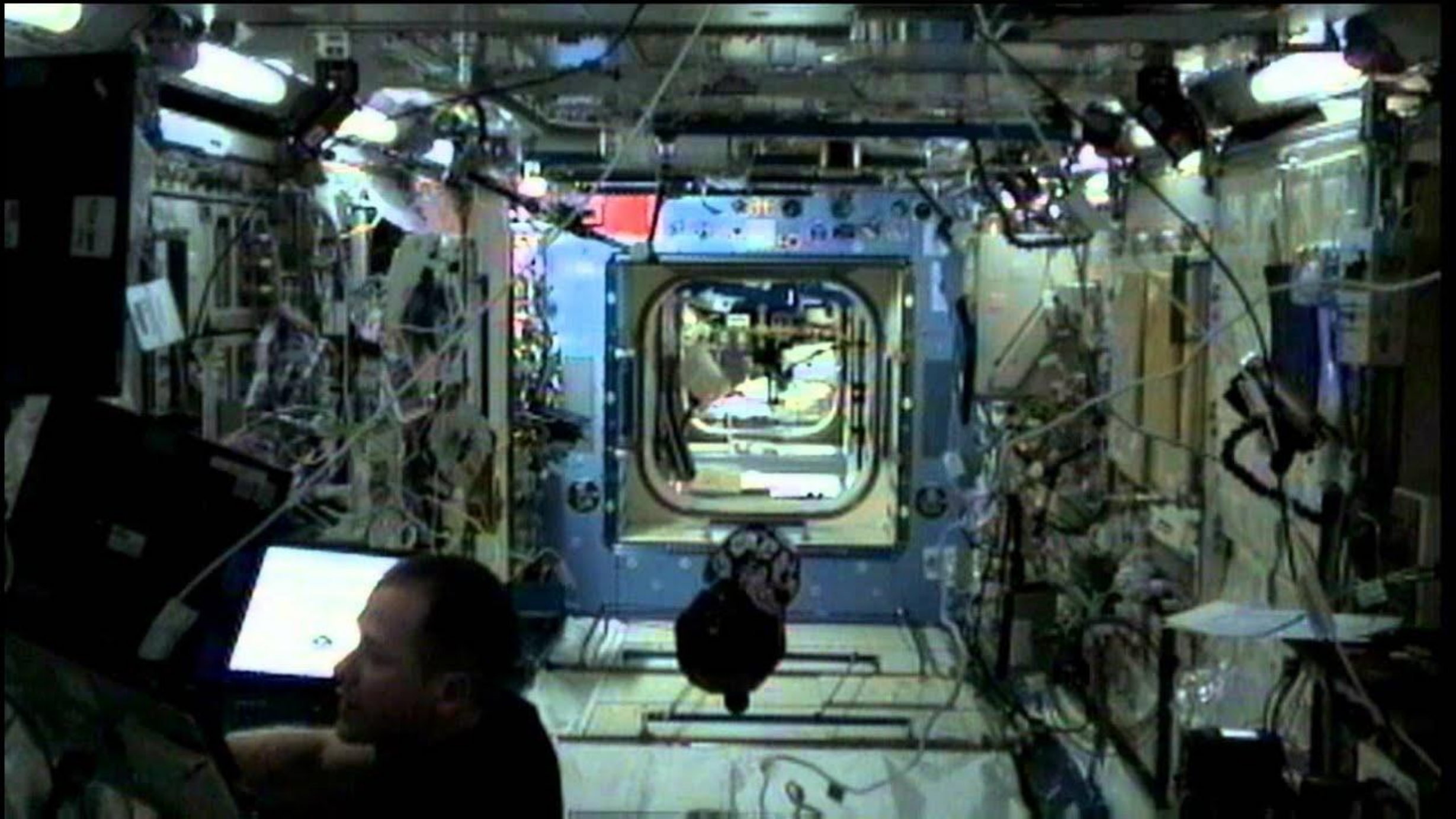

1
00:00:05,590 --> 00:00:03,590
this is mission control houston the

2
00:00:07,510 --> 00:00:05,600
international space station crew has

3
00:00:10,230 --> 00:00:07,520
executed an awful lot of important

4
00:00:12,789 --> 00:00:10,240
science operations on board this week

5
00:00:15,270 --> 00:00:12,799
while they have been in parallel getting

6
00:00:17,510 --> 00:00:15,280
themselves ready to support the planned

7
00:00:19,510 --> 00:00:17,520
arrival of a commercial cargo ship at

8
00:00:21,670 --> 00:00:19,520
the station this weekend

9
00:00:23,349 --> 00:00:21,680
commander kevin ford kicked off the week

10
00:00:25,349 --> 00:00:23,359
with a couple of days worth

11
00:00:27,589 --> 00:00:25,359
troubleshooting a piece of hardware

12
00:00:29,830 --> 00:00:27,599
called the amine swingbed that's a

13
00:00:32,389 --> 00:00:29,840

technology demonstration payload that's

14
00:00:34,630 --> 00:00:32,399
testing whether vacuum-generated amine

15
00:00:36,549 --> 00:00:34,640
system could work as an effective system

16
00:00:38,790 --> 00:00:36,559
to remove carbon dioxide from the

17
00:00:39,910 --> 00:00:38,800
spacecraft environment from the crew

18
00:00:42,709 --> 00:00:39,920
area

19
00:00:45,110 --> 00:00:42,719
he did determine that a suspect valve

20
00:00:47,510 --> 00:00:45,120
was not responsible for the hardware's

21
00:00:50,790 --> 00:00:47,520
inability to work and did find that the

22
00:00:53,270 --> 00:00:50,800
culprit was a gearbox a gearbox that was

23
00:00:55,029 --> 00:00:53,280
removed and prepared for return to earth

24
00:00:57,029 --> 00:00:55,039
for analysis

25
00:00:59,189 --> 00:00:57,039
ford and flight engineer tom marshburn

26
00:01:02,069 --> 00:00:59,199
joined up late in the day to practice

27
00:01:04,710 --> 00:01:02,079
operations with the canadarm2 for the

28
00:01:07,030 --> 00:01:04,720
scheduled grapple and birthing of the

29
00:01:10,550 --> 00:01:07,040
dragon cargo ship which launched this

30
00:01:12,870 --> 00:01:10,560
morning at 9 10 central time from the

31
00:01:14,710 --> 00:01:12,880
cape canaveral air force station flight

32
00:01:17,109 --> 00:01:14,720
engineer chris hadfield helped prepare

33
00:01:19,590 --> 00:01:17,119
for dragon by getting some special a

34
00:01:20,870 --> 00:01:19,600
special communications system for dragon

35
00:01:23,109 --> 00:01:20,880
operations

36
00:01:24,710 --> 00:01:23,119
set up in the cupola module

37
00:01:26,550 --> 00:01:24,720
and then packing items that are

38
00:01:27,590 --> 00:01:26,560

scheduled to be returned to earth when

39
00:01:29,590 --> 00:01:27,600
dragon

40
00:01:31,429 --> 00:01:29,600
comes back in late march

41
00:01:33,830 --> 00:01:31,439
hadfield also took care of science

42
00:01:36,710 --> 00:01:33,840
payloads initializing the binary

43
00:01:38,310 --> 00:01:36,720
colloidal alloy test apparatus and

44
00:01:40,390 --> 00:01:38,320
photographing some samples for that

45
00:01:42,069 --> 00:01:40,400
physical science investigation

46
00:01:44,630 --> 00:01:42,079
he was also looking over training

47
00:01:47,270 --> 00:01:44,640
materials for a material science

48
00:01:50,230 --> 00:01:47,280
investigation called coarsening in solid

49
00:01:52,389 --> 00:01:50,240
liquid mixtures which has new experiment

50
00:01:53,670 --> 00:01:52,399
sample materials on its way to the

51
00:01:55,990 --> 00:01:53,680
station now

52
00:01:58,389 --> 00:01:56,000
flight engineers evgeny tarelkin and

53
00:02:00,550 --> 00:01:58,399
oleg novitskiy began preparations for

54
00:02:03,590 --> 00:02:00,560
their departure from the station

55
00:02:05,749 --> 00:02:03,600
along with commander kevin ford nowitzki

56
00:02:08,710 --> 00:02:05,759
and tarelkin are scheduled to leave the

57
00:02:10,790 --> 00:02:08,720
station in two weeks time and this week

58
00:02:12,949 --> 00:02:10,800
they began their first of several days

59
00:02:15,510 --> 00:02:12,959
work with the lower body negative

60
00:02:17,910 --> 00:02:15,520
pressure suit that's a russian apparatus

61
00:02:20,309 --> 00:02:17,920
that uses suction to pull fluids to the

62
00:02:22,710 --> 00:02:20,319
lower extremities and simulate gravity

63
00:02:25,350 --> 00:02:22,720

and allows the cosmonauts to evaluate

64
00:02:27,430 --> 00:02:25,360
their orthostatic stability tuesday this

65
00:02:29,430 --> 00:02:27,440
week was a science focus day with tom

66
00:02:32,229 --> 00:02:29,440
marshburn spending much of it supporting

67
00:02:34,390 --> 00:02:32,239
the spheres vertigo experiment that's an

68
00:02:36,790 --> 00:02:34,400
mit space systems laboratory

69
00:02:38,790 --> 00:02:36,800
investigation that employs two of the

70
00:02:40,869 --> 00:02:38,800
bowling ball-sized satellites the

71
00:02:43,270 --> 00:02:40,879
spheres satellites

72
00:02:45,910 --> 00:02:43,280
uses them to create a 3d model of

73
00:02:47,990 --> 00:02:45,920
another object with the intent that the

74
00:02:49,270 --> 00:02:48,000
model that's created could then be used

75
00:02:51,670 --> 00:02:49,280
to inform

76
00:02:52,949 --> 00:02:51,680
the autonomous navigation of those free

77
00:02:55,030 --> 00:02:52,959
flyers

78
00:02:57,589 --> 00:02:55,040
kevin ford started tuesday with a health

79
00:02:59,830 --> 00:02:57,599
status questionnaire part of the ongoing

80
00:03:02,309 --> 00:02:59,840
effort to gather information about how

81
00:03:04,149 --> 00:03:02,319
human bodies respond to being in the

82
00:03:05,110 --> 00:03:04,159
zero-g environment for an extended

83
00:03:07,830 --> 00:03:05,120
period

84
00:03:10,390 --> 00:03:07,840
he then loaded software on a laptop in

85
00:03:11,990 --> 00:03:10,400
the columbus module for later operations

86
00:03:14,790 --> 00:03:12,000
with a european space agency

87
00:03:17,270 --> 00:03:14,800
investigation into ways to improve crew

88
00:03:18,949 --> 00:03:17,280

efficiency and autonomy

89
00:03:20,790 --> 00:03:18,959
he spent the rest of the day finishing

90
00:03:22,309 --> 00:03:20,800
that troubleshooting with the amine

91
00:03:24,789 --> 00:03:22,319
swingbed

92
00:03:26,789 --> 00:03:24,799
on wednesday the commander spent a big

93
00:03:29,030 --> 00:03:26,799
part of his morning working on elements

94
00:03:31,589 --> 00:03:29,040
of the cruise experiment the issa

95
00:03:33,990 --> 00:03:31,599
technology demonstrator of possible ways

96
00:03:36,470 --> 00:03:34,000
to improve efficiency of the crew

97
00:03:39,509 --> 00:03:36,480
ford worked with the voice activated

98
00:03:41,430 --> 00:03:39,519
procedure viewer and procedural displays

99
00:03:43,910 --> 00:03:41,440
he was testing ways in which crew

100
00:03:45,509 --> 00:03:43,920
members can be more autonomous and more

101
00:03:47,750 --> 00:03:45,519
efficient in work

102
00:03:50,070 --> 00:03:47,760
something that be even more critical for

103
00:03:51,990 --> 00:03:50,080
future explorers on missions where

104
00:03:54,630 --> 00:03:52,000
communication with earth is much harder

105
00:03:56,309 --> 00:03:54,640
than it is for the crews today

106
00:03:58,229 --> 00:03:56,319
hadfield and marshburn spent time

107
00:04:01,110 --> 00:03:58,239
wednesday on the integrated

108
00:04:03,509 --> 00:04:01,120
cardiovascular experiment this one aims

109
00:04:05,670 --> 00:04:03,519
to quantify the decrease in the size of

110
00:04:08,070 --> 00:04:05,680
a crew member's heart muscle over time

111
00:04:09,910 --> 00:04:08,080
while in weightlessness that's just one

112
00:04:12,070 --> 00:04:09,920
component of the research documenting

113
00:04:14,390 --> 00:04:12,080

how human bodies are affected by being

114
00:04:16,150 --> 00:04:14,400
in space environment with an eye towards

115
00:04:17,909 --> 00:04:16,160
discovering ways to counteract the

116
00:04:20,310 --> 00:04:17,919
negative effects

117
00:04:22,550 --> 00:04:20,320
flight engineer roman romanenko assisted

118
00:04:24,790 --> 00:04:22,560
evgeny tarelkin with another session of

119
00:04:26,629 --> 00:04:24,800
the lower body negative pressure suit

120
00:04:29,189 --> 00:04:26,639
the routine russian protocol for

121
00:04:32,070 --> 00:04:29,199
retuning returning crew members

122
00:04:34,550 --> 00:04:32,080
later he joined his soyuz crewmates

123
00:04:36,870 --> 00:04:34,560
hadfield and marshburn for a routine

124
00:04:39,590 --> 00:04:36,880
emergency descent drill that's a

125
00:04:41,430 --> 00:04:39,600
standard for all crews

126
00:04:44,870 --> 00:04:41,440
romanenko hadfield and marshburn not

127
00:04:46,390 --> 00:04:44,880
scheduled to return to earth until may

128
00:04:48,310 --> 00:04:46,400
on thursday

129
00:04:50,629 --> 00:04:48,320
novitskiy and tarelkin spent half the

130
00:04:52,950 --> 00:04:50,639
day laying cables in the russian segment

131
00:04:54,710 --> 00:04:52,960
of the station to support the plasma

132
00:04:57,270 --> 00:04:54,720
wave experiment that's going to measure

133
00:04:58,950 --> 00:04:57,280
the electromagnetic field around the

134
00:05:01,189 --> 00:04:58,960
outside of the station

135
00:05:03,110 --> 00:05:01,199
the exterior hardware installation for

136
00:05:06,070 --> 00:05:03,120
that experiment is planned for a

137
00:05:09,029 --> 00:05:06,080
spacewalk by romanenko and cosmonaut

138
00:05:10,790 --> 00:05:09,039

pavel vinogradov in april vinogradov

139
00:05:14,230 --> 00:05:10,800
will be arriving at the station in late

140
00:05:15,430 --> 00:05:14,240
march with alexander misurkin and chris

141
00:05:17,830 --> 00:05:15,440
cassidy

142
00:05:19,830 --> 00:05:17,840
romanenko spent part of his day on

143
00:05:22,310 --> 00:05:19,840
thursday taking surface samples in the

144
00:05:25,189 --> 00:05:22,320
russian segment and seeing two science

145
00:05:27,270 --> 00:05:25,199
experiment operations in the afternoon

146
00:05:29,350 --> 00:05:27,280
after lunch novitskiy worked to stow

147
00:05:31,189 --> 00:05:29,360
items that are destined for disposal in

148
00:05:33,510 --> 00:05:31,199
one of the progress ships that's docked

149
00:05:35,830 --> 00:05:33,520
to the russian segment and tarelkin did

150
00:05:38,070 --> 00:05:35,840
maintenance as well as shot scenes for a

151
00:05:40,150 --> 00:05:38,080
russian documentary about station

152
00:05:41,909 --> 00:05:40,160
payload operations

153
00:05:44,310 --> 00:05:41,919
there were a couple of tasks on the

154
00:05:46,230 --> 00:05:44,320
agenda on thursday for chris hadfield

155
00:05:48,950 --> 00:05:46,240
including an interview with popular

156
00:05:50,950 --> 00:05:48,960
canadian tv network morning show

157
00:05:53,110 --> 00:05:50,960
and then the final pre-packing of items

158
00:05:55,189 --> 00:05:53,120
that are scheduled to come back to earth

159
00:05:57,670 --> 00:05:55,199
on the dragon spacecraft

160
00:06:00,629 --> 00:05:57,680
tom marshburn even set up an hd camera

161
00:06:03,749 --> 00:06:00,639
in the lab that will shoot the

162
00:06:05,430 --> 00:06:03,759
robotic workstation monitors there so

163
00:06:07,189 --> 00:06:05,440

that the mission control teams can

164
00:06:09,670 --> 00:06:07,199
follow along and see what the arm

165
00:06:12,629 --> 00:06:09,680
operators are doing during those dynamic

166
00:06:14,550 --> 00:06:12,639
operations on saturday the crew members

167
00:06:17,189 --> 00:06:14,560
would actually be working in the cupola

168
00:06:20,309 --> 00:06:17,199
on saturday the camera is shooting at

169
00:06:22,469 --> 00:06:20,319
the backup station in the lab

170
00:06:25,189 --> 00:06:22,479
kevin ford chris hadfield tom marshburn

171
00:06:26,629 --> 00:06:25,199
all had regular exercise sessions but

172
00:06:29,270 --> 00:06:26,639
little else on their schedules for

173
00:06:31,430 --> 00:06:29,280
thursday they got time off thursday and

174
00:06:33,350 --> 00:06:31,440
friday to rest up in advance for the

175
00:06:34,469 --> 00:06:33,360
weekend operations with the dragon

176
00:06:36,390 --> 00:06:34,479
spacecraft

177
00:06:38,550 --> 00:06:36,400
in fact hadfield uh

178
00:06:41,350 --> 00:06:38,560
rather ford and marshburn had their

179
00:06:44,150 --> 00:06:41,360
final training for robotics operations

180
00:06:46,950 --> 00:06:44,160
for the dragon today the second

181
00:06:49,589 --> 00:06:46,960
operational flight of the vehicle from

182
00:06:51,830 --> 00:06:49,599
spacex did launch on friday morning

183
00:06:54,870 --> 00:06:51,840
carrying 1200 pounds of science

184
00:06:57,110 --> 00:06:54,880
experiment materials and crew supplies

185
00:06:59,350 --> 00:06:57,120
scheduled to be a grappled on saturday

186
00:07:02,870 --> 00:06:59,360
morning by the crew members at the

187
00:07:04,629 --> 00:07:02,880
controls of the canadarm2

188
00:07:05,749 --> 00:07:04,639

robotic manipulator

189
00:07:08,230 --> 00:07:05,759
and then

190
00:07:10,870 --> 00:07:08,240
through use of the arm ground commanded

191
00:07:13,430 --> 00:07:10,880
birthed to the harmony module with a

192
00:07:14,950 --> 00:07:13,440
hatch opening scheduled for sunday to

193
00:07:17,589 --> 00:07:14,960
allow the crew to start unloading

194
00:07:19,670 --> 00:07:17,599
supplies as well as the food and