON
THE DETAILS THERE.

689
00:41:29,269 --> 00:41:31,900
OFF THE TOP OF MY HEAD I WOULD
SAY A THIRD CAN COME BACK TO

690
00:41:31,900 --> 00:41:38,890

LAND AND THE REST IS A DRONE
SHIP.

691
00:41:38,890 --> 00:41:39,890
>> MARCIA?

692
00:41:39,890 --> 00:41:42,619
>> HANS, MARCIA, A.P.

693
00:41:42,619 --> 00:41:48,000
I REMEMBER AFTER THE LAST
SUMMER'S ACCIDENT ELON SAID THAT

694
00:41:48,000 --> 00:41:51,640
HE WAS GOING TO ACTIVATE THE
PARACHUTE DEPLOY ON THE DRAGON

695
00:41:51,640 --> 00:41:54,740
FOR THE NEXT FLIGHT SO YOU COULD
SALVAGE THE CAPSULE IF

696
00:41:54,740 --> 00:41:55,740
NECESSARY.

697
00:41:55,740 --> 00:41:56,740
HAS THAT BEEN DONE?

698
00:41:56,740 --> 00:41:57,740
>> THAT'S CORRECT.

699
00:41:57,740 --> 00:42:00,059
IF WE WOULD BE IN A SIMILAR
SITUATION, DRAGON WOULD DEPLOY

700
00:42:00,059 --> 00:42:04,609
THE PARACHUTE AND WOULD LAND
SOFTLY IN THE WATER AND WE WOULD

701
00:42:04,609 --> 00:42:13,770

BE ABLE TO SAVE SCIENCE AND THE
CARGO OF DRAGON THAT HAS BEEN

702
00:42:13,770 --> 00:42:14,770
IMPLEMENTED.

703
00:42:14,770 --> 00:42:16,859
>> CAN I ADD TO THAT?

704
00:42:16,859 --> 00:42:21,680
>> IN THE FUTURE I'M ASSUMING
FROM HERE ON OUT, STANDARD

705
00:42:21,680 --> 00:42:22,680
PROCEDURE GOING FORWARD?

706
00:42:22,680 --> 00:42:23,680
>> YES.

707
00:42:23,680 --> 00:42:25,369
>> WE THOUGHT†-- NASA THOUGHT
THAT WAS A GREAT CAPABILITY TO

708
00:42:25,369 --> 00:42:26,369
HAVE.

709
00:42:26,369 --> 00:42:28,890
CERTAINLY IF A SIMILAR SITUATION
WHERE WE BELIEVED DRAGON WOULD

710
00:42:28,890 --> 00:42:31,740
SURVIVE, THE FAA HAS TO APPROVE
IT.

711
00:42:31,740 --> 00:42:36,579
SINCE IT'S IN LAUNCH AND
LANDING, THE FAA HAS TO APPROVE

712
00:42:36,579 --> 00:42:37,579

IT.

713
00:42:37,579 --> 00:42:41,359
AND THEY DID APPROVE PHASE ONE
AND PHASE TWO.

714
00:42:41,359 --> 00:42:45,680
THERE'S FURTHER DOWN RANGE WHICH
HAS NOT BEEN APPROVED YET.

715
00:42:45,680 --> 00:42:47,710
OF COURSE LANDING ON THE OCEAN
IS THE FIRST PROBLEM.

716
00:42:47,710 --> 00:42:50,430
AT SOME POINT IN TIME YOU
ACTUALLY HAVE TO GET THERE TO

717
00:42:50,430 --> 00:42:51,430
GET IT.

718
00:42:51,430 --> 00:42:53,660
OBVIOUSLY IF IT'S CLOSE BY IT'S
NOT A PROBLEM.

719
00:42:53,660 --> 00:42:57,519
ALL THE LOGISTICS ABOUT GETTING
IT IS TO BE WORKED OUT.

720
00:42:57,519 --> 00:42:58,770
WE THINK IT'S A GREAT
CAPABILITY.

721
00:42:58,770 --> 00:43:04,739
NASA IS VERY HAPPY TO HAVE THAT
CONTINGENCY CAPABILITY IN PLACE.

722
00:43:04,739 --> 00:43:08,380
>> SO YOU'RE SAYING THAT YOU
COULD†-- FOR EARLY IN THE FLIGHT

723
00:43:08,380 --> 00:43:12,630
YOU COULD SALVAGE IT IF
NECESSARY?

724
00:43:12,630 --> 00:43:14,099
>> IT'S NOT ACTUALLY THAT EARLY.

725
00:43:14,099 --> 00:43:18,420
EVERYTHING EXCEPT THE LAST
20-ISH SECONDS.

726
00:43:18,420 --> 00:43:19,819
>> JAMES?

727
00:43:19,819 --> 00:43:25,600
>> HANS, FOLLOWING UP ON A
COMMENT YOU MADE A MOMENT AGO

728
00:43:25,600 --> 00:43:28,420
ABOUT UTILIZING ALL YOUR LAUNCH
SITES.

729
00:43:28,420 --> 00:43:34,910
WHEN ARE YOU TARGETING THE FIRST
LAUNCH OFF PAD 39-A?

730
00:43:34,910 --> 00:43:41,029
>> THE FIRST LAUNCH IS LATER
THIS YEAR.

731
00:43:41,029 --> 00:43:47,510
I DON'T REMEMBER WHICH ONE RIGHT
NOW.

732
00:43:47,510 --> 00:43:48,510
SORRY.

733
00:43:48,510 --> 00:43:51,569

>> WE'LL TAKE TWO MORE QUESTIONS
HERE.

734
00:43:51,569 --> 00:43:54,770
LET'S TAKE ONE RIGHT HERE IN THE
BACK AND THEN WE'LL COME TO THE

735
00:43:54,770 --> 00:43:56,380
FRONT AND WRAP UP.

736
00:43:56,380 --> 00:43:57,990
>> JANE WELLS WITH CNBC.

737
00:43:57,990 --> 00:44:02,760
HANS, HAVE YOU BEEN ABLE TO GIVE
A REAL WORLD FIGURE OF HOW MUCH

738
00:44:02,760 --> 00:44:10,240
IT COSTS TO USE THE ROCKET,
RETRIEVE IT, REFURBISHING IT TO

739
00:44:10,240 --> 00:44:13,420
RELAUNCH VERSUS BUILDING A NEW
ROCKET.

740
00:44:13,420 --> 00:44:14,619
WHAT'S THE DIFFERENTIAL?

741
00:44:14,619 --> 00:44:15,839
>> I DON'T THINK I HAVE A NUMBER
FOR YOU.

742
00:44:15,839 --> 00:44:19,099
I KNOW WE'RE WORKING ON THAT.

743
00:44:19,099 --> 00:44:21,500
THERE'S A COUPLE DETAILS HERE.

744
00:44:21,500 --> 00:44:25,790

OBVIOUSLY IF YOU HAVE A DRONE
SHIP OUT THERE IT'S GOING TO BE

745
00:44:25,790 --> 00:44:26,790
MORE EXPENSIVE.

746
00:44:26,790 --> 00:44:28,600
WE KNOW HOW MUCH THAT IS.

747
00:44:28,600 --> 00:44:33,260
AND THEN ON THE FLIP SIDE IF YOU
LAND ON LAND, YOU DON'T HAVE TO

748
00:44:33,260 --> 00:44:37,059
WASH IT, GET THE SALT BASICALLY
OFF IT.

749
00:44:37,059 --> 00:44:40,210
SO THERE'S LESS REFURBISHMENT ON
THE LAND SIDE.

750
00:44:40,210 --> 00:44:44,790
IN FACT, OUR GOAL IS TO GET TO
VERY MINIMAL REFURBISHMENT AT

751
00:44:44,790 --> 00:44:51,170
ALL AND BASICALLY FLY THE
ROCKETS AFTER INSPECTION AS SOON

752
00:44:51,170 --> 00:44:53,809
AS POSSIBLE.

753
00:44:53,809 --> 00:44:57,780
WHAT'S GOING TO BE THE STUFF
WE'RE WORKING ON IS THAT THE

754
00:44:57,780 --> 00:44:59,279
TRAJECTORIES ARE DIFFERENT.

755

00:44:59,279 --> 00:45:02,210
THE HEAT LOAD IS DIFFERENT.

756
00:45:02,210 --> 00:45:05,680
WE HAVE ONE DATA POINT AT THIS
POINT IN TIME AND WE ARE

757
00:45:05,680 --> 00:45:07,793
CONTINUING TO WORK TOWARDS MORE
DATA POINTS, ESPECIALLY FROM THE

758
00:45:07,793 --> 00:45:08,793
DRONE SHIPS.

759
00:45:08,793 --> 00:45:09,793
>> TELL YOU WHAT THE DATA POINT
IS?

760
00:45:09,793 --> 00:45:15,000
>> I DON'T WANT TO GIVE YOU THE
NUMBER ON THE DRONE SHIP.

761
00:45:15,000 --> 00:45:16,000
EXPENSIVE.

762
00:45:16,000 --> 00:45:19,030
>> LET'S GO RIGHT HERE.

763
00:45:19,030 --> 00:45:22,450
WE'LL TAKE TWO MORE AND WE'LL
HAVE TO WRAP UP.

764
00:45:22,450 --> 00:45:24,620
>> I JUST HAVE A REAL QUICK.

765
00:45:24,620 --> 00:45:27,890
THAT WAS REALLY INTERESTING WHAT
YOU SAID ABOUT THE CAPABILITY TO

766

00:45:27,890 --> 00:45:31,089
RETRIEVE DRAGON IF BY CHANCE
THERE WAS AN ACCIDENT, BUT IS

767
00:45:31,089 --> 00:45:35,490
THERE A PLAN TO†-- DOES SPACEX
HAVE A CONTINGENCY PLAN TO

768
00:45:35,490 --> 00:45:39,570
DEPLOY AND SHIP AND HOW LONG
WOULD IT TAKE TO DO THAT AND HOW

769
00:45:39,570 --> 00:45:42,940
FAR DOWN THAT ROAD WOULD YOU NOT
WANT TO GO?

770
00:45:42,940 --> 00:45:44,559
>> WE DO HAVE A CONTINGENCY
PLAN.

771
00:45:44,559 --> 00:45:51,900
THAT'S A REQUIREMENT AND IN THIS
PARTICULAR CASE WE DO HAVE BOATS

772
00:45:51,900 --> 00:45:55,940
OUT THERE IN GENERAL FOR LANDING
THE FIRST STAGE.

773
00:45:55,940 --> 00:45:59,960
WE WOULD REDIRECT THE BOATS.

774
00:45:59,960 --> 00:46:02,760
ACTUALLY IN THIS PARTICULAR
TRAJECTORY, YOU'RE NEVER THAT

775
00:46:02,760 --> 00:46:04,420
FAR OFF SHORE.

776
00:46:04,420 --> 00:46:09,619
I'M PRETTY SURE IT'S EASY TO†--

RELATIVELY EASY TO WORK WITH THE

777
00:46:09,619 --> 00:46:13,839
COAST GUARD AND GET SOME HELP
THERE.

778
00:46:13,839 --> 00:46:16,359
SO THAT WOULD BE OUR PRIMARY
APPROACH, WORKING WITH THE COAST

779
00:46:16,359 --> 00:46:17,359
GUARD.

780
00:46:17,359 --> 00:46:21,009
I DON'T HOPE WE'RE GOING TO USE
THAT FRANKLY.

781
00:46:21,009 --> 00:46:24,790
>> LAST QUESTION RIGHT HERE.

782
00:46:24,790 --> 00:46:30,809
>> HANS, CAN YOU TELL ME, WITH
THE ADAPTATION OF THE MERLIN

783
00:46:30,809 --> 00:46:37,829
ENGINES, HOW MUCH MORE THRUST,
TORQUE, DO THESE SUPPLY COMPARED

784
00:46:37,829 --> 00:46:40,799
TO THE PREVIOUS ENGINES ON THE
FALCON?

785
00:46:40,799 --> 00:46:45,160
AND A QUESTION ALSO ON THE
PAYLOAD.

786
00:46:45,160 --> 00:46:50,250
THE BIGELOW, WHAT PORTION OF THE
EXACT TOTAL WEIGHT OF THE

787
00:46:50,250 --> 00:46:52,560
PAYLOAD DOES IT INCORPORATE?

788
00:46:52,560 --> 00:46:54,999
HOW DOES IT WEIGH?

789
00:46:54,999 --> 00:47:01,589
>> REGARDING THE ENGINE, IT'S
20% MORE.

790
00:47:01,589 --> 00:47:03,180
IT'S A GOOD AMOUNT OF THRUST.

791
00:47:03,180 --> 00:47:07,759
BACK TO BIGELOW, YOU SAID
EARLIER IT'S†--

792
00:47:07,759 --> 00:47:09,190
>> 3100 POUNDS.

793
00:47:09,190 --> 00:47:12,400
>> ON TOP OF THAT IS THE
STRUCTURE THAT HOLDS IT DOWN,

794
00:47:12,400 --> 00:47:16,170
AND THE TRUNK AND THAT STRUCTURE
IS PRETTY SUBSTANTIAL.

795
00:47:16,170 --> 00:47:18,810
A COUPLE THOUSAND POUNDS THAT
COME TO THAT.

796
00:47:18,810 --> 00:47:22,019
I THINK THE TOTAL IS LIKE 6,000
OR 7,000.

797
00:47:22,019 --> 00:47:26,150
>> THAT'S GOING TO CONCLUDE OUR
BRIEFING.

798
00:47:26,150 --> 00:47:30,930
OUR LAUNCH COVERAGE FRIDAY
AFTERNOON STARTS AT 3:30 P.M.

799
00:47:30,930 --> 00:47:32,260
FOR LAUNCH AT 4:43.

800
00:47:32,260 --> 00:47:36,950
FOR ADDITIONAL INFORMATION ABOUT
THIS MISSION YOU CAN GO TO