1
00:00:40,960 --> 00:01:09,190
down

2
00:01:13,510 --> 00:01:11,590
good morning endeavor we show you just

3
00:01:15,270 --> 00:01:13,520
off the east coast of australia and

4
00:01:24,550 --> 00:01:15,280
that's morning's wakeup music is a

5
00:01:24,560 --> 00:01:35,749
and good

6
00:01:35,759 --> 00:01:38,630
rogers are we

7
00:01:44,870 --> 00:01:41,830
views of the uh pam stew satellite uh

8
00:01:47,429 --> 00:01:44,880
from uh endeavor the range to the

9
00:01:49,350 --> 00:01:47,439
satellite is about 2 000 feet this is a

10
00:01:51,270 --> 00:01:49,360
station keeping position that endeavor

11
00:01:53,749 --> 00:01:51,280
will

12
00:01:54,870 --> 00:01:53,759
basically match the movements of the

13
00:01:57,910 --> 00:01:54,880

satellite

14
00:02:01,270 --> 00:01:57,920
for the next six to eight hours or so

15
00:02:03,590 --> 00:02:01,280
this satellite is a cylindrically shaped

16
00:02:06,830 --> 00:02:03,600
spacecraft with a

17
00:02:09,910 --> 00:02:06,840
size of about two feet by three

18
00:02:12,790 --> 00:02:09,920
feet this is mission control houston uh

19
00:02:14,150 --> 00:02:12,800
the good news reported uh to the crew

20
00:02:15,910 --> 00:02:14,160
from chris hadfield here in mission

21
00:02:19,589 --> 00:02:15,920
control that the attitude measurement

22
00:02:21,030 --> 00:02:19,599
system has locked on to the uh pam stew

23
00:02:22,070 --> 00:02:21,040
satellite

24
00:02:25,030 --> 00:02:22,080
using

25
00:02:27,030 --> 00:02:25,040
lasers mounted in one of the canisters

26
00:02:28,710 --> 00:02:27,040
on the

27
00:02:36,869 --> 00:02:28,720
experiment rack in the back end of

28
00:02:40,630 --> 00:02:38,229
i sure i think i should say do you

29
00:02:43,110 --> 00:02:40,640
usually have a mile cable building

30
00:02:44,390 --> 00:02:43,120
affirmative we are watching uh your

31
00:02:47,750 --> 00:02:44,400
camera view that you're downlinking

32
00:02:49,110 --> 00:02:47,760
we'll have it for another few minutes

33
00:02:50,070 --> 00:02:49,120
okay great just want to make sure you're

34
00:02:52,150 --> 00:02:50,080
getting it

35
00:02:56,150 --> 00:02:52,160
we're getting a rock solid image and we

36
00:02:59,830 --> 00:02:58,309
you can thank the

37
00:03:05,110 --> 00:02:59,840
cecil b

38
00:03:10,949 --> 00:03:07,990

brown referencing mario runko and andy

39
00:03:13,830 --> 00:03:10,959
thomas operating cameras providing the

40
00:03:16,030 --> 00:03:13,840
view of the pam stew satellite

41
00:03:18,710 --> 00:03:16,040
at a range of about

42
00:03:21,589 --> 00:03:18,720
1740 feet

43
00:03:25,589 --> 00:03:23,350
debra houston we're with you on tdrs

44
00:03:27,430 --> 00:03:25,599
east and the folks in the park again

45
00:03:29,270 --> 00:03:27,440
want to pass along their congratulations

46
00:03:52,309 --> 00:03:29,280
to the cinematographer and the key grip

47
00:03:56,630 --> 00:03:54,550
just a fantastic picture endeavor thank

48
00:04:04,789 --> 00:03:56,640
you

49
00:04:07,910 --> 00:04:05,750
john

50
00:04:11,830 --> 00:04:07,920
we've just got a request to delay the

51
00:04:13,509 --> 00:04:11,840
next pam stew rendezvous by a day so

52
00:04:15,190 --> 00:04:13,519
and and we're going to accommodate that

53
00:04:17,590 --> 00:04:15,200
plan it looks like that means

54
00:04:19,909 --> 00:04:17,600
essentially we'll swap flight day 8 and

55
00:04:21,030 --> 00:04:19,919
flight day 9 activities

56
00:04:22,550 --> 00:04:21,040
and of course there'll be a lot of

57
00:04:24,150 --> 00:04:22,560
impacts to that

58
00:04:26,230 --> 00:04:24,160
beginning here

59
00:04:27,670 --> 00:04:26,240
gosh post sep

60
00:04:29,110 --> 00:04:27,680
so we wanted to give you a heads up on

61
00:04:31,110 --> 00:04:29,120
that we're going to continue

62
00:04:33,510 --> 00:04:31,120
troubleshooting right now but

63
00:04:35,030 --> 00:04:33,520

the pam stu folks i think that it'll be

64
00:04:36,790 --> 00:04:35,040
real beneficial to them to give them

65
00:04:37,830 --> 00:04:36,800
just a little bit more time to analyze

66
00:04:40,070 --> 00:04:37,840
the data

67
00:04:41,909 --> 00:04:40,080
and see if they can

68
00:04:44,790 --> 00:04:41,919
come up with some workarounds to some of

69
00:04:46,950 --> 00:04:44,800
the problems that they've been seeing

70
00:04:49,189 --> 00:04:46,960
that's the direction we're headed and of

71
00:04:52,629 --> 00:04:49,199
course if you've got any insights and

72
00:04:53,830 --> 00:04:52,639
then any suggestions as to ways to

73
00:04:55,990 --> 00:04:53,840
minimize

74
00:04:59,749 --> 00:04:56,000
any negative impact on the crew to doing

75
00:05:03,350 --> 00:05:01,430
okay

76
00:05:04,950 --> 00:05:03,360
we're just discussing the same thing on

77
00:05:06,550 --> 00:05:04,960
board so it sounds like we're thinking

78
00:05:08,310 --> 00:05:06,560
alike

79
00:05:10,629 --> 00:05:08,320
we don't have any

80
00:05:12,230 --> 00:05:10,639
suggestions on the uh

81
00:05:14,550 --> 00:05:12,240
on the laser office we'll continue

82
00:05:17,510 --> 00:05:14,560
taking all the video that we can

83
00:05:19,909 --> 00:05:17,520
so uh linda can use that

84
00:05:21,590 --> 00:05:19,919
of course we've got plenty of uh

85
00:05:27,270 --> 00:05:21,600
we're glad to stay up here another day

86
00:05:31,430 --> 00:05:29,110
and we copy that john and we'll make

87
00:05:33,430 --> 00:05:31,440
sure we put that in the list of options

88
00:05:35,830 --> 00:05:33,440

uh that are considered

89
00:05:37,670 --> 00:05:35,840
the of course uh of course cryo is

90
00:05:40,550 --> 00:05:37,680
cryo's the real uh the real limiting

91
00:05:40,560 --> 00:05:48,950
the lights are going down right now

92
00:05:54,790 --> 00:05:50,870
i appreciate anything you can do to put

93
00:05:54,800 --> 00:05:59,029
we'll fight the good fight jones

94
00:05:59,039 --> 00:06:06,629
endeavor houston for john

95
00:06:10,230 --> 00:06:07,990
yeah john uh

96
00:06:12,070 --> 00:06:10,240
of course all kidding aside that we we

97
00:06:13,830 --> 00:06:12,080
did take a look at uh your cryo margin

98
00:06:15,990 --> 00:06:13,840
and uh we just uh we don't we don't see

99
00:06:17,909 --> 00:06:16,000
any way to uh conserve enough cryo to

100
00:06:19,909 --> 00:06:17,919
really get an extension day uh you know

101
00:06:21,110 --> 00:06:19,919
of course we're protecting wave off days

102
00:06:22,629 --> 00:06:21,120
but

103
00:06:30,230 --> 00:06:22,639
we don't think an actual extension day

104
00:06:37,350 --> 00:06:34,390
okay well i know you looked at it

105
00:06:38,790 --> 00:06:37,360
once we uh stick it takes so much effort

106
00:06:41,110 --> 00:06:38,800
for us to get up here you know we've

107
00:06:42,629 --> 00:06:41,120
been in training for this flight for uh

108
00:06:45,029 --> 00:06:42,639
almost a year now

109
00:07:01,270 --> 00:06:45,039
and i wish i had a nickel for every

110
00:07:04,950 --> 00:07:03,189
uh we couldn't applaud those like those

111
00:07:06,950 --> 00:07:04,960
comments anymore

112
00:07:08,790 --> 00:07:06,960
from a ground standpoint this is one of

113
00:07:10,870 --> 00:07:08,800

the most exciting missions so most of us

114
00:07:12,550 --> 00:07:10,880
have been involved with and

115
00:07:25,350 --> 00:07:12,560
gosh we'd like to see it go on for a lot

116
00:07:30,150 --> 00:07:27,510
the story of the mere cooperative ray

117
00:07:31,830 --> 00:07:30,160
began back a couple of years ago when

118
00:07:33,430 --> 00:07:31,840
team members from the international

119
00:07:36,070 --> 00:07:33,440
space station program

120
00:07:38,070 --> 00:07:36,080
conceived of the project that would

121
00:07:39,830 --> 00:07:38,080
power on the russian space station and

122
00:07:41,510 --> 00:07:39,840
provide invaluable information to the

123
00:07:43,830 --> 00:07:41,520
designers of the array

124
00:07:46,150 --> 00:07:43,840
for the international space station the

125
00:07:50,869 --> 00:07:46,160
u.s portion of the project was managed

126
00:07:54,950 --> 00:07:53,029
the cooperative array project followed

127
00:07:57,189 --> 00:07:54,960
an aggressive timeline taking less than

128
00:07:58,629 --> 00:07:57,199
two and a half years from the inception

129
00:08:01,189 --> 00:07:58,639
to space

130
00:08:03,830 --> 00:08:01,199
deployment the video that is being sent

131
00:08:04,790 --> 00:08:03,840
to us from the mere space station

132
00:08:07,189 --> 00:08:04,800
is

133
00:08:09,670 --> 00:08:07,199
was recorded during the spacewalk in

134
00:08:11,749 --> 00:08:09,680
this particular view an array on the

135
00:08:13,670 --> 00:08:11,759
base block of the module

136
00:08:15,510 --> 00:08:13,680
is the article

137
00:08:17,990 --> 00:08:15,520
towards the front of the picture which

138
00:08:19,270 --> 00:08:18,000

is uh straight the collaborative array

139
00:08:23,830 --> 00:08:19,280
can be seen

140
00:08:27,029 --> 00:08:23,840
as a accordion feature behind that array

141
00:08:29,670 --> 00:08:27,039
and the space walkers are in the shadow

142
00:08:47,030 --> 00:08:29,680
on the right right hand side of the

143
00:08:50,790 --> 00:08:49,829
to once again orient this particular

144
00:08:55,509 --> 00:08:50,800
picture

145
00:08:57,430 --> 00:08:55,519
the golden straight feature towards the

146
00:09:00,389 --> 00:08:57,440
left side of the screen is actually an

147
00:09:02,389 --> 00:09:00,399
array that is on the base block of the

148
00:09:03,190 --> 00:09:02,399
mir space station

149
00:09:05,750 --> 00:09:03,200
the

150
00:09:08,790 --> 00:09:05,760
array that is being unfurled

151
00:09:10,949 --> 00:09:08,800
is an accordion feature that is behind

152
00:09:12,710 --> 00:09:10,959
it in this particular view you can see

153
00:09:14,790 --> 00:09:12,720
the accordion

154
00:09:18,550 --> 00:09:14,800
shape of the array as it's being

155
00:09:23,269 --> 00:09:21,430
these are pictures were recorded by nasa

156
00:09:25,910 --> 00:09:23,279
astronaut and cosmonaut researcher

157
00:09:28,310 --> 00:09:25,920
shannon lucid from the interior of the

158
00:09:39,829 --> 00:09:28,320
mir space station

159
00:09:43,910 --> 00:09:42,630
in this particular view you can see

160
00:09:52,389 --> 00:09:43,920
the

161
00:09:56,150 --> 00:09:52,399
solar array

162
00:09:58,230 --> 00:09:56,160
the individual on the lower portion of

163
00:10:00,230 --> 00:09:58,240

the deploy device

164
00:10:01,990 --> 00:10:00,240
is cranking in a

165
00:10:04,310 --> 00:10:02,000
slightly slower fashion that's actually

166
00:10:06,069 --> 00:10:04,320
a little bit tighter crank and then that

167
00:10:09,590 --> 00:10:06,079
the person

168
00:10:13,430 --> 00:10:09,600
on the space walker on the far side is

169
00:10:15,509 --> 00:10:13,440
cranking at a slightly higher rate

170
00:10:16,949 --> 00:10:15,519
this is a very physically intensive

171
00:10:20,069 --> 00:10:16,959
exercise

172
00:10:44,630 --> 00:10:22,550
re-entered into the space lock to

173
00:10:49,990 --> 00:10:46,870
this particular piece of video was taken

174
00:10:52,790 --> 00:10:50,000
towards the end of the deployment

175
00:10:53,590 --> 00:10:52,800
overall it took about three hours for

176
00:10:55,910 --> 00:10:53,600
uh

177
00:10:59,430 --> 00:10:55,920
any franco and usa

178
00:11:01,350 --> 00:10:59,440
to deploy the entire array

179
00:11:04,069 --> 00:11:01,360
it is a very physically demanding

180
00:11:05,990 --> 00:11:04,079
activity since it requires both men to

181
00:11:29,030 --> 00:11:06,000
hand crank the array to its full

182
00:11:33,910 --> 00:11:31,110
after a brief pause to uh switch out

183
00:11:36,389 --> 00:11:33,920
concepts on the uh space station we are

184
00:11:37,990 --> 00:11:36,399
once again receiving a downlink of the

185
00:11:41,750 --> 00:11:38,000
uh deploy

186
00:11:44,150 --> 00:11:41,760
of the mirror cooperative solar array

187
00:11:47,910 --> 00:11:44,160
the eva today began

188
00:11:50,870 --> 00:11:47,920

around 1am moscow time

189
00:11:53,350 --> 00:11:50,880
which was about midnight decreed moscow

190
00:11:58,230 --> 00:11:53,360
time that is the time with which the

191
00:12:03,110 --> 00:12:00,949
the crew members were back inside

192
00:12:04,230 --> 00:12:03,120
by about

193
00:12:05,190 --> 00:12:04,240
6

194
00:12:07,590 --> 00:12:05,200
am

195
00:12:09,110 --> 00:12:07,600
decreed mascot time which is about 7 00

196
00:13:07,829 --> 00:12:09,120
am

197
00:13:12,470 --> 00:13:10,069
even with a little more light it's uh

198
00:13:13,269 --> 00:13:12,480
difficult from this position to tell the

199
00:13:18,710 --> 00:13:13,279
two

200
00:13:21,750 --> 00:13:18,720
that did the job today for a joint

201
00:13:24,310 --> 00:13:21,760
project were mayor 21 commander yuri

202
00:13:26,470 --> 00:13:24,320
onye franco and flight engineer yuri

203
00:13:29,670 --> 00:13:26,480
usachev

204
00:13:31,910 --> 00:13:29,680
on the left-hand side of the

205
00:13:33,110 --> 00:13:31,920
array that runs down the center of the

206
00:13:36,150 --> 00:13:33,120
screen

207
00:13:38,310 --> 00:13:36,160
is the boom crane this was used to

208
00:13:39,590 --> 00:13:38,320
remove the

209
00:13:41,829 --> 00:13:39,600
solar ray

210
00:13:43,030 --> 00:13:41,839
canister from the docking module where

211
00:13:45,509 --> 00:13:43,040
it was

212
00:14:01,590 --> 00:13:45,519
stored for the launch

213
00:14:06,470 --> 00:14:03,829

the canister was actually moved into

214
00:14:07,269 --> 00:14:06,480
position uh early tuesday morning moscow

215
00:14:09,670 --> 00:14:07,279
time

216
00:14:12,069 --> 00:14:09,680
in preparation for today's array

217
00:14:13,350 --> 00:14:12,079
for today's uh spacewalk and deploy of

218
00:14:21,829 --> 00:14:13,360
the array

219
00:14:26,230 --> 00:14:21,839
out and

220
00:14:29,189 --> 00:14:26,240
positioned for today's activities

221
00:14:31,590 --> 00:14:29,199
we have completed the replay of the

222
00:14:35,189 --> 00:14:31,600
spacewalk activities this is now a live

223
00:14:37,750 --> 00:14:35,199
picture from the mere space station

224
00:14:55,430 --> 00:14:37,760
showing the solar array in its deployed