
PAO
ISS D/L 1 LOS

1
00:00:06,389 --> 00:00:03,510
the european space agency's automated

2
00:00:08,070 --> 00:00:06,399
transfer vehicle continues to make its

3
00:00:10,310 --> 00:00:08,080
way toward the international space

4
00:00:12,789 --> 00:00:10,320
station right now it's heading for a

5
00:00:15,990 --> 00:00:12,799
docking to the zvezda module's aft

6
00:00:18,550 --> 00:00:16,000
docking port next tuesday morning the

7
00:00:21,029 --> 00:00:18,560
ship which launched from french guyana

8
00:00:23,670 --> 00:00:21,039
last week is the fifth in a series of

9
00:00:26,230 --> 00:00:23,680
five vehicles that esa its member

10
00:00:27,670 --> 00:00:26,240
nations and its industry partners have

11
00:00:29,109 --> 00:00:27,680
provided to the international space

12
00:00:30,870 --> 00:00:29,119
station project

13
00:00:33,030 --> 00:00:30,880

been delivering supplies to the station

14
00:00:35,030 --> 00:00:33,040
but done a lot more than that as well

15
00:00:36,870 --> 00:00:35,040
over the years today we're going to

16
00:00:39,030 --> 00:00:36,880
discuss that with eric vanderwaal the

17
00:00:41,910 --> 00:00:39,040
european space agency's international

18
00:00:43,830 --> 00:00:41,920
space station program liaison in houston

19
00:00:45,430 --> 00:00:43,840
good morning eric good morning that was

20
00:00:47,270 --> 00:00:45,440
a beautiful launch last week how have

21
00:00:49,029 --> 00:00:47,280
things been going so far things have

22
00:00:51,350 --> 00:00:49,039
been going fabulous

23
00:00:52,709 --> 00:00:51,360
we had a great launch on the 29th of

24
00:00:54,630 --> 00:00:52,719
july

25
00:00:56,229 --> 00:00:54,640
everything is going well systems are

26
00:00:58,869 --> 00:00:56,239
extremely healthy

27
00:01:01,110 --> 00:00:58,879
and we're performing our phasing towards

28
00:01:03,110 --> 00:01:01,120
the iss it's slow and steady all

29
00:01:05,590 --> 00:01:03,120
maneuvers are being completed as planned

30
00:01:07,830 --> 00:01:05,600
so everything looks great for a docking

31
00:01:09,590 --> 00:01:07,840
next week tuesday now

32
00:01:11,910 --> 00:01:09,600
it's going to do some more work on the

33
00:01:14,390 --> 00:01:11,920
way too there's a not just carrying

34
00:01:16,630 --> 00:01:14,400
cargo but atv has been a test bed for

35
00:01:18,870 --> 00:01:16,640
developing some technology and you're

36
00:01:21,749 --> 00:01:18,880
gonna try to demonstrate some of that on

37
00:01:23,830 --> 00:01:21,759
friday with the the lyris rendezvous

38
00:01:25,109 --> 00:01:23,840

sensors tell me what that is

39
00:01:27,990 --> 00:01:25,119
so basically

40
00:01:29,670 --> 00:01:28,000
every atv is similar to the previous one

41
00:01:32,069 --> 00:01:29,680
because certainly now it has become a

42
00:01:34,630 --> 00:01:32,079
mature concept however

43
00:01:37,109 --> 00:01:34,640
there is an experiment called lyris

44
00:01:39,590 --> 00:01:37,119
stands for laser infrared

45
00:01:41,429 --> 00:01:39,600
imaging sensors which is piggybacking on

46
00:01:43,510 --> 00:01:41,439
this last flight

47
00:01:45,590 --> 00:01:43,520
we have sensors installed on the outside

48
00:01:47,030 --> 00:01:45,600
of the atv and recording equipment on

49
00:01:49,429 --> 00:01:47,040
the inside

50
00:01:51,749 --> 00:01:49,439
so maybe to give you an idea the atv

51
00:01:54,870 --> 00:01:51,759
today his approach to the space station

52
00:01:56,469 --> 00:01:54,880
is mainly done in a cooperative way we

53
00:01:58,789 --> 00:01:56,479
have that is to say the station is

54
00:02:01,830 --> 00:01:58,799
cooperating the station helps us the

55
00:02:03,030 --> 00:02:01,840
station is aware that we're coming

56
00:02:04,550 --> 00:02:03,040
we have

57
00:02:07,429 --> 00:02:04,560
for the long range approach we're using

58
00:02:09,589 --> 00:02:07,439
gps data which comes from the atv and

59
00:02:11,589 --> 00:02:09,599
from the space station and we use rgps

60
00:02:13,990 --> 00:02:11,599
navigation and when we get closer we

61
00:02:15,589 --> 00:02:14,000
switch to optical sensors which work

62
00:02:18,309 --> 00:02:15,599
together with the space station which

63
00:02:19,910 --> 00:02:18,319

has on the smf ports laser reflectors

64
00:02:23,350 --> 00:02:19,920
installed

65
00:02:25,190 --> 00:02:23,360
however isa and the european uh industry

66
00:02:28,390 --> 00:02:25,200
believe that it's essential also to look

67
00:02:30,470 --> 00:02:28,400
at non-cooperative rendezvous so for

68
00:02:31,190 --> 00:02:30,480
instance with space debris or objects

69
00:02:33,910 --> 00:02:31,200
which

70
00:02:36,309 --> 00:02:33,920
try to

71
00:02:38,949 --> 00:02:36,319
to make an approach so new sensors have

72
00:02:41,110 --> 00:02:38,959
been developed for this new technology

73
00:02:43,110 --> 00:02:41,120
lyris is one of them

74
00:02:45,509 --> 00:02:43,120
so libras consists basically of an

75
00:02:48,470 --> 00:02:45,519
infrared camera which will be used for a

76
00:02:51,509 --> 00:02:48,480
long-range approach and a lidar for the

77
00:02:53,830 --> 00:02:51,519
short range navigation

78
00:02:56,949 --> 00:02:53,840
so lyrics has been installed on atv will

79
00:02:58,790 --> 00:02:56,959
be demonstrated on this atv flight

80
00:02:59,830 --> 00:02:58,800
there will be a fly under at the end of

81
00:03:02,149 --> 00:02:59,840
this week

82
00:03:05,190 --> 00:03:02,159
and we will use the data

83
00:03:07,190 --> 00:03:05,200
or use lyrics and the sensors up to

84
00:03:09,830 --> 00:03:07,200
the rendezvous and the docking

85
00:03:11,990 --> 00:03:09,840
lyrics itself does not is not included

86
00:03:14,390 --> 00:03:12,000
in the navigation of atv so atv has

87
00:03:15,910 --> 00:03:14,400
their own navigation system

88
00:03:18,710 --> 00:03:15,920

it's just a separate thing we will

89
00:03:20,309 --> 00:03:18,720
record the data and once we get on board

90
00:03:21,990 --> 00:03:20,319
we will get the recorders out and then

91
00:03:24,470 --> 00:03:22,000
we'll bring the data down later very

92
00:03:27,270 --> 00:03:24,480
interesting now in fact on this flight

93
00:03:28,949 --> 00:03:27,280
the atv is also going to be used in in

94
00:03:30,949 --> 00:03:28,959
sort of a similar way to demonstrate

95
00:03:33,990 --> 00:03:30,959
other technologies but this is at the

96
00:03:36,390 --> 00:03:34,000
end of its mission uh the the af after

97
00:03:38,070 --> 00:03:36,400
it undocks six months from now its

98
00:03:40,149 --> 00:03:38,080
descent is going to be different than

99
00:03:40,949 --> 00:03:40,159
what has happened before

100
00:03:42,710 --> 00:03:40,959
well

101
00:03:44,390 --> 00:03:42,720
one day the space station

102
00:03:46,149 --> 00:03:44,400
will have to come down

103
00:03:48,390 --> 00:03:46,159
we call it the end of life of the space

104
00:03:49,350 --> 00:03:48,400
station the space station is a very

105
00:03:50,949 --> 00:03:49,360
heavy

106
00:03:53,110 --> 00:03:50,959
uh vehicle

107
00:03:55,589 --> 00:03:53,120
and uh unfortunately it's it's not

108
00:03:58,070 --> 00:03:55,599
plausible to have sufficient uh

109
00:03:59,910 --> 00:03:58,080
uh propulsion available to do a steep

110
00:04:02,149 --> 00:03:59,920
reentry most vehicles will actually do a

111
00:04:04,229 --> 00:04:02,159
steep reentry

112
00:04:06,630 --> 00:04:04,239
the iss is going to do

113
00:04:07,910 --> 00:04:06,640

a design of life a shallow reentry now

114
00:04:09,830 --> 00:04:07,920
there is a

115
00:04:12,229 --> 00:04:09,840
crucial difference between a steep and a

116
00:04:15,350 --> 00:04:12,239
shallow reentry in a steep range you get

117
00:04:18,229 --> 00:04:15,360
you get very short but very very strong

118
00:04:19,830 --> 00:04:18,239
heating on the vehicle

119
00:04:20,870 --> 00:04:19,840
which has certain characteristics of

120
00:04:23,749 --> 00:04:20,880
breakup

121
00:04:28,070 --> 00:04:23,759
on the shallow reentry you get a very

122
00:04:29,270 --> 00:04:28,080
slow heating almost melting of the

123
00:04:32,629 --> 00:04:29,280
structures

124
00:04:33,909 --> 00:04:32,639
so the isis partnership got together has

125
00:04:37,110 --> 00:04:33,919
expressed a

126
00:04:40,550 --> 00:04:37,120
mutual interest to go and try to

127
00:04:42,390 --> 00:04:40,560
to implement a shallow entry on the atv

128
00:04:44,870 --> 00:04:42,400
in order to get a data to

129
00:04:47,990 --> 00:04:44,880
as good as possible model the future

130
00:04:50,790 --> 00:04:48,000
re-entry of the iss so we have agreed to

131
00:04:52,950 --> 00:04:50,800
that so after our stay which will be

132
00:04:55,270 --> 00:04:52,960
approximately six months

133
00:04:57,909 --> 00:04:55,280
we will undock from the space station

134
00:04:59,350 --> 00:04:57,919
and get ready to do a

135
00:05:02,150 --> 00:04:59,360
shallow reentry

136
00:05:03,590 --> 00:05:02,160
there will be equipment inside the atv

137
00:05:06,550 --> 00:05:03,600
there will be

138
00:05:08,790 --> 00:05:06,560

an esa experiment which is a camera

139
00:05:12,710 --> 00:05:08,800
this is the first we will have eyeball

140
00:05:15,510 --> 00:05:12,720
which is an infrared camera we'll have a

141
00:05:17,510 --> 00:05:15,520
rebar which is a breakup recorder

142
00:05:19,909 --> 00:05:17,520
and then we will have also on ground

143
00:05:22,390 --> 00:05:19,919
there is a great interest

144
00:05:23,990 --> 00:05:22,400
from people in australia to have

145
00:05:25,590 --> 00:05:24,000
numerous experiments i think i don't

146
00:05:26,550 --> 00:05:25,600
know the exact number but it's close to

147
00:05:28,390 --> 00:05:26,560
70

148
00:05:30,550 --> 00:05:28,400
experiments which will do monitoring

149
00:05:32,550 --> 00:05:30,560
from the ground and we will also ask if

150
00:05:34,790 --> 00:05:32,560
possible the crew from the space station

151
00:05:36,310 --> 00:05:34,800
if we have the right lighting to take

152
00:05:39,029 --> 00:05:36,320
pictures

153
00:05:40,870 --> 00:05:39,039
during the breakup of the atv and

154
00:05:43,029 --> 00:05:40,880
i think there will be a tremendous

155
00:05:45,189 --> 00:05:43,039
amount of data which we can collect from

156
00:05:47,350 --> 00:05:45,199
this re-entry and which will be uh

157
00:05:48,950 --> 00:05:47,360
extremely valuable to uh

158
00:05:50,469 --> 00:05:48,960
to a lot of people but especially the

159
00:05:52,550 --> 00:05:50,479
iss those are

160
00:05:54,950 --> 00:05:52,560
i think great examples of the kinds of

161
00:05:56,309 --> 00:05:54,960
things that esa has been able to do with

162
00:05:58,550 --> 00:05:56,319
this project

163
00:06:01,590 --> 00:05:58,560

and and that's being turned over into

164
00:06:03,670 --> 00:06:01,600
future uh future products or portions of

165
00:06:05,510 --> 00:06:03,680
future vehicles right

166
00:06:07,670 --> 00:06:05,520
well we have to see that

167
00:06:08,710 --> 00:06:07,680
first the european industry can be very

168
00:06:11,990 --> 00:06:08,720
proud

169
00:06:14,070 --> 00:06:12,000
achieved they have uh

170
00:06:17,029 --> 00:06:14,080
have designed they have developed they

171
00:06:20,790 --> 00:06:17,039
have operated we're still operating

172
00:06:21,990 --> 00:06:20,800
a fully autonomous free-flying vehicle

173
00:06:24,390 --> 00:06:22,000
with

174
00:06:27,430 --> 00:06:24,400
i would say state-of-the-art navigation

175
00:06:31,830 --> 00:06:29,350
and we have done this

176
00:06:34,309 --> 00:06:31,840
now five times

177
00:06:37,990 --> 00:06:34,319
at the same time it has also proven that

178
00:06:40,150 --> 00:06:38,000
isa with the delivery of the 5 atvs

179
00:06:43,189 --> 00:06:40,160
we use those atvs also

180
00:06:45,670 --> 00:06:43,199
as a compensation in kind for our parts

181
00:06:48,070 --> 00:06:45,680
or our obligation for the i call it the

182
00:06:50,469 --> 00:06:48,080
household bill of the space stations or

183
00:06:51,670 --> 00:06:50,479
the common system operation cost

184
00:06:54,150 --> 00:06:51,680
so

185
00:06:56,150 --> 00:06:54,160
with with the delivery of columbus

186
00:06:58,950 --> 00:06:56,160
module which is attached to the station

187
00:07:00,870 --> 00:06:58,960
and the atv it has also set isa as a

188
00:07:03,589 --> 00:07:00,880

very reliable partner in international

189
00:07:05,830 --> 00:07:03,599
corporation in human spaceflight

190
00:07:07,029 --> 00:07:05,840
and i think this has led

191
00:07:11,749 --> 00:07:07,039
to

192
00:07:14,390 --> 00:07:11,759
because now that we have completed our

193
00:07:17,110 --> 00:07:14,400
obligation for the coming years

194
00:07:20,390 --> 00:07:17,120
we were looking to a perspective to go

195
00:07:22,550 --> 00:07:20,400
beyond iss the atv is really limited to

196
00:07:25,749 --> 00:07:22,560
the resupply of the space station and

197
00:07:28,309 --> 00:07:25,759
going beyond the iss is the perfect way

198
00:07:29,830 --> 00:07:28,319
to reuse the technology the processes

199
00:07:31,670 --> 00:07:29,840
and expertise that you have developed

200
00:07:34,390 --> 00:07:31,680
some of those systems are are going to

201
00:07:36,230 --> 00:07:34,400
be part of the next crude vehicle the

202
00:07:39,029 --> 00:07:36,240
orion vehicle so

203
00:07:40,150 --> 00:07:39,039
when we looked at it we have uh found

204
00:07:43,670 --> 00:07:40,160
something which we believe is a

205
00:07:47,029 --> 00:07:43,680
confirmation of the skills and and the

206
00:07:48,390 --> 00:07:47,039
valuable partnership that esa can offer

207
00:07:49,990 --> 00:07:48,400
and we have signed an agreement with

208
00:07:52,950 --> 00:07:50,000
nasa to develop

209
00:07:55,029 --> 00:07:52,960
the service module of the uh

210
00:07:56,070 --> 00:07:55,039
multi-purpose crew vehicle of the orion

211
00:07:56,950 --> 00:07:56,080
program

212
00:07:59,510 --> 00:07:56,960
so

213
00:08:02,629 --> 00:07:59,520

this is this is again a confirmation of

214
00:08:05,430 --> 00:08:02,639
validation of everything that atv has

215
00:08:08,150 --> 00:08:05,440
brought to this program has helped us do

216
00:08:10,629 --> 00:08:08,160
all the expertise and part of it is now

217
00:08:13,110 --> 00:08:10,639
being reused not only technology but the

218
00:08:14,790 --> 00:08:13,120
processes everything will be reused in

219
00:08:15,830 --> 00:08:14,800
the development of the service module

220
00:08:17,029 --> 00:08:15,840
which is

221
00:08:19,270 --> 00:08:17,039
part of a

222
00:08:20,790 --> 00:08:19,280
very important u.s exploration program

223
00:08:22,550 --> 00:08:20,800
it's all very very

224
00:08:24,550 --> 00:08:22,560
very exciting to to see what's going to

225
00:08:26,629 --> 00:08:24,560
happen with this in the next step eric

226
00:08:28,230 --> 00:08:26,639
thank you for for coming and sharing

227
00:08:30,950 --> 00:08:28,240
some of that story with us this morning

228
00:08:32,870 --> 00:08:30,960
thank you so much eric vanderwaal is the

229
00:08:35,430 --> 00:08:32,880
your international space station program