



CAUTION
KEY OPERATED LIFT



LIVE

Y M

1
00:00:00,780 --> 00:01:44,810

foreign

2
00:01:49,730 --> 00:01:47,690

hello good morning and welcome my name

3
00:01:52,190 --> 00:01:49,740

is Dan Evans and as the designated

4
00:01:54,350 --> 00:01:52,200

federal official for NASA's unidentified

5
00:01:56,149 --> 00:01:54,360

anomalous phenomena independent study

6
00:01:58,969 --> 00:01:56,159

team I'd like to call this meeting to

7
00:02:01,910 --> 00:01:58,979

order and introduce the panelists in the

8
00:02:05,389 --> 00:02:01,920

back row we have Nadia Drake Paula Bon

9
00:02:08,570 --> 00:02:05,399

Tempe Federica Bianco David grinspoon

10
00:02:10,969 --> 00:02:08,580

Carlin toner Josh simata and Jennifer

11
00:02:13,850 --> 00:02:10,979

Buss well in the front row we have

12
00:02:16,130 --> 00:02:13,860

Walter Scott Warren Randolph Reggie

13
00:02:17,510 --> 00:02:16,140

Brothers Shelley Wright

14

00:02:20,869 --> 00:02:17,520

Scott Kelly

15

00:02:23,869 --> 00:02:20,879

Anna Maria Brea Mike gold and David

16

00:02:26,449 --> 00:02:23,879

spurgle who serves as chair of the team

17

00:02:27,949 --> 00:02:26,459

I have a few opening remarks but to

18

00:02:28,970 --> 00:02:27,959

begin I'd like to start with the

19

00:02:31,190 --> 00:02:28,980

following

20

00:02:33,290 --> 00:02:31,200

first I'd like to pay tribute to the

21

00:02:35,809 --> 00:02:33,300

life of retired Air Force Master

22

00:02:37,610 --> 00:02:35,819

Sergeant Sam Sato who's being laid to

23

00:02:38,630 --> 00:02:37,620

rest at Arlington National Cemetery

24

00:02:41,030 --> 00:02:38,640

today

25

00:02:42,949 --> 00:02:41,040

following his active duty service Sam

26

00:02:44,809 --> 00:02:42,959

served as the intelligence collection

27

00:02:47,390 --> 00:02:44,819

manager for the National Intelligence

28

00:02:50,570 --> 00:02:47,400

manager for Aviation where he played a

29

00:02:53,150 --> 00:02:50,580

critical role in UAP analysis all of us

30

00:02:56,449 --> 00:02:53,160

at Nasa offer our condolences to Sam's

31

00:02:58,850 --> 00:02:56,459

family friends and colleagues

32

00:03:01,490 --> 00:02:58,860

second I'd like to take this opportunity

33

00:03:03,410 --> 00:03:01,500

to express my profound gratitude to our

34

00:03:07,190 --> 00:03:03,420

distinguished panel of experts for their

35

00:03:09,110 --> 00:03:07,200

unwavering commitment and dedication

36

00:03:12,050 --> 00:03:09,120

happening to note that several of them

37

00:03:14,089 --> 00:03:12,060

have been subjected to online abuse due

38

00:03:17,089 --> 00:03:14,099

to their decision to participate on this

39

00:03:20,210 --> 00:03:17,099

panel a NASA security team is actively

40

00:03:22,550 --> 00:03:20,220

addressing this issue we at Nasa are

41

00:03:24,290 --> 00:03:22,560

acutely aware of the considerable public

42

00:03:27,110 --> 00:03:24,300

interest in UAP

43

00:03:28,910 --> 00:03:27,120

however it's critical to understand any

44

00:03:30,890 --> 00:03:28,920

form of harassment towards our panelists

45

00:03:33,110 --> 00:03:30,900

only serves to detract from the

46

00:03:36,170 --> 00:03:33,120

scientific process which requires an

47

00:03:38,390 --> 00:03:36,180

environment of respect and openness

48

00:03:40,250 --> 00:03:38,400

now every member of our team is a

49

00:03:42,589 --> 00:03:40,260

recognized Authority in their respective

50

00:03:43,430 --> 00:03:42,599

field and they have our unequivocal

51

00:03:45,789 --> 00:03:43,440

support

52

00:03:48,410 --> 00:03:45,799

NASA stands in solidarity with them

53

00:03:50,930 --> 00:03:48,420

advocating for a respectful discourse

54

00:03:53,930 --> 00:03:50,940

that befits their expertise and the

55

00:03:56,690 --> 00:03:53,940

significance of their work thanks

56

00:03:59,270 --> 00:03:56,700

now in recent years the subjects of

57

00:04:01,550 --> 00:03:59,280

unidentified aerial phenomena nowadays

58

00:04:04,430 --> 00:04:01,560

termed unidentified anomalous phenomena

59

00:04:07,309 --> 00:04:04,440

or uaps has captured the attention of

60

00:04:09,710 --> 00:04:07,319

the public the scientific community and

61

00:04:12,170 --> 00:04:09,720

the government alike and it's now our

62

00:04:14,330 --> 00:04:12,180

Collective responsibility to investigate

63

00:04:18,050 --> 00:04:14,340

these incurrences with the rigorous

64

00:04:20,870 --> 00:04:18,060

scientific scrutiny that they deserve

65

00:04:23,210 --> 00:04:20,880

NASA administrator sent us a Bill Nelson

66

00:04:25,730 --> 00:04:23,220

believes that understanding uaps is

67

00:04:27,409 --> 00:04:25,740

vital for several reasons which is why

68

00:04:29,689 --> 00:04:27,419

he directed this study

69

00:04:32,330 --> 00:04:29,699

first and foremost it provides an

70

00:04:34,850 --> 00:04:32,340

opportunity for us to expand our

71

00:04:37,249 --> 00:04:34,860

understanding of the world around us

72

00:04:40,010 --> 00:04:37,259

as an organization dedicated to

73

00:04:41,990 --> 00:04:40,020

exploring the unknown this work is in

74

00:04:44,390 --> 00:04:42,000

our DNA

75

00:04:46,969 --> 00:04:44,400

secondly this study aims to enhance

76

00:04:50,030 --> 00:04:46,979

situational awareness the presence of

77

00:04:52,010 --> 00:04:50,040

uaps raises concerns about the safety of

78

00:04:54,230 --> 00:04:52,020

our skies and it's this nation's

79

00:04:56,990 --> 00:04:54,240

obligation to determine whether these

80

00:04:58,550 --> 00:04:57,000

phenomena boast any potential risks to

81

00:05:01,550 --> 00:04:58,560

airspace safety

82

00:05:04,070 --> 00:05:01,560

by understanding the nature of uaps we

83

00:05:05,990 --> 00:05:04,080

can ensure that our skies remain a safe

84

00:05:08,510 --> 00:05:06,000

space for all

85

00:05:11,090 --> 00:05:08,520

in order to achieve these goals it is

86

00:05:14,570 --> 00:05:11,100

crucial that we employ a scientific lens

87

00:05:17,270 --> 00:05:14,580

for our UAP work it's precisely this

88

00:05:19,430 --> 00:05:17,280

rigorous evidence-based approach that

89

00:05:20,810 --> 00:05:19,440

allows one to separate facts from

90

00:05:24,050 --> 00:05:20,820

fiction

91

00:05:26,749 --> 00:05:24,060

this team is comprised of experts from

92

00:05:28,730 --> 00:05:26,759

various disciplines which allows them to

93

00:05:31,189 --> 00:05:28,740

approach this work from multiple

94

00:05:34,370 --> 00:05:31,199

perspective and we have greatly

95

00:05:37,249 --> 00:05:34,380

benefited from that Collective expertise

96

00:05:39,409 --> 00:05:37,259

now why do we value a scientific

97

00:05:42,350 --> 00:05:39,419

approach it's because science is built

98

00:05:44,290 --> 00:05:42,360

on evidence it thrives on scrutiny it

99

00:05:48,050 --> 00:05:44,300

demands reproduce

100

00:05:50,210 --> 00:05:48,060

reproducibility Reaper I can't sorry and

101
00:05:52,850 --> 00:05:50,220
above all objectivity when we approach

102
00:05:54,830 --> 00:05:52,860
uaps from a scientific perspective we do

103
00:05:57,170 --> 00:05:54,840
not come in with an agenda we come in

104
00:05:59,150 --> 00:05:57,180
needing a roadmap indeed the primary

105
00:06:01,189 --> 00:05:59,160
objective of this incredible team of

106
00:06:03,710 --> 00:06:01,199
experts is not to go back and look at

107
00:06:06,170 --> 00:06:03,720
grainy footage of uaps but rather to

108
00:06:08,810 --> 00:06:06,180
give us a roadmap to guide us for future

109
00:06:12,230 --> 00:06:08,820
analysis and this is the very scientific

110
00:06:14,689 --> 00:06:12,240
method that NASA holds true to its heart

111
00:06:17,570 --> 00:06:14,699
scientific research is intended to be

112
00:06:20,390 --> 00:06:17,580
publicly available and transparent a

113
00:06:23,029 --> 00:06:20,400

NASA Prides itself on making its data

114

00:06:25,610 --> 00:06:23,039

and images available to the public to

115

00:06:27,529 --> 00:06:25,620

learn and explore on their own

116

00:06:30,650 --> 00:06:27,539

by holding public meetings like this one

117

00:06:32,990 --> 00:06:30,660

we aim for open and honest dialogue with

118

00:06:35,809 --> 00:06:33,000

the public we recognize that public

119

00:06:37,330 --> 00:06:35,819

interest in uaps is high and that the

120

00:06:39,890 --> 00:06:37,340

demand for answers is strong

121

00:06:41,990 --> 00:06:39,900

conversations like this one are the

122

00:06:44,090 --> 00:06:42,000

first step to reducing the stigma

123

00:06:46,370 --> 00:06:44,100

surrounding UAP reporting

124

00:06:48,830 --> 00:06:46,380

moreover transparency is essential for

125

00:06:51,170 --> 00:06:48,840

fostering trust between NASA the public

126

00:06:53,689 --> 00:06:51,180

and the scientific community

127

00:06:56,570 --> 00:06:53,699

in order to do things right we must work

128

00:06:59,629 --> 00:06:56,580

together pulling our resources our

129

00:07:01,010 --> 00:06:59,639

knowledge and our expertise and by

130

00:07:02,990 --> 00:07:01,020

maintaining open channels of

131

00:07:05,330 --> 00:07:03,000

communication we can facilitate

132

00:07:07,909 --> 00:07:05,340

collaboration encourage the exchange of

133

00:07:09,650 --> 00:07:07,919

ideas and ensure that our work is as

134

00:07:11,990 --> 00:07:09,660

robust as possible

135

00:07:14,990 --> 00:07:12,000

not only that but our commitment to

136

00:07:16,909 --> 00:07:15,000

openness is in itself a reflection of

137

00:07:18,110 --> 00:07:16,919

NASA's commitment to Scientific

138

00:07:20,270 --> 00:07:18,120

integrity

139

00:07:22,550 --> 00:07:20,280

there's an organization dedicated to the

140

00:07:25,249 --> 00:07:22,560

pursuit of knowledge it is NASA's

141

00:07:27,890 --> 00:07:25,259

responsibility to be honest and

142

00:07:30,170 --> 00:07:27,900

forthright and to follow the science

143

00:07:32,270 --> 00:07:30,180

and by being transparent in our work we

144

00:07:33,529 --> 00:07:32,280

uphold our dedication to Scientific

145

00:07:35,809 --> 00:07:33,539

excellence

146

00:07:37,730 --> 00:07:35,819

the meeting today represents the first

147

00:07:40,010 --> 00:07:37,740

deliberative actions that the team has

148

00:07:42,290 --> 00:07:40,020

taken and so it's important to keep in

149

00:07:44,870 --> 00:07:42,300

mind that they still have several months

150

00:07:46,790 --> 00:07:44,880

of work ahead of them their final report

151
00:07:48,710 --> 00:07:46,800
will be released this summer and we will

152
00:07:51,529 --> 00:07:48,720
publish it on our website

153
00:07:53,589 --> 00:07:51,539
NASA believes that the study of

154
00:07:56,629 --> 00:07:53,599
unidentified anomalous phenomena

155
00:07:59,029 --> 00:07:56,639
represents an exciting step forward in

156
00:08:01,430 --> 00:07:59,039
our quest to uncover the mysteries of

157
00:08:03,589 --> 00:08:01,440
the world around us by embracing a

158
00:08:05,990 --> 00:08:03,599
scientific lens we ensure that our work

159
00:08:08,570 --> 00:08:06,000
is rigorous and reliable and by valuing

160
00:08:11,270 --> 00:08:08,580
transparency and openness we can foster

161
00:08:14,809 --> 00:08:11,280
trust and collaboration with the public

162
00:08:17,510 --> 00:08:14,819
simply put this is why we do what we do

163
00:08:19,790 --> 00:08:17,520

now before I introduce Nikki there are a

164

00:08:21,950 --> 00:08:19,800

few administrative matters to attend to

165

00:08:24,170 --> 00:08:21,960

firstly the identified anomalous

166

00:08:26,210 --> 00:08:24,180

phenomena independent study team has

167

00:08:28,189 --> 00:08:26,220

been established in accordance with the

168

00:08:30,529 --> 00:08:28,199

federal advisory committee act known as

169

00:08:33,469 --> 00:08:30,539

fako its parent committee is the earth

170

00:08:34,790 --> 00:08:33,479

science advisory committees as such this

171

00:08:37,070 --> 00:08:34,800

group does not report to the government

172

00:08:38,389 --> 00:08:37,080

it reports to the earth science advisory

173

00:08:40,490 --> 00:08:38,399

committee who'll debate the

174

00:08:42,649 --> 00:08:40,500

recommendations and formally transmit

175

00:08:44,750 --> 00:08:42,659

this team's report to the government

176
00:08:47,269 --> 00:08:44,760
next our deliberative committee meetings

177
00:08:49,730 --> 00:08:47,279
such as this one are open to the public

178
00:08:51,829 --> 00:08:49,740
and also after this panel was convened

179
00:08:54,949 --> 00:08:51,839
the National Defense authorization act

180
00:08:56,509 --> 00:08:54,959
known as the ndaa changed the a in UAP

181
00:08:58,250 --> 00:08:56,519
to be anomalous

182
00:09:01,009 --> 00:08:58,260
accordingly this Pal's remit was

183
00:09:02,509 --> 00:09:01,019
expanded to Encompass not just aerial

184
00:09:07,250 --> 00:09:02,519
UAP

185
00:09:09,350 --> 00:09:07,260
date have been in the aerial domain so

186
00:09:12,889 --> 00:09:09,360
it's fair to say that this panel's focus

187
00:09:14,870 --> 00:09:12,899
is on the aerial aspect of anomalous

188
00:09:16,490 --> 00:09:14,880

now in compliance with the fact of

189

00:09:17,750 --> 00:09:16,500

federal statute four more minutes have

190

00:09:20,389 --> 00:09:17,760

been taken throughout the meeting today

191

00:09:22,190 --> 00:09:20,399

and these meetings and these minutes are

192

00:09:24,470 --> 00:09:22,200

for the public record and hence all

193

00:09:26,449 --> 00:09:24,480

presentations and discussions and

194

00:09:29,150 --> 00:09:26,459

comments by the committee members should

195

00:09:31,850 --> 00:09:29,160

be considered to be on the record

196

00:09:33,650 --> 00:09:31,860

each member of this UAP study team has

197

00:09:35,810 --> 00:09:33,660

been appointed because of their specific

198

00:09:38,930 --> 00:09:35,820

subject matter expertise as individuals

199

00:09:40,970 --> 00:09:38,940

and hence each member is subject to

200

00:09:42,650 --> 00:09:40,980

Federal ethics laws

201
00:09:45,590 --> 00:09:42,660
this category of appointment is called

202
00:09:47,449 --> 00:09:45,600
special government employees or sges for

203
00:09:48,829 --> 00:09:47,459
our non-government members and our two

204
00:09:50,810 --> 00:09:48,839
federal employees

205
00:09:52,490 --> 00:09:50,820
serve as regular government employees

206
00:09:55,130 --> 00:09:52,500
known as rges

207
00:09:57,710 --> 00:09:55,140
the panel all members on this committee

208
00:10:00,590 --> 00:09:57,720
should remember to recuse themselves if

209
00:10:02,090 --> 00:10:00,600
a topic comes up in which you have a

210
00:10:04,190 --> 00:10:02,100
potential conflict of interest between

211
00:10:05,630 --> 00:10:04,200
your financial interests including those

212
00:10:08,030 --> 00:10:05,640
of your employer

213
00:10:09,650 --> 00:10:08,040

and matters that we're discussing and

214

00:10:11,150 --> 00:10:09,660

then finally panel if you have any

215

00:10:13,670 --> 00:10:11,160

ethics questions please see me

216

00:10:16,610 --> 00:10:13,680

separately and if needed I'll put you in

217

00:10:18,710 --> 00:10:16,620

contact with a NASA ethics attorney

218

00:10:20,410 --> 00:10:18,720

thanks for bearing with me I'd now like

219

00:10:22,610 --> 00:10:20,420

to turn to the amazing Dr Nikki Fox

220

00:10:24,230 --> 00:10:22,620

associate administrator for NASA's

221

00:10:30,710 --> 00:10:24,240

science Mission directorate over to you

222

00:10:36,590 --> 00:10:33,590

thank you Dan and thank you to all the

223

00:10:39,290 --> 00:10:36,600

members of NASA's UAP independent study

224

00:10:41,750 --> 00:10:39,300

team your selfless dedication to the

225

00:10:44,389 --> 00:10:41,760

pursuit of knowledge is just so

226

00:10:46,550 --> 00:10:44,399

commendable and I want to thank you the

227

00:10:49,009 --> 00:10:46,560

audience for tuning in today to watch

228

00:10:51,889 --> 00:10:49,019

our first deliberative meeting of NASA's

229

00:10:54,530 --> 00:10:51,899

independent study team on evaluating and

230

00:10:55,910 --> 00:10:54,540

categorizing unidentified anomalous

231

00:10:58,190 --> 00:10:55,920

phenomena

232

00:11:01,370 --> 00:10:58,200

before I begin though I really do want

233

00:11:03,230 --> 00:11:01,380

to double down on Dan's words that it is

234

00:11:05,449 --> 00:11:03,240

really disheartening to hear of the

235

00:11:07,790 --> 00:11:05,459

harassment that our panelists have faced

236

00:11:08,690 --> 00:11:07,800

online all because they're studying this

237

00:11:11,329 --> 00:11:08,700

topic

238

00:11:14,210 --> 00:11:11,339

NASA stands behind our panelists and we

239

00:11:16,250 --> 00:11:14,220

do not tolerate abuse harassment only

240

00:11:19,190 --> 00:11:16,260

leads to further stigmatization of the

241

00:11:21,290 --> 00:11:19,200

UAP field significantly hindering the

242

00:11:23,569 --> 00:11:21,300

scientific progress and discouraging

243

00:11:24,710 --> 00:11:23,579

others to study this important subject

244

00:11:26,870 --> 00:11:24,720

matter

245

00:11:28,670 --> 00:11:26,880

your harassment also obstructs the

246

00:11:30,949 --> 00:11:28,680

Public's right to knowledge our

247

00:11:33,110 --> 00:11:30,959

panelists are leading experts in the

248

00:11:36,290 --> 00:11:33,120

scientific Aeronautics and data

249

00:11:38,389 --> 00:11:36,300

analytics communities we are very lucky

250

00:11:40,730 --> 00:11:38,399

to have them on board to share their

251
00:11:43,190 --> 00:11:40,740
invaluable insights to inform NASA on

252
00:11:45,350 --> 00:11:43,200
what possible data could be collected in

253
00:11:48,470 --> 00:11:45,360
the future and how it can be collected

254
00:11:50,449 --> 00:11:48,480
to help us better understand the nature

255
00:11:52,250 --> 00:11:50,459
of UAP

256
00:11:54,949 --> 00:11:52,260
the UAP independent study was

257
00:11:57,530 --> 00:11:54,959
commissioned to create a road map on how

258
00:12:00,530 --> 00:11:57,540
to use the tools of science to evaluate

259
00:12:03,170 --> 00:12:00,540
and categorize the nature of uaps going

260
00:12:05,269 --> 00:12:03,180
forward this roadmap of course will help

261
00:12:07,910 --> 00:12:05,279
the federal government obtain usable

262
00:12:09,650 --> 00:12:07,920
data to explain the nature of future

263
00:12:12,170 --> 00:12:09,660

uaps

264

00:12:14,750 --> 00:12:12,180

transparency openness and scientific

265

00:12:17,030 --> 00:12:14,760

Integrity are Pinnacle to NASA's Mission

266

00:12:19,370 --> 00:12:17,040

they're at the Forefront of this public

267

00:12:22,190 --> 00:12:19,380

meeting and have been throughout the

268

00:12:24,350 --> 00:12:22,200

team's seven months on this study

269

00:12:26,329 --> 00:12:24,360

as Dan noted this is a working meeting

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00:12:28,910 --> 00:12:26,339

and so the public will have the

271

00:12:31,610 --> 00:12:28,920

incredible opportunity to witness the

272

00:12:34,069 --> 00:12:31,620

process of Science in action

273

00:12:36,410 --> 00:12:34,079

at Nasa we lead the world in Exploration

274

00:12:37,970 --> 00:12:36,420

and are committed to rigorous scientific

275

00:12:39,889 --> 00:12:37,980

inquiry

276

00:12:42,230 --> 00:12:39,899

the nature of science is to better

277

00:12:44,930 --> 00:12:42,240

understand the unknown and to do that

278

00:12:47,150 --> 00:12:44,940

our scientists need data

279

00:12:49,610 --> 00:12:47,160

right now there is very limited number

280

00:12:51,949 --> 00:12:49,620

of high quality observations and data

281

00:12:53,930 --> 00:12:51,959

curation of UAP

282

00:12:56,449 --> 00:12:53,940

the existing data available from

283

00:12:58,550 --> 00:12:56,459

eyewitness reports are often modeled and

284

00:13:02,210 --> 00:12:58,560

cannot provide conclusive evidence that

285

00:13:04,550 --> 00:13:02,220

supports UAP recognition and Analysis

286

00:13:06,710 --> 00:13:04,560

additionally an object's background can

287

00:13:09,710 --> 00:13:06,720

complicate the data further and render

288

00:13:11,509 --> 00:13:09,720

it unusable due to Conventional objects

289

00:13:13,670 --> 00:13:11,519

that can mimic or overshadow the

290

00:13:16,430 --> 00:13:13,680

phenomena completely such as commercial

291

00:13:20,389 --> 00:13:16,440

aircraft military equipment the weather

292

00:13:22,970 --> 00:13:20,399

and ionospheric phenomena like auroras

293

00:13:24,410 --> 00:13:22,980

this lack of high quality data make it

294

00:13:27,949 --> 00:13:24,420

impossible to draw scientific

295

00:13:30,470 --> 00:13:27,959

conclusions on the nature of UAP

296

00:13:32,210 --> 00:13:30,480

now this team has used unclassified data

297

00:13:34,970 --> 00:13:32,220

from civilian government entities

298

00:13:37,610 --> 00:13:34,980

commercial data and data from other

299

00:13:40,069 --> 00:13:37,620

sources to inform their recommendations

300

00:13:42,230 --> 00:13:40,079

and as downloaded they will be published

301
00:13:43,430 --> 00:13:42,240
in a public report that comes out this

302
00:13:45,230 --> 00:13:43,440
summer

303
00:13:47,509 --> 00:13:45,240
I want to emphasize that there is really

304
00:13:50,030 --> 00:13:47,519
great benefit to studying unclassified

305
00:13:51,170 --> 00:13:50,040
data rather than classify data for this

306
00:13:53,990 --> 00:13:51,180
study

307
00:13:55,910 --> 00:13:54,000
first unidentified anomalous phenomena

308
00:13:58,430 --> 00:13:55,920
sightings themselves are not classified

309
00:13:59,990 --> 00:13:58,440
it's often the sensor platform that is

310
00:14:00,949 --> 00:14:00,000
classified and you can kind of think of

311
00:14:03,350 --> 00:14:00,959
it

312
00:14:05,389 --> 00:14:03,360
um if a fighter jet took a picture of

313
00:14:07,610 --> 00:14:05,399

the Statue of Liberty then that image

314

00:14:09,410 --> 00:14:07,620

would be classified not because of the

315

00:14:11,389 --> 00:14:09,420

subject in the picture but because of

316

00:14:13,550 --> 00:14:11,399

the sensors on the plane

317

00:14:15,230 --> 00:14:13,560

second unclassified data make it

318

00:14:17,990 --> 00:14:15,240

possible for our team to communicate

319

00:14:20,990 --> 00:14:18,000

openly to advance our understanding of

320

00:14:23,090 --> 00:14:21,000

UAP not only with each other but across

321

00:14:24,170 --> 00:14:23,100

the scientific community and to the

322

00:14:26,810 --> 00:14:24,180

public

323

00:14:29,030 --> 00:14:26,820

this ensures a clear and transparent

324

00:14:30,949 --> 00:14:29,040

pipeline of information that can be

325

00:14:34,790 --> 00:14:30,959

built upon through the general through

326

00:14:36,829 --> 00:14:34,800

generations to expand our understanding

327

00:14:40,009 --> 00:14:36,839

this study relies on open data

328

00:14:42,470 --> 00:14:40,019

everything we use at Nasa is open and

329

00:14:44,689 --> 00:14:42,480

anyone can look at these records so I

330

00:14:45,850 --> 00:14:44,699

invite you to visit our open data portal

331

00:14:54,290 --> 00:14:45,860

at

332

00:14:57,290 --> 00:14:54,300

and fully accessible to the public

333

00:15:01,189 --> 00:14:57,300

additionally please check out data.gov

334

00:15:03,290 --> 00:15:01,199

open slash data for a great overview of

335

00:15:05,569 --> 00:15:03,300

where you can find the archives for our

336

00:15:07,850 --> 00:15:05,579

science and Mission data sites

337

00:15:09,829 --> 00:15:07,860

I am very very much looking forward to

338

00:15:11,810 --> 00:15:09,839

hearing the deliberations put forth

339

00:15:16,370 --> 00:15:11,820

today from our distinguished panel of

340

00:15:20,689 --> 00:15:17,930

um before you go look I just want to

341

00:15:24,410 --> 00:15:20,699

open up to questions let me start with a

342

00:15:26,449 --> 00:15:24,420

question on this on the NASA data

343

00:15:28,910 --> 00:15:26,459

um I think one of the important things

344

00:15:31,550 --> 00:15:28,920

uh that we'll be looking at with other

345

00:15:34,069 --> 00:15:31,560

data sets and events is the data is not

346

00:15:35,689 --> 00:15:34,079

very well calibrated can you say just a

347

00:15:37,189 --> 00:15:35,699

little bit about how NASA goes through

348

00:15:40,970 --> 00:15:37,199

calibrating some of its earth science

349

00:15:42,949 --> 00:15:40,980

data oh yes we very very rigorous um I

350

00:15:44,449 --> 00:15:42,959

mean at all of our data sets not just

351

00:15:46,910 --> 00:15:44,459

earth science go through extremely

352

00:15:49,069 --> 00:15:46,920

rigorous calibration

353

00:15:50,990 --> 00:15:49,079

um we don't release anything until it's

354

00:15:54,050 --> 00:15:51,000

really perfect I mean we have quick look

355

00:15:55,910 --> 00:15:54,060

data that is marked as quick look data

356

00:15:57,470 --> 00:15:55,920

um so you know you can use it to get

357

00:15:59,569 --> 00:15:57,480

preliminary

358

00:16:02,990 --> 00:15:59,579

um findings but wait for the the really

359

00:16:04,069 --> 00:16:03,000

nicely cleaned up data so I uh a lot of

360

00:16:06,530 --> 00:16:04,079

rigorous

361

00:16:09,470 --> 00:16:06,540

um protocol in putting out our data to

362

00:16:14,389 --> 00:16:11,329

do we have any other questions from the

363

00:16:30,590 --> 00:16:17,509

all right thank you so much

364

00:16:35,569 --> 00:16:33,949

hi I'm David Spurgle I'm the chair of

365

00:16:37,850 --> 00:16:35,579

the panel

366

00:16:39,710 --> 00:16:37,860

and when I look at our chart we have a

367

00:16:43,009 --> 00:16:39,720

lengthy charge but the high level

368

00:16:46,790 --> 00:16:43,019

summary of it is how can NASA contribute

369

00:16:49,970 --> 00:16:46,800

to understanding the nature of uaps

370

00:16:52,430 --> 00:16:49,980

and our role here is not to resolve the

371

00:16:54,650 --> 00:16:52,440

nature of these events but rather to

372

00:16:58,550 --> 00:16:54,660

give NASA guidance to provide a road map

373

00:17:00,170 --> 00:16:58,560

of how it can contribute in this area

374

00:17:02,569 --> 00:17:00,180

after

375

00:17:05,929 --> 00:17:02,579

my opening remarks we'll hear from Sean

376

00:17:08,090 --> 00:17:05,939

kirpatrick from the aaro and it's the

377

00:17:10,789 --> 00:17:08,100

aaro that's charged with leading the

378

00:17:12,890 --> 00:17:10,799

whole of government UAP eff effort

379

00:17:14,510 --> 00:17:12,900

and they've already issued some

380

00:17:15,829 --> 00:17:14,520

preliminary reports on some of the

381

00:17:18,530 --> 00:17:15,839

events

382

00:17:21,409 --> 00:17:18,540

NASA's role is to use its unique

383

00:17:24,049 --> 00:17:21,419

capabilities and its role as a civilian

384

00:17:26,510 --> 00:17:24,059

agency interacting with the scientific

385

00:17:28,130 --> 00:17:26,520

community in an open and transparent

386

00:17:32,150 --> 00:17:28,140

manner

387

00:17:34,789 --> 00:17:32,160

and you know as Dr Fox emphasized the

388

00:17:35,930 --> 00:17:34,799

defense and intelligence agency data on

389

00:17:38,570 --> 00:17:35,940

UAP

390

00:17:41,450 --> 00:17:38,580

and I'll often classified primarily

391

00:17:43,250 --> 00:17:41,460

because of how the data is collected not

392

00:17:46,070 --> 00:17:43,260

because what's in the data

393

00:17:48,470 --> 00:17:46,080

the camera on an F-35 took a picture of

394

00:17:51,110 --> 00:17:48,480

a bird it's classified

395

00:17:54,289 --> 00:17:51,120

if a spy satellite takes an image of a

396

00:17:55,789 --> 00:17:54,299

balloon and we've had in the news some

397

00:17:58,370 --> 00:17:55,799

balloons recently

398

00:18:01,310 --> 00:17:58,380

that date is classified and that's

399

00:18:05,150 --> 00:18:01,320

because of a desire to not reveal our

400

00:18:07,430 --> 00:18:05,160

technical capabilities to other nations

401
00:18:09,230 --> 00:18:07,440
NASA on the other hand operates in a

402
00:18:10,250 --> 00:18:09,240
mode where it's collecting data in the

403
00:18:12,350 --> 00:18:10,260
open

404
00:18:15,529 --> 00:18:12,360
and the NASA data is available on

405
00:18:18,230 --> 00:18:15,539
websites and as well characterized and

406
00:18:21,710 --> 00:18:18,240
because of NASA being the civilian

407
00:18:23,409 --> 00:18:21,720
agency studying Air and Space it has a

408
00:18:27,049 --> 00:18:23,419
special role to play

409
00:18:29,630 --> 00:18:27,059
and I see our charge primarily as

410
00:18:32,090 --> 00:18:29,640
helping identify for NASA ways that

411
00:18:34,730 --> 00:18:32,100
could play that role and contribute to

412
00:18:36,830 --> 00:18:34,740
understanding

413
00:18:38,390 --> 00:18:36,840

we've gone through a preliminary data

414

00:18:41,029 --> 00:18:38,400

collection stage

415

00:18:42,230 --> 00:18:41,039

and to summarize some of the things that

416

00:18:44,510 --> 00:18:42,240

we've learned

417

00:18:47,570 --> 00:18:44,520

the current data collection efforts

418

00:18:50,870 --> 00:18:47,580

regarding uaps are unsystematic and

419

00:18:53,029 --> 00:18:50,880

fragmented across various agencies often

420

00:18:56,090 --> 00:18:53,039

using instruments uncalibrated for

421

00:18:58,789 --> 00:18:56,100

scientific data collection

422

00:19:00,830 --> 00:18:58,799

and if I think about the data that

423

00:19:02,570 --> 00:19:00,840

people have out there it's in many ways

424

00:19:05,630 --> 00:19:02,580

what we'd like to think of as citizen

425

00:19:07,370 --> 00:19:05,640

science but again it is uncalibrated

426
00:19:11,810 --> 00:19:07,380
Data

427
00:19:14,930 --> 00:19:11,820
um poorly characterized not well curated

428
00:19:17,870 --> 00:19:14,940
and we face looking through this data a

429
00:19:20,390 --> 00:19:17,880
significant background a background of

430
00:19:23,810 --> 00:19:20,400
many of these events are commercial

431
00:19:26,630 --> 00:19:23,820
aircraft civilian America militaries up

432
00:19:29,330 --> 00:19:26,640
drones weather and research balloons

433
00:19:33,130 --> 00:19:29,340
military equipment ionospheric

434
00:19:35,630 --> 00:19:33,140
phenomenon we need to characterize how

435
00:19:39,770 --> 00:19:35,640
what the date when the date is taken

436
00:19:41,870 --> 00:19:39,780
when it sees events like this first

437
00:19:44,990 --> 00:19:41,880
the current existing data and eyewitness

438
00:19:46,850 --> 00:19:45,000

reports alone are insufficient to

439

00:19:49,190 --> 00:19:46,860

provide conclusive evidence about the

440

00:19:52,310 --> 00:19:49,200

nature and origin of every UAP event

441

00:19:55,909 --> 00:19:52,320

they're often uninformative due to lack

442

00:19:58,430 --> 00:19:55,919

of quality control and data curation

443

00:20:01,070 --> 00:19:58,440

to understand UAP better

444

00:20:03,650 --> 00:20:01,080

targeted data collection

445

00:20:05,870 --> 00:20:03,660

thorough data curation and robust

446

00:20:08,350 --> 00:20:05,880

analyses are needed

447

00:20:11,090 --> 00:20:08,360

such an approach will help to discern

448

00:20:13,310 --> 00:20:11,100

unexplained UAP sightings

449

00:20:16,490 --> 00:20:13,320

but even then there's no guarantee that

450

00:20:18,650 --> 00:20:16,500

all sightings will be explained

451
00:20:20,690 --> 00:20:18,660
another challenge in this area is what

452
00:20:23,510 --> 00:20:20,700
we call stigma there's a real stigma

453
00:20:26,450 --> 00:20:23,520
among people reporting events

454
00:20:27,950 --> 00:20:26,460
and despite NASA's extensive efforts to

455
00:20:31,570 --> 00:20:27,960
reduce the stigma

456
00:20:34,909 --> 00:20:31,580
the origin of the uaps remain unclear

457
00:20:36,169 --> 00:20:34,919
and we feel many events remain

458
00:20:38,510 --> 00:20:36,179
unreported

459
00:20:39,830 --> 00:20:38,520
commercial pilots for example are very

460
00:20:44,029 --> 00:20:39,840
reluctant

461
00:20:46,970 --> 00:20:44,039
to report anomalies and one of our goals

462
00:20:48,169 --> 00:20:46,980
in having NASA play a role is to remove

463
00:20:50,330 --> 00:20:48,179

stigma

464

00:20:53,510 --> 00:20:50,340

and

465

00:20:56,330 --> 00:20:53,520

get high quality data

466

00:20:59,270 --> 00:20:56,340

in fact if I were to summarize

467

00:21:03,350 --> 00:20:59,280

in one line what I feel we've learned

468

00:21:05,029 --> 00:21:03,360

it's we need high quality data and this

469

00:21:07,990 --> 00:21:05,039

is not some as a

470

00:21:10,970 --> 00:21:08,000

research scientist whose work has been

471

00:21:14,330 --> 00:21:10,980

primarily focused in cosmology

472

00:21:16,490 --> 00:21:14,340

I would say the lesson of my career has

473

00:21:19,010 --> 00:21:16,500

been you want to address important

474

00:21:22,310 --> 00:21:19,020

questions you need high quality data

475

00:21:24,710 --> 00:21:22,320

with well-calibrated instruments

476

00:21:27,169 --> 00:21:24,720

so the let me now

477

00:21:29,330 --> 00:21:27,179

uh introduce the agenda

478

00:21:31,490 --> 00:21:29,340

we're going to hear from a number of

479

00:21:32,690 --> 00:21:31,500

experts who will be presenting up to

480

00:21:37,250 --> 00:21:32,700

lunch

481

00:21:39,590 --> 00:21:37,260

to 12 30.

482

00:21:42,529 --> 00:21:39,600

at 12 30 we'll resume

483

00:21:45,409 --> 00:21:42,539

and we'll have presentations by members

484

00:21:49,130 --> 00:21:45,419

of the panel on some preliminary ideas

485

00:21:50,990 --> 00:21:49,140

for discussion and that will be a period

486

00:21:52,250 --> 00:21:51,000

of time for some open discussion by the

487

00:21:55,130 --> 00:21:52,260

panel

488

00:21:57,409 --> 00:21:55,140

we will then have a q a session based on

489

00:22:00,590 --> 00:21:57,419

questions that have been sent in in

490

00:22:02,090 --> 00:22:00,600

advance to the website and we've curated

491

00:22:04,250 --> 00:22:02,100

those questions and grouped them

492

00:22:06,110 --> 00:22:04,260

together and we'll be going through a

493

00:22:07,850 --> 00:22:06,120

lot of those questions and then we'll

494

00:22:11,750 --> 00:22:07,860

summarize

495

00:22:14,210 --> 00:22:11,760

and then over the subsequent uh couple

496

00:22:17,029 --> 00:22:14,220

months we'll work on putting together

497

00:22:19,490 --> 00:22:17,039

the report and as Dan said we're aiming

498

00:22:22,010 --> 00:22:19,500

to make a public report available we

499

00:22:25,370 --> 00:22:22,020

hope by the end of July

500

00:22:26,649 --> 00:22:25,380

so now let me turn this over to Sean

501
00:22:30,049 --> 00:22:26,659
Uncle Patrick

502
00:22:32,270 --> 00:22:30,059
we'll do a couple q and A's for me okay

503
00:22:34,190 --> 00:22:32,280
from the panel any any questions on the

504
00:22:43,909 --> 00:22:34,200
panel

505
00:22:51,049 --> 00:22:47,270
yeah um so one of the things I think Dr

506
00:22:53,270 --> 00:22:51,059
Fox uh said was looking at the release

507
00:22:56,810 --> 00:22:53,280
of data very important for our study

508
00:22:59,990 --> 00:22:56,820
when it's high quality and you have also

509
00:23:02,270 --> 00:23:00,000
commented that data are not always

510
00:23:04,669 --> 00:23:02,280
perfect when we're doing certain studies

511
00:23:08,029 --> 00:23:04,679
I wonder if you could

512
00:23:10,430 --> 00:23:08,039
um shed some light on the you know the

513
00:23:11,930 --> 00:23:10,440

difference between the application of

514

00:23:15,289 --> 00:23:11,940

certain data to certain scientific

515

00:23:22,970 --> 00:23:19,850

so you know when you look at your camera

516

00:23:24,830 --> 00:23:22,980

your camera is often designed to take an

517

00:23:27,049 --> 00:23:24,840

image in the daytime

518

00:23:28,610 --> 00:23:27,059

and might not be optimized for nighttime

519

00:23:30,890 --> 00:23:28,620

Imaging

520

00:23:33,890 --> 00:23:30,900

or if you take something that

521

00:23:37,610 --> 00:23:33,900

astronomers are very familiar with is we

522

00:23:42,649 --> 00:23:37,620

design our telescopes to work at night

523

00:23:44,330 --> 00:23:42,659

and if the Sun is not even if you're you

524

00:23:46,610 --> 00:23:44,340

know you would never take the Hubble

525

00:23:49,250 --> 00:23:46,620

telescope and point it at the Sun

526
00:23:52,370 --> 00:23:49,260
this would destroy its detectors

527
00:23:54,110 --> 00:23:52,380
not only that if the telescope is

528
00:23:56,870 --> 00:23:54,120
pointing there

529
00:23:59,049 --> 00:23:56,880
and the Sun is over there even though

530
00:24:01,789 --> 00:23:59,059
you're not looking at the sun

531
00:24:04,450 --> 00:24:01,799
Reflections off of the Optics will

532
00:24:07,490 --> 00:24:04,460
produce what we call ghosting

533
00:24:10,970 --> 00:24:07,500
and that kind of ghosting

534
00:24:13,730 --> 00:24:10,980
gets produces some very strange images

535
00:24:15,890 --> 00:24:13,740
and this you know one of the many things

536
00:24:19,490 --> 00:24:15,900
we need to worry about when we see

537
00:24:21,770 --> 00:24:19,500
unusual things taken from a camera

538
00:24:22,850 --> 00:24:21,780

is even if you're pointing the camera

539

00:24:27,770 --> 00:24:22,860

there

540

00:24:30,470 --> 00:24:27,780

those kinds of anomalies degrade the

541

00:24:31,990 --> 00:24:30,480

quality of the data and that's why it's

542

00:24:34,250 --> 00:24:32,000

very important to work with

543

00:24:37,310 --> 00:24:34,260

well-characterized instruments

544

00:24:40,250 --> 00:24:37,320

and to be you know using them in ways in

545

00:24:43,610 --> 00:24:40,260

which you you understand what's going on

546

00:24:46,730 --> 00:24:43,620

so I think if you look at

547

00:24:48,529 --> 00:24:46,740

you know data taken from the James Webb

548

00:24:49,850 --> 00:24:48,539

Telescope or from the Hubble or any of

549

00:24:52,490 --> 00:24:49,860

these things and these are you know

550

00:24:55,430 --> 00:24:52,500

telescopes looking out in space you'll

551
00:24:56,810 --> 00:24:55,440
see some really you know at first funny

552
00:25:00,289 --> 00:24:56,820
phenomenon

553
00:25:01,250 --> 00:25:00,299
when a telescope points at a star that's

554
00:25:04,669 --> 00:25:01,260
bright

555
00:25:07,130 --> 00:25:04,679
it saturates the detector and puts

556
00:25:09,230 --> 00:25:07,140
bleeding down the detector

557
00:25:13,850 --> 00:25:09,240
and you'll see phenomenon like if

558
00:25:16,070 --> 00:25:13,860
there's a bright star off to the side

559
00:25:16,970 --> 00:25:16,080
of the that not even one you're looking

560
00:25:19,730 --> 00:25:16,980
at

561
00:25:22,310 --> 00:25:19,740
you get this of the effects where light

562
00:25:26,630 --> 00:25:22,320
bounces off of dust

563
00:25:29,210 --> 00:25:26,640

in your telescope and produces a sort of

564

00:25:30,950 --> 00:25:29,220

diffuse image that has some really

565

00:25:32,870 --> 00:25:30,960

strange properties

566

00:25:35,570 --> 00:25:32,880

so you know when you

567

00:25:37,490 --> 00:25:35,580

see something unusual

568

00:25:40,310 --> 00:25:37,500

the first thing you have to do is

569

00:25:43,010 --> 00:25:40,320

understand how that data was taken

570

00:25:46,190 --> 00:25:43,020

and I think this is one of the

571

00:25:49,370 --> 00:25:46,200

challenges one faces when you have data

572

00:25:52,610 --> 00:25:49,380

taken by uncalibrated instruments

573

00:25:54,590 --> 00:25:52,620

years ago it's very hard to know what's

574

00:25:56,149 --> 00:25:54,600

taken it's very hard to draw conclusions

575

00:26:01,850 --> 00:25:56,159

I think that's one of the challenges

576

00:26:04,430 --> 00:26:01,860

with archival data and I think having

577

00:26:06,830 --> 00:26:04,440

dedicated well-calibrated instruments I

578

00:26:10,070 --> 00:26:06,840

think will be important here is in any

579

00:26:13,789 --> 00:26:10,080

other area to understand what's going on

580

00:26:16,789 --> 00:26:13,799

so David anomalies are so often the

581

00:26:18,830 --> 00:26:16,799

engine of Discovery maybe you could say

582

00:26:21,110 --> 00:26:18,840

a quick word about high risk High reward

583

00:26:23,450 --> 00:26:21,120

research in your field of cosmology and

584

00:26:24,890 --> 00:26:23,460

how you see that impacting the UAP study

585

00:26:25,909 --> 00:26:24,900

as well

586

00:26:28,549 --> 00:26:25,919

so

587

00:26:33,590 --> 00:26:32,269

an area that comes to mind is fast radio

588

00:26:37,190 --> 00:26:33,600

bursts

589

00:26:38,690 --> 00:26:37,200

and the shore prize was just announced

590

00:26:40,789 --> 00:26:38,700

yesterday

591

00:26:43,010 --> 00:26:40,799

I'm rewarded to the discovery of fast

592

00:26:44,810 --> 00:26:43,020

radio bursts and these are these

593

00:26:47,690 --> 00:26:44,820

bursting signals

594

00:26:50,950 --> 00:26:47,700

that go off all over in space

595

00:26:53,810 --> 00:26:50,960

and it's an interesting story because

596

00:26:56,870 --> 00:26:53,820

some of the births were real

597

00:26:58,070 --> 00:26:56,880

and are fascinating and some of the

598

00:27:03,470 --> 00:26:58,080

births

599

00:27:06,470 --> 00:27:03,480

this observatory in Australia

600

00:27:08,510 --> 00:27:06,480

and they had really strange structure

601
00:27:10,610 --> 00:27:08,520
and people couldn't figure out what was

602
00:27:12,529 --> 00:27:10,620
going on

603
00:27:16,130 --> 00:27:12,539
and then they start to notice a lot of

604
00:27:18,409 --> 00:27:16,140
them bunched together around lunchtime

605
00:27:20,510 --> 00:27:18,419
and what had happened was

606
00:27:22,789 --> 00:27:20,520
the uh

607
00:27:25,070 --> 00:27:22,799
people at the observatory would heat up

608
00:27:27,110 --> 00:27:25,080
their lunch in the microwave

609
00:27:28,850 --> 00:27:27,120
and something they would do is they

610
00:27:29,930 --> 00:27:28,860
would open the door of the microwave

611
00:27:32,570 --> 00:27:29,940
oven

612
00:27:35,029 --> 00:27:32,580
before the

613
00:27:37,930 --> 00:27:35,039

microwave stopped

614

00:27:41,450 --> 00:27:37,940

this is bad for your microwave oven

615

00:27:44,450 --> 00:27:41,460

it wears it out but not only that It

616

00:27:46,010 --> 00:27:44,460

produced a burst of radio signals that

617

00:27:47,149 --> 00:27:46,020

was picked up by these sensitive

618

00:27:48,409 --> 00:27:47,159

detectors

619

00:27:56,510 --> 00:27:48,419

so

620

00:27:59,810 --> 00:27:56,520

unusual and conventional

621

00:28:03,010 --> 00:27:59,820

but some events with these frbs turn out

622

00:28:05,990 --> 00:28:03,020

to be these powerful explosions

623

00:28:08,049 --> 00:28:06,000

which are taking place a cosmological

624

00:28:11,149 --> 00:28:08,059

distances

625

00:28:12,430 --> 00:28:11,159

their nature is still not fully

626

00:28:14,690 --> 00:28:12,440

understood

627

00:28:17,090 --> 00:28:14,700

I think they're one of the really most

628

00:28:19,510 --> 00:28:17,100

fascinating objects we have these bursts

629

00:28:22,549 --> 00:28:19,520

going out all over space

630

00:28:24,710 --> 00:28:22,559

they're interesting Pros because they're

631

00:28:25,610 --> 00:28:24,720

kind of lighting up space between here

632

00:28:28,070 --> 00:28:25,620

and there

633

00:28:29,090 --> 00:28:28,080

and they're a subject of a reactive

634

00:28:31,010 --> 00:28:29,100

research

635

00:28:34,370 --> 00:28:31,020

and in fact you know one looks at the

636

00:28:36,890 --> 00:28:34,380

history of these frbs at first they were

637

00:28:39,470 --> 00:28:36,900

discovered not believed and confirmly

638

00:28:41,390 --> 00:28:39,480

confirmed and they were discovered by

639

00:28:43,310 --> 00:28:41,400

instruments that were very sensitive but

640

00:28:45,830 --> 00:28:43,320

not optimized for this

641

00:28:48,110 --> 00:28:45,840

and now what we're doing is we're

642

00:28:51,590 --> 00:28:48,120

optimizing instruments and optimizing

643

00:28:54,890 --> 00:28:51,600

software to look for these events

644

00:28:56,630 --> 00:28:54,900

it's often these surprises that turn out

645

00:29:00,470 --> 00:28:56,640

to be most interesting

646

00:29:02,450 --> 00:29:00,480

and you know there are phenomenon like

647

00:29:04,190 --> 00:29:02,460

Sprites which you can think of as upward

648

00:29:07,970 --> 00:29:04,200

going lightning

649

00:29:09,890 --> 00:29:07,980

which were seen by commercial pilots and

650

00:29:12,409 --> 00:29:09,900

some had not believed right because they

651
00:29:15,470 --> 00:29:12,419
were very strange and and it was really

652
00:29:18,769 --> 00:29:15,480
only when we were able to take very high

653
00:29:21,289 --> 00:29:18,779
speed Imaging data data taken often from

654
00:29:25,130 --> 00:29:21,299
places like space station that we're

655
00:29:27,230 --> 00:29:25,140
able to see that and learn about these

656
00:29:30,169 --> 00:29:27,240
some fascinating ionospheric phenomena

657
00:29:32,690 --> 00:29:30,179
so it's uh surprises are really

658
00:29:34,789 --> 00:29:32,700
interesting I mean I think this is

659
00:29:38,090 --> 00:29:34,799
one of the

660
00:29:39,889 --> 00:29:38,100
uh fascinating things about the UAP

661
00:29:41,269 --> 00:29:39,899
phenomenon if it's something that's

662
00:29:43,549 --> 00:29:41,279
anomalous

663
00:29:46,130 --> 00:29:43,559

that makes it interesting and worthy of

664

00:29:49,010 --> 00:29:47,690

other questions

665

00:30:01,850 --> 00:29:49,020

great

666

00:30:05,930 --> 00:30:04,010

thank you David Dan

667

00:30:07,789 --> 00:30:05,940

pleasure to be back good morning

668

00:30:10,010 --> 00:30:07,799

everyone I want to start by thanking

669

00:30:13,190 --> 00:30:10,020

NASA for convening today's

670

00:30:15,830 --> 00:30:13,200

UAP independent study public meeting and

671

00:30:18,230 --> 00:30:15,840

inviting me to continue to participate

672

00:30:20,450 --> 00:30:18,240

NASA has been an invaluable partner to

673

00:30:22,789 --> 00:30:20,460

our team at Arrow as we work to better

674

00:30:25,190 --> 00:30:22,799

understand and respond to unidentified

675

00:30:27,649 --> 00:30:25,200

anomalous phenomena

676
00:30:29,570 --> 00:30:27,659
we applaud NASA for commissioning its

677
00:30:31,850 --> 00:30:29,580
independent study team and for exploring

678
00:30:34,850 --> 00:30:31,860
what data and tools could be leveraged

679
00:30:37,310 --> 00:30:34,860
to shed greater light on UAP

680
00:30:40,310 --> 00:30:37,320
though NASA and arrow are taking on very

681
00:30:42,250 --> 00:30:40,320
different aspects of the UAP problem set

682
00:30:44,750 --> 00:30:42,260
our efforts are very much complementary

683
00:30:47,630 --> 00:30:44,760
we both are committed to the scientific

684
00:30:49,610 --> 00:30:47,640
method to a data-driven approach

685
00:30:51,409 --> 00:30:49,620
and the highest standards of scientific

686
00:30:53,870 --> 00:30:51,419
research integrity

687
00:30:57,590 --> 00:30:53,880
while NASA is evaluating unclassified

688
00:31:00,590 --> 00:30:57,600

data sources for its study arrows data

689

00:31:03,230 --> 00:31:00,600

set includes classified material with a

690

00:31:06,289 --> 00:31:03,240

focus on National Security areas

691

00:31:08,029 --> 00:31:06,299

however all of this data collectively is

692

00:31:10,730 --> 00:31:08,039

critical to understanding the nature and

693

00:31:13,070 --> 00:31:10,740

origin of UAP

694

00:31:16,130 --> 00:31:13,080

NASA brings unique capabilities

695

00:31:19,430 --> 00:31:16,140

world-class scientists and a wealth of

696

00:31:21,889 --> 00:31:19,440

academic and research linkages

697

00:31:23,110 --> 00:31:21,899

NASA also has access to Earth sensing

698

00:31:25,430 --> 00:31:23,120

satellites

699

00:31:27,409 --> 00:31:25,440

radiological sensors tools for

700

00:31:29,990 --> 00:31:27,419

gravitational wave geomagnetic wave

701
00:31:32,330 --> 00:31:30,000
detection and means for analyzing open

702
00:31:34,730 --> 00:31:32,340
source cloud and crowdsourced data that

703
00:31:36,710 --> 00:31:34,740
may assist both Aero and NASA in their

704
00:31:38,810 --> 00:31:36,720
UAP efforts

705
00:31:41,810 --> 00:31:38,820
we are very grateful for the partnership

706
00:31:43,669 --> 00:31:41,820
and welcome the opportunity to join with

707
00:31:45,649 --> 00:31:43,679
NASA to share our Collective findings

708
00:31:48,169 --> 00:31:45,659
with the public as the U.S government

709
00:31:50,389 --> 00:31:48,179
moves towards greater transparency on

710
00:31:52,730 --> 00:31:50,399
this issue

711
00:31:54,710 --> 00:31:52,740
last month I testified before members of

712
00:31:56,930 --> 00:31:54,720
the Senate armed services committee on

713
00:31:59,570 --> 00:31:56,940

emerging threats and capabilities

714

00:32:03,230 --> 00:31:59,580

and shared some of the progress made

715

00:32:05,090 --> 00:32:03,240

since Arrow's establishment in July 2022

716

00:32:06,769 --> 00:32:05,100

I discussed arrows scientific and

717

00:32:09,409 --> 00:32:06,779

analytic approaches

718

00:32:11,630 --> 00:32:09,419

its efforts to improve UAP data

719

00:32:14,690 --> 00:32:11,640

collection standardize our reporting

720

00:32:16,850 --> 00:32:14,700

processes leverage our Partnerships and

721

00:32:19,669 --> 00:32:16,860

meticulously review the US government's

722

00:32:22,190 --> 00:32:19,679

UAP related historical records

723

00:32:25,250 --> 00:32:22,200

as I told the subcommittee then the

724

00:32:27,350 --> 00:32:25,260

resolution of all UAP cases cannot be

725

00:32:29,029 --> 00:32:27,360

accomplished by DOD and the intelligence

726

00:32:30,950 --> 00:32:29,039

Community alone

727

00:32:33,230 --> 00:32:30,960

era's ultimate success will require

728

00:32:36,289 --> 00:32:33,240

Partnerships with the interagency

729

00:32:38,810 --> 00:32:36,299

industry Academia the scientific

730

00:32:41,029 --> 00:32:38,820

community and the public

731

00:32:44,750 --> 00:32:41,039

which all bring their own resources

732

00:32:47,930 --> 00:32:44,760

ideas and expertise to the UAP challenge

733

00:32:48,649 --> 00:32:47,940

We Believe robust collaboration and peer

734

00:32:50,750 --> 00:32:48,659

review

735

00:32:52,370 --> 00:32:50,760

across a broad range of Partners will

736

00:32:55,430 --> 00:32:52,380

promote greater objectivity and

737

00:32:58,010 --> 00:32:55,440

transparency in the study of UAP

738

00:32:59,810 --> 00:32:58,020

of course NASA's UAP independent study

739

00:33:01,250 --> 00:32:59,820

team was convened very much in that

740

00:33:03,830 --> 00:33:01,260

spirit

741

00:33:06,169 --> 00:33:03,840

I also emphasized to Congress that the

742

00:33:08,870 --> 00:33:06,179

only a very small percentage of UAP

743

00:33:12,289 --> 00:33:08,880

reports displays signatures that could

744

00:33:14,690 --> 00:33:12,299

reasonably be described as anomalous

745

00:33:17,330 --> 00:33:14,700

the majority of unidentified objects

746

00:33:20,450 --> 00:33:17,340

reported to Arrow and in our Holdings

747

00:33:22,730 --> 00:33:20,460

demonstrate mundane characteristics of

748

00:33:25,070 --> 00:33:22,740

readily explainable sources

749

00:33:27,289 --> 00:33:25,080

while a large number of cases in arrows

750

00:33:30,590 --> 00:33:27,299

Holdings remain technically unresolved

751

00:33:33,049 --> 00:33:30,600

this is primarily due to a lack of data

752

00:33:35,330 --> 00:33:33,059

associated with those cases

753

00:33:37,430 --> 00:33:35,340

very much along the lines of what David

754

00:33:40,070 --> 00:33:37,440

was just speaking about

755

00:33:42,289 --> 00:33:40,080

without sufficient data we are unable to

756

00:33:44,149 --> 00:33:42,299

reach defensible conclusions that meet

757

00:33:45,889 --> 00:33:44,159

the high scientific standards we set for

758

00:33:48,110 --> 00:33:45,899

resolution

759

00:33:49,789 --> 00:33:48,120

meanwhile for the few objects that do

760

00:33:52,250 --> 00:33:49,799

demonstrate potentially anomalous

761

00:33:54,110 --> 00:33:52,260

characteristics arrows approaching these

762

00:33:57,470 --> 00:33:54,120

cases with the highest level

763

00:33:59,690 --> 00:33:57,480

of objectivity and analytic rigor this

764

00:34:02,509 --> 00:33:59,700

includes physical testing and employing

765

00:34:05,450 --> 00:34:02,519

modeling and simulation to validate our

766

00:34:07,310 --> 00:34:05,460

analyzes and the underlying theories and

767

00:34:09,649 --> 00:34:07,320

then peer reviewing those results before

768

00:34:11,930 --> 00:34:09,659

reaching any conclusions

769

00:34:14,510 --> 00:34:11,940

Arrow has shared these cases with the

770

00:34:16,849 --> 00:34:14,520

appropriately cleared NASA team members

771

00:34:19,790 --> 00:34:16,859

in order to discuss and help recommend

772

00:34:22,129 --> 00:34:19,800

potential scientific areas of study that

773

00:34:24,230 --> 00:34:22,139

NASA may want to take lead on

774

00:34:26,270 --> 00:34:24,240

I'll underscore here as I did before

775

00:34:28,849 --> 00:34:26,280

Congress at arrows work will take time

776

00:34:30,589 --> 00:34:28,859

if we are committed to doing it right

777

00:34:32,089 --> 00:34:30,599

arrow is committed to the highest

778

00:34:34,730 --> 00:34:32,099

standards of scientific research

779

00:34:36,530 --> 00:34:34,740

Integrity as we know our partners at

780

00:34:38,450 --> 00:34:36,540

Nasa are as well

781

00:34:40,609 --> 00:34:38,460

thanks again to NASA for hosting this

782

00:34:42,770 --> 00:34:40,619

public forum for UAP discussion and

783

00:34:44,869 --> 00:34:42,780

information exchange and I'd like to

784

00:34:46,849 --> 00:34:44,879

turn to a brief presentation that

785

00:34:51,169 --> 00:34:46,859

includes some recently Declassified

786

00:34:54,530 --> 00:34:51,179

footage and trends for discussion

787

00:34:59,890 --> 00:34:57,050

so if some of you probably saw a version

788

00:35:02,349 --> 00:34:59,900

of this at the open hearing last month

789

00:35:05,210 --> 00:35:02,359

this is an overall

790

00:35:07,609 --> 00:35:05,220

review of all the analytic trends of all

791

00:35:11,450 --> 00:35:07,619

the cases that we have to date while the

792

00:35:17,210 --> 00:35:13,450

um the overall Trends remain the same

793

00:35:19,849 --> 00:35:17,220

most of what we are seeing reported by

794

00:35:22,310 --> 00:35:19,859

aircraft are at the altitudes where we

795

00:35:23,390 --> 00:35:22,320

fly aircraft that should not be a

796

00:35:25,609 --> 00:35:23,400

surprise

797

00:35:28,130 --> 00:35:25,619

you will note however that I have no

798

00:35:30,050 --> 00:35:28,140

space reports and I have no Maritime

799

00:35:32,210 --> 00:35:30,060

reports

800

00:35:34,910 --> 00:35:32,220

that is notable even though we are

801
00:35:37,510 --> 00:35:34,920
looking across all of those domains

802
00:35:40,430 --> 00:35:37,520
on the upper right we have UAP

803
00:35:42,410 --> 00:35:40,440
morphologies the vast majority of what

804
00:35:46,970 --> 00:35:42,420
has been reported and what we have data

805
00:35:49,329 --> 00:35:46,980
on a little less than half now our orbs

806
00:35:52,730 --> 00:35:49,339
round spheres

807
00:35:55,609 --> 00:35:52,740
and in the bottom right you will see in

808
00:35:58,010 --> 00:35:55,619
the really the the Heats map of the

809
00:36:00,530 --> 00:35:58,020
areas where we get most of our reporting

810
00:36:03,530 --> 00:36:00,540
this is very much a collection biased

811
00:36:07,430 --> 00:36:03,540
map this is where our sensors are our

812
00:36:08,930 --> 00:36:07,440
military and our IC and some of the FAA

813
00:36:11,990 --> 00:36:08,940

data

814

00:36:14,810 --> 00:36:12,000

in the middle is what we call our

815

00:36:17,150 --> 00:36:14,820

typical UAP characteristics for the vast

816

00:36:20,030 --> 00:36:17,160

majority of the cases that we see

817

00:36:22,370 --> 00:36:20,040

one way of looking at that is a is a

818

00:36:25,550 --> 00:36:22,380

we'll call it a Target package this is

819

00:36:27,650 --> 00:36:25,560

the thing we are out hunting for in most

820

00:36:32,210 --> 00:36:27,660

cases

821

00:36:37,430 --> 00:36:34,609

this is an example of one that I showed

822

00:36:39,890 --> 00:36:37,440

at the hearing recently this is a

823

00:36:44,150 --> 00:36:39,900

spherical orb metallic in the Middle

824

00:36:45,650 --> 00:36:44,160

East 2022 by an MQ-9

825

00:36:47,450 --> 00:36:45,660

and we'll come back to the sensor

826

00:36:48,829 --> 00:36:47,460

question that David raised here in a

827

00:36:51,589 --> 00:36:48,839

moment

828

00:36:54,349 --> 00:36:51,599

this is a typical example of the thing

829

00:36:57,650 --> 00:36:54,359

that we see most of we see these all

830

00:37:00,290 --> 00:36:57,660

over the world and we see these in and

831

00:37:03,950 --> 00:37:00,300

making very interesting

832

00:37:08,569 --> 00:37:05,990

this one in particular however I would

833

00:37:11,150 --> 00:37:08,579

point out demonstrated no enigmatic

834

00:37:13,490 --> 00:37:11,160

technical capabilities and was no threat

835

00:37:15,650 --> 00:37:13,500

to Airborne safety

836

00:37:18,050 --> 00:37:15,660

while we are still looking at it I don't

837

00:37:20,089 --> 00:37:18,060

have any more data other than that

838

00:37:23,270 --> 00:37:20,099

and so being able to come to some

839

00:37:25,849 --> 00:37:23,280

conclusion is going to take time until

840

00:37:28,490 --> 00:37:25,859

we can get better resolved data on

841

00:37:30,710 --> 00:37:28,500

similar objects that we can then do a

842

00:37:34,190 --> 00:37:30,720

larger analysis on

843

00:37:40,310 --> 00:37:36,589

I'm going to let this play through this

844

00:37:42,950 --> 00:37:40,320

is a newly released video you'll notice

845

00:37:45,290 --> 00:37:42,960

there are two dots moving back and forth

846

00:37:47,270 --> 00:37:45,300

there is a plane at the bottom that's

847

00:37:49,730 --> 00:37:47,280

moving across the screen and now there

848

00:37:52,790 --> 00:37:49,740

are three dots moving back and forth

849

00:37:54,349 --> 00:37:52,800

the moving back and forth is from the

850

00:37:58,730 --> 00:37:54,359

sensor and the platform that's

851

00:38:00,170 --> 00:37:58,740

collecting it this is a a P3 on a

852

00:38:02,870 --> 00:38:00,180

training mission in the Western United

853

00:38:05,390 --> 00:38:02,880

States they picked these up and they

854

00:38:07,190 --> 00:38:05,400

tried to intercept and was unable to

855

00:38:10,069 --> 00:38:07,200

intercept them

856

00:38:12,829 --> 00:38:10,079

apart from that motion and you'll see a

857

00:38:13,730 --> 00:38:12,839

little bit of defocusing from the sensor

858

00:38:16,250 --> 00:38:13,740

itself

859

00:38:19,130 --> 00:38:16,260

there is no other

860

00:38:21,410 --> 00:38:19,140

Oddity about this except for the fact

861

00:38:22,910 --> 00:38:21,420

that they couldn't catch them the reason

862

00:38:25,970 --> 00:38:22,920

they couldn't catch them is because

863

00:38:28,310 --> 00:38:25,980

after further analysis it was shown that

864

00:38:31,130 --> 00:38:28,320

those objects were actually much farther

865

00:38:33,349 --> 00:38:31,140

away from the P3 than they thought

866

00:38:35,450 --> 00:38:33,359

and in fact when we went even deeper

867

00:38:37,970 --> 00:38:35,460

looked at Air Traffic Control Data we

868

00:38:41,450 --> 00:38:37,980

were able to match those to aircraft on

869

00:38:43,849 --> 00:38:41,460

a major flight Corridor heading into a

870

00:38:47,870 --> 00:38:43,859

major airport for landing

871

00:38:50,990 --> 00:38:47,880

this is the kind of thing that can

872

00:38:54,290 --> 00:38:51,000

spook and or provide misperception of

873

00:38:55,790 --> 00:38:54,300

both very highly trained pilots as well

874

00:38:59,150 --> 00:38:55,800

as sensors

875

00:39:01,970 --> 00:38:59,160

right and this was reported as an odd

876

00:39:03,230 --> 00:39:01,980

grouping of three UAP

877

00:39:05,870 --> 00:39:03,240

all right

878

00:39:08,150 --> 00:39:05,880

that is not to say that the pilots

879

00:39:10,130 --> 00:39:08,160

didn't know what they were looking at or

880

00:39:12,650 --> 00:39:10,140

they they knew what they were looking at

881

00:39:14,690 --> 00:39:12,660

but they weren't really sure but it also

882

00:39:16,550 --> 00:39:14,700

is meant to say that when they're not

883

00:39:18,230 --> 00:39:16,560

sure they're reporting it now and that's

884

00:39:20,000 --> 00:39:18,240

what they're supposed to be doing and

885

00:39:21,650 --> 00:39:20,010

then we have to go look at it

886

00:39:25,069 --> 00:39:21,660

[Music]

887

00:39:28,609 --> 00:39:27,109

that brings us to really what is Arrow

888

00:39:30,710 --> 00:39:28,619

doing in the science and Technical

889

00:39:31,870 --> 00:39:30,720

Realms so this is one of those areas

890

00:39:34,010 --> 00:39:31,880

that

891

00:39:37,390 --> 00:39:34,020

I'm going to expound a little bit more

892

00:39:39,829 --> 00:39:37,400

on than we did in the last hearings

893

00:39:42,349 --> 00:39:39,839

Arrow has a

894

00:39:44,450 --> 00:39:42,359

robust scientific plan that we are

895

00:39:46,990 --> 00:39:44,460

required to then provide to Congress

896

00:39:49,310 --> 00:39:47,000

here pretty soon

897

00:39:51,470 --> 00:39:49,320

one of the first things that we're doing

898

00:39:54,589 --> 00:39:51,480

is looking across all the existing

899

00:39:57,109 --> 00:39:54,599

sensor data against that typical UAP

900

00:40:00,470 --> 00:39:57,119

Target that I gave you up at the very

901
00:40:02,510 --> 00:40:00,480
first slide that goes beyond DOD and IC

902
00:40:04,730 --> 00:40:02,520
sensors that's commercial that's civil

903
00:40:08,050 --> 00:40:04,740
that's in and with partnership with NASA

904
00:40:10,550 --> 00:40:08,060
with NASA sensors and NOAA sensors

905
00:40:13,130 --> 00:40:10,560
understanding if any of these Earth

906
00:40:15,290 --> 00:40:13,140
sensing satellites any of these Airborne

907
00:40:17,630 --> 00:40:15,300
platforms any of these ground Radars

908
00:40:19,609 --> 00:40:17,640
whether it's FAA or other can actually

909
00:40:22,370 --> 00:40:19,619
see these things

910
00:40:23,810 --> 00:40:22,380
given what we've got so far is going to

911
00:40:25,430 --> 00:40:23,820
be an important first step to

912
00:40:28,130 --> 00:40:25,440
understanding which sensors are going to

913
00:40:33,050 --> 00:40:30,890

from there we will we are augmenting

914

00:40:36,230 --> 00:40:33,060

with dedicated sensors that we've

915

00:40:38,630 --> 00:40:36,240

purpose built designed to detect track

916

00:40:41,150 --> 00:40:38,640

and characterize those particular

917

00:40:43,970 --> 00:40:41,160

objects we will be then putting those

918

00:40:46,730 --> 00:40:43,980

out in very select areas for

919

00:40:49,490 --> 00:40:46,740

surveillance purposes

920

00:40:51,770 --> 00:40:49,500

Partnerships with Academia exploring the

921

00:40:54,290 --> 00:40:51,780

signatures to match to our data so

922

00:40:56,810 --> 00:40:54,300

understanding if a thing is moving and

923

00:40:58,310 --> 00:40:56,820

if it is doing certain anomalous

924

00:41:00,470 --> 00:40:58,320

activities what are the signatures we

925

00:41:03,290 --> 00:41:00,480

would expect to see how do we pull on

926
00:41:05,390 --> 00:41:03,300
that and then from there how do I tune

927
00:41:06,890 --> 00:41:05,400
my collection architecture to go after

928
00:41:08,930 --> 00:41:06,900
it

929
00:41:11,030 --> 00:41:08,940
statistical analytic techniques we're

930
00:41:12,950 --> 00:41:11,040
working with a couple of universities on

931
00:41:16,069 --> 00:41:12,960
how do I do broader base statistical

932
00:41:18,230 --> 00:41:16,079
analysis on unclassified and classified

933
00:41:20,630 --> 00:41:18,240
data so that I can apply those analytics

934
00:41:23,390 --> 00:41:20,640
to our Holdings

935
00:41:26,390 --> 00:41:23,400
and then Ai and ml analytic techniques

936
00:41:28,370 --> 00:41:26,400
for searching out through the data what

937
00:41:31,310 --> 00:41:28,380
are this what are the objects what are

938
00:41:33,890 --> 00:41:31,320

the targets that we're going after

939

00:41:36,290 --> 00:41:33,900

we have Partnerships with both DOD and

940

00:41:38,510 --> 00:41:36,300

doe labs to explore our current

941

00:41:40,609 --> 00:41:38,520

state-of-the-art fundamental physics of

942

00:41:42,829 --> 00:41:40,619

UAP observations

943

00:41:45,349 --> 00:41:42,839

both current and historical in other

944

00:41:47,349 --> 00:41:45,359

words if I have objects those few that

945

00:41:50,569 --> 00:41:47,359

are doing some things that are anomalous

946

00:41:52,730 --> 00:41:50,579

what is our current understanding of

947

00:41:54,370 --> 00:41:52,740

maneuverability

948

00:41:56,829 --> 00:41:54,380

speed

949

00:41:59,750 --> 00:41:56,839

signature management

950

00:42:01,490 --> 00:41:59,760

propulsion what are those underlying

951
00:42:05,329 --> 00:42:01,500
signatures that we would expect to see

952
00:42:07,430 --> 00:42:05,339
and how do I then pull on that

953
00:42:09,530 --> 00:42:07,440
our interagency and Allied partnership

954
00:42:11,510 --> 00:42:09,540
ships for calibration of our

955
00:42:14,329 --> 00:42:11,520
capabilities this is exactly what David

956
00:42:16,670 --> 00:42:14,339
was pointing at the vast majority of

957
00:42:19,670 --> 00:42:16,680
what we have reported to us are DOD

958
00:42:21,589 --> 00:42:19,680
sensors DOD sensors are not scientific

959
00:42:23,089 --> 00:42:21,599
sensors they are not intelligence

960
00:42:24,710 --> 00:42:23,099
Community sensors

961
00:42:26,750 --> 00:42:24,720
Believe It or Not intelligence Community

962
00:42:28,730 --> 00:42:26,760
sensors are very close to Scientific

963
00:42:31,069 --> 00:42:28,740

sensors they are calibrated they are

964

00:42:34,069 --> 00:42:31,079

high Precision they are everything you'd

965

00:42:36,950 --> 00:42:34,079

ever want to know about a thing

966

00:42:40,010 --> 00:42:36,960

DOD sensors have one purpose they are to

967

00:42:41,450 --> 00:42:40,020

identify an object that is known and put

968

00:42:43,550 --> 00:42:41,460

a weapon on it

969

00:42:46,430 --> 00:42:43,560

that is what they're for right

970

00:42:48,470 --> 00:42:46,440

predominantly so understanding how do

971

00:42:51,589 --> 00:42:48,480

you calibrate those against these known

972

00:42:53,810 --> 00:42:51,599

objects how do I fly in F-35 against a

973

00:42:55,430 --> 00:42:53,820

weather balloon at different speeds and

974

00:42:57,589 --> 00:42:55,440

different altitudes and different Sun

975

00:42:59,569 --> 00:42:57,599

conditions and different lighting

976
00:43:02,030 --> 00:42:59,579
conditions and and heating conditions

977
00:43:04,130 --> 00:43:02,040
those are all important measurements

978
00:43:07,190 --> 00:43:04,140
that need to be done and we are on the

979
00:43:09,470 --> 00:43:07,200
in process of doing that right now that

980
00:43:12,290 --> 00:43:09,480
table on the right is a very simplified

981
00:43:14,210 --> 00:43:12,300
version of our entire test Matrix which

982
00:43:16,790 --> 00:43:14,220
you would not be able to fit on three of

983
00:43:20,569 --> 00:43:16,800
these slides against all of our sensors

984
00:43:22,490 --> 00:43:20,579
across all of those phenomenologies

985
00:43:24,950 --> 00:43:22,500
that will be useful in order to then

986
00:43:27,770 --> 00:43:24,960
train our operators pilots and sensors

987
00:43:29,750 --> 00:43:27,780
against the known objects

988
00:43:31,190 --> 00:43:29,760

and then finally our pattern of Life

989

00:43:33,410 --> 00:43:31,200

analysis

990

00:43:35,930 --> 00:43:33,420

this is essentially baselining what is

991

00:43:38,390 --> 00:43:35,940

normal I have all these Hot Spot areas

992

00:43:40,430 --> 00:43:38,400

but we only have hotspot areas because

993

00:43:42,170 --> 00:43:40,440

that's when the reports come in from The

994

00:43:43,069 --> 00:43:42,180

Operators that are operating at that

995

00:43:49,730 --> 00:43:43,079

time

996

00:43:52,910 --> 00:43:49,740

so to have a 24 7 collection monitoring

997

00:43:55,190 --> 00:43:52,920

campaign in some of these areas for

998

00:43:58,130 --> 00:43:55,200

three months at a time is going to be

999

00:44:00,829 --> 00:43:58,140

necessary in order to measure out what

1000

00:44:01,670 --> 00:44:00,839

is normal then I'll know what is not

1001
00:44:03,470 --> 00:44:01,680
normal

1002
00:44:05,870 --> 00:44:03,480
all right when we have additional things

1003
00:44:08,990 --> 00:44:05,880
that come through those spaces

1004
00:44:10,970 --> 00:44:09,000
and that includes space and maritime

1005
00:44:12,410 --> 00:44:10,980
next slide please

1006
00:44:14,870 --> 00:44:12,420
which brings me to some of my

1007
00:44:18,829 --> 00:44:14,880
recommendations for the panel and their

1008
00:44:23,569 --> 00:44:20,690
some of these we're going to be

1009
00:44:25,970 --> 00:44:23,579
exploring with our our new NASA embed

1010
00:44:27,710 --> 00:44:25,980
I'm happy to be welcoming on for your

1011
00:44:31,190 --> 00:44:27,720
pretty soon who's going to help us in

1012
00:44:35,450 --> 00:44:32,650
um

1013
00:44:37,370 --> 00:44:35,460

crowdsourcing unclassified open source

1014

00:44:40,430 --> 00:44:37,380

data this is where you know some of the

1015

00:44:43,849 --> 00:44:40,440

public can be helpful you know

1016

00:44:45,890 --> 00:44:43,859

imagery from a iPhone is generally not

1017

00:44:47,930 --> 00:44:45,900

helpful unless you are right up on

1018

00:44:49,309 --> 00:44:47,940

whatever it is you're looking at

1019

00:44:51,710 --> 00:44:49,319

however

1020

00:44:55,550 --> 00:44:51,720

some of the ancillary data that your

1021

00:44:58,089 --> 00:44:55,560

iPhone provides from location to speed

1022

00:45:00,530 --> 00:44:58,099

to you know other

1023

00:45:03,790 --> 00:45:00,540

phenomenologies and more than one of

1024

00:45:08,950 --> 00:45:06,290

large-scale ground-based scientific

1025

00:45:10,849 --> 00:45:08,960

instrumentation

1026

00:45:12,710 --> 00:45:10,859

evaluating

1027

00:45:14,990 --> 00:45:12,720

how can I use some of these other

1028

00:45:18,589 --> 00:45:15,000

instruments for detection the frb

1029

00:45:20,530 --> 00:45:18,599

example was was perfect right you have a

1030

00:45:22,670 --> 00:45:20,540

bunch of large scales

1031

00:45:24,230 --> 00:45:22,680

instruments that were not designed for

1032

00:45:26,990 --> 00:45:24,240

that yet they picked them up because

1033

00:45:28,190 --> 00:45:27,000

there was a microwave

1034

00:45:32,270 --> 00:45:28,200

well

1035

00:45:35,089 --> 00:45:32,280

we have a a surrogate Target package of

1036

00:45:37,190 --> 00:45:35,099

what we think these things are at least

1037

00:45:38,690 --> 00:45:37,200

from a what we've got reported to us

1038

00:45:39,970 --> 00:45:38,700

that was in the front

1039

00:45:43,130 --> 00:45:39,980

slide

1040

00:45:46,010 --> 00:45:43,140

understanding how can I evaluate that

1041

00:45:48,410 --> 00:45:46,020

against all of these other instruments

1042

00:45:50,089 --> 00:45:48,420

and do any of them have a chance of

1043

00:45:52,250 --> 00:45:50,099

picking anything up that would be

1044

00:45:55,730 --> 00:45:52,260

helpful in tipping and queuing us to get

1045

00:46:00,650 --> 00:45:58,550

I think leading that evaluation of the

1046

00:46:03,770 --> 00:46:00,660

scientific ground-based sensors would be

1047

00:46:05,750 --> 00:46:03,780

useful also the same thing for the Earth

1048

00:46:09,190 --> 00:46:05,760

Sciences satellites as we mentioned

1049

00:46:13,550 --> 00:46:11,809

intentional Vice coincidental collection

1050

00:46:17,390 --> 00:46:13,560

so

1051
00:46:21,550 --> 00:46:17,400
looking at how can I provide a tip and

1052
00:46:24,309 --> 00:46:21,560
cue to both the ground and space-based

1053
00:46:27,890 --> 00:46:24,319
scientific and academic sensor Community

1054
00:46:30,589 --> 00:46:27,900
to put additional sensors on a object

1055
00:46:34,550 --> 00:46:30,599
when it is reported I'm currently doing

1056
00:46:38,270 --> 00:46:34,560
that with arrow The Joint staff the

1057
00:46:41,690 --> 00:46:38,280
commands for when they get tip in queue

1058
00:46:44,270 --> 00:46:41,700
right so a pilot says something they see

1059
00:46:46,010 --> 00:46:44,280
something they report it in and we're

1060
00:46:48,109 --> 00:46:46,020
going to turn on a whole bunch of new

1061
00:46:50,510 --> 00:46:48,119
collection to go after it I should be

1062
00:46:52,849 --> 00:46:50,520
able to hand that same tip and cue to

1063
00:46:54,710 --> 00:46:52,859

the scientific and academic community

1064

00:46:55,970 --> 00:46:54,720

so looking at how that works would be

1065

00:46:59,390 --> 00:46:55,980

helpful

1066

00:47:01,370 --> 00:46:59,400

peer reviewing Advanced capabilities the

1067

00:47:02,690 --> 00:47:01,380

parameterization and the publication of

1068

00:47:04,250 --> 00:47:02,700

that that have not yet been engineered

1069

00:47:07,970 --> 00:47:04,260

we understand a lot of fundamental

1070

00:47:10,849 --> 00:47:07,980

physics it is the scientific community's

1071

00:47:13,250 --> 00:47:10,859

responsibility to explore and document

1072

00:47:15,470 --> 00:47:13,260

those fundamentals and peer-reviewed

1073

00:47:17,690 --> 00:47:15,480

scientific journals to match to data so

1074

00:47:20,510 --> 00:47:17,700

that we can weed out all kinds of

1075

00:47:22,190 --> 00:47:20,520

different hypotheses right that's how

1076
00:47:24,290 --> 00:47:22,200
science works we need to make sure that

1077
00:47:26,510 --> 00:47:24,300
we are doing that I think leading that

1078
00:47:28,569 --> 00:47:26,520
conversation would be very helpful from

1079
00:47:31,490 --> 00:47:28,579
NASA's perspective

1080
00:47:34,630 --> 00:47:31,500
archived scientific data so we have a

1081
00:47:37,609 --> 00:47:34,640
whole bunch of calibrated large-scale

1082
00:47:41,210 --> 00:47:37,619
scientific data from all these different

1083
00:47:43,670 --> 00:47:41,220
instrumentations around the world taking

1084
00:47:47,510 --> 00:47:43,680
a look at how can you apply some maybe

1085
00:47:50,809 --> 00:47:47,520
some AIML tools to search through that

1086
00:47:52,730 --> 00:47:50,819
data for anomalous signatures that may

1087
00:47:54,770 --> 00:47:52,740
correlate to things that we've got

1088
00:47:56,530 --> 00:47:54,780

reporting on that would be an

1089

00:47:58,670 --> 00:47:56,540

interesting study

1090

00:48:00,470 --> 00:47:58,680

distributions of sightings I think this

1091

00:48:03,109 --> 00:48:00,480

is a low hanging fruit one right so if

1092

00:48:05,390 --> 00:48:03,119

we take a look at all of the

1093

00:48:07,309 --> 00:48:05,400

distributions of sightings that are

1094

00:48:09,230 --> 00:48:07,319

outside of my National Security areas

1095

00:48:10,730 --> 00:48:09,240

that I've got classified reporting for

1096

00:48:12,710 --> 00:48:10,740

and they generate the similar

1097

00:48:14,510 --> 00:48:12,720

distribution map as we've got and we put

1098

00:48:16,309 --> 00:48:14,520

those two pieces together now I have a

1099

00:48:17,630 --> 00:48:16,319

holistic picture

1100

00:48:19,670 --> 00:48:17,640

and then of course our foreign

1101

00:48:22,250 --> 00:48:19,680

Partnerships building a robust

1102

00:48:25,809 --> 00:48:22,260

scientific community of Interest review

1103

00:48:29,210 --> 00:48:25,819

data capabilities conduct analysis

1104

00:48:31,790 --> 00:48:29,220

expanding upon you know our military and

1105

00:48:33,950 --> 00:48:31,800

intelligence collaborations across the

1106

00:48:36,050 --> 00:48:33,960

world into the scientific and academic

1107

00:48:38,950 --> 00:48:36,060

world

1108

00:48:41,270 --> 00:48:38,960

and with that those were my thoughts

1109

00:48:44,270 --> 00:48:41,280

we've talked about some of these in the

1110

00:48:46,309 --> 00:48:44,280

past it would be interesting to to hear

1111

00:48:48,530 --> 00:48:46,319

if there's any further questions or

1112

00:48:50,329 --> 00:48:48,540

deliberations on any of those points and

1113

00:48:52,130 --> 00:48:50,339

I'm happy to take any questions that you

1114

00:48:54,890 --> 00:48:52,140

all have

1115

00:48:56,450 --> 00:48:54,900

great uh thank you Dr Kirkpatrick and I

1116

00:48:59,870 --> 00:48:56,460

also want to you take this opportunity

1117

00:49:02,750 --> 00:48:59,880

to thank you in the Aro for your

1118

00:49:05,690 --> 00:49:02,760

openness in providing this committee

1119

00:49:07,849 --> 00:49:05,700

with insight and information about what

1120

00:49:08,750 --> 00:49:07,859

you've learned so far how we could work

1121

00:49:10,790 --> 00:49:08,760

together

1122

00:49:13,550 --> 00:49:10,800

think this is very much an area where

1123

00:49:16,430 --> 00:49:13,560

it's going to be essential that NASA be

1124

00:49:19,910 --> 00:49:16,440

a partner and be a good partner for aaro

1125

00:49:21,230 --> 00:49:19,920

and I think you're uh really want to

1126

00:49:23,630 --> 00:49:21,240

thank you for your role with this

1127

00:49:26,030 --> 00:49:23,640

Committee in helping to start to build

1128

00:49:30,770 --> 00:49:26,040

that partnership it's been my pleasure

1129

00:49:32,630 --> 00:49:30,780

and let's uh Reggie Griffin

1130

00:49:34,010 --> 00:49:32,640

um question uh we talked a lot about

1131

00:49:36,890 --> 00:49:34,020

data already

1132

00:49:38,390 --> 00:49:36,900

what's up with sensors for a second so

1133

00:49:39,650 --> 00:49:38,400

you mentioned that you work with Labs

1134

00:49:41,930 --> 00:49:39,660

Academia

1135

00:49:43,790 --> 00:49:41,940

do you see a need to go beyond what you

1136

00:49:46,250 --> 00:49:43,800

mentioned earlier that is the type of

1137

00:49:47,990 --> 00:49:46,260

census we have right now which are based

1138

00:49:49,550 --> 00:49:48,000

on National Security threats and certain

1139

00:49:50,870 --> 00:49:49,560

phenomenologies and frequency range of

1140

00:49:52,490 --> 00:49:50,880

these kinds of things

1141

00:49:55,190 --> 00:49:52,500

do you see a reason of going beyond that

1142

00:49:56,930 --> 00:49:55,200

yep absolutely what what are some of the

1143

00:49:57,650 --> 00:49:56,940

challenges there materials that will

1144

00:50:00,290 --> 00:49:57,660

happen

1145

00:50:03,130 --> 00:50:00,300

so can we go back to the front slide

1146

00:50:05,290 --> 00:50:03,140

just the first slide where the target

1147

00:50:08,690 --> 00:50:05,300

characterization is

1148

00:50:10,730 --> 00:50:08,700

so we've we've purpose built a couple of

1149

00:50:12,530 --> 00:50:10,740

of sensors

1150

00:50:15,470 --> 00:50:12,540

to do search

1151
00:50:18,230 --> 00:50:15,480
across that no down one there you go

1152
00:50:19,970 --> 00:50:18,240
that's great but to go down some of

1153
00:50:25,210 --> 00:50:19,980
those characteristics to see if we can

1154
00:50:29,569 --> 00:50:25,220
find them correlated to Pilot reporting

1155
00:50:31,370 --> 00:50:29,579
some of those are initially this is

1156
00:50:33,410 --> 00:50:31,380
going to be I'm going to say this is a

1157
00:50:36,410 --> 00:50:33,420
bootstrap method right we're doing a

1158
00:50:39,650 --> 00:50:36,420
broad spectrum search across very few

1159
00:50:42,290 --> 00:50:39,660
indicators that we can point to that

1160
00:50:46,370 --> 00:50:42,300
will enable us to get a little bit more

1161
00:50:49,370 --> 00:50:46,380
data refine that narrow Those sensors

1162
00:50:52,250 --> 00:50:49,380
and and and go from there so we aren't

1163
00:50:54,710 --> 00:50:52,260

just relying on the dod and IC sensors

1164

00:50:56,210 --> 00:50:54,720

that exist today because frankly they

1165

00:50:58,309 --> 00:50:56,220

don't point to where we want them to

1166

00:51:00,109 --> 00:50:58,319

point right I mean I'll be frank with

1167

00:51:04,309 --> 00:51:00,119

with everyone

1168

00:51:08,390 --> 00:51:04,319

we we can point the largest

1169

00:51:10,790 --> 00:51:08,400

collection apparatus in the entire Globe

1170

00:51:12,290 --> 00:51:10,800

at any point we want

1171

00:51:13,549 --> 00:51:12,300

you just have to tell me where I want to

1172

00:51:15,890 --> 00:51:13,559

point it

1173

00:51:19,130 --> 00:51:15,900

second piece of that is a lot of what we

1174

00:51:20,510 --> 00:51:19,140

have is is around the continental United

1175

00:51:24,010 --> 00:51:20,520

States

1176
00:51:27,829 --> 00:51:24,020
most people including the government

1177
00:51:30,890 --> 00:51:27,839
don't like it when I point our entire

1178
00:51:34,549 --> 00:51:30,900
collection apparatus to your backyard

1179
00:51:36,290 --> 00:51:34,559
right it's it's not allowed we have some

1180
00:51:39,170 --> 00:51:36,300
laws about that and we've got to figure

1181
00:51:41,510 --> 00:51:39,180
out how to do this only in the areas

1182
00:51:44,150 --> 00:51:41,520
that that I can get high confidence

1183
00:51:46,370 --> 00:51:44,160
there's going to be something there

1184
00:51:48,650 --> 00:51:46,380
and high confidence I'm not going to

1185
00:51:50,809 --> 00:51:48,660
break any laws doing it

1186
00:51:52,609 --> 00:51:50,819
so there's a there's a trade there so

1187
00:51:55,130 --> 00:51:52,619
some of these ground-based Point

1188
00:51:57,490 --> 00:51:55,140

detectors are going to be necessary for

1189

00:52:00,410 --> 00:51:57,500

that to point up to point out to search

1190

00:52:03,370 --> 00:52:00,420

coupled with we're evaluating a number

1191

00:52:06,069 --> 00:52:03,380

of sensor opportunities across different

1192

00:52:08,690 --> 00:52:06,079

organizations Academia

1193

00:52:11,390 --> 00:52:08,700

industry whatnot that that already exist

1194

00:52:13,490 --> 00:52:11,400

or are being built for similar purposes

1195

00:52:16,849 --> 00:52:13,500

or maybe other purposes that I might be

1196

00:52:19,430 --> 00:52:16,859

able to recalibrate for this and see if

1197

00:52:21,349 --> 00:52:19,440

those will have a chance of of seeing

1198

00:52:23,990 --> 00:52:21,359

that Target right so that's where the

1199

00:52:26,150 --> 00:52:24,000

modeling and Sim comes in can I can I

1200

00:52:28,430 --> 00:52:26,160

take that Target put it into your sensor

1201
00:52:33,589 --> 00:52:28,440
and have a chance of seeing it

1202
00:52:38,930 --> 00:52:35,150
oh wait

1203
00:52:43,309 --> 00:52:41,809
thanks Sean I have the questions you

1204
00:52:45,410 --> 00:52:43,319
probably don't want which are about

1205
00:52:46,609 --> 00:52:45,420
numbers unless I miss them during your

1206
00:52:48,650 --> 00:52:46,619
presentation

1207
00:52:49,910 --> 00:52:48,660
uh you had said that only a very small

1208
00:52:51,950 --> 00:52:49,920
percentage of your cases display

1209
00:52:53,690 --> 00:52:51,960
signatures that could be anomalous and

1210
00:52:55,750 --> 00:52:53,700
then follow that up with the few objects

1211
00:52:58,370 --> 00:52:55,760
that do demonstrate potentially

1212
00:53:00,710 --> 00:52:58,380
anomalous characteristics

1213
00:53:02,930 --> 00:53:00,720

what numbers are we talking about how

1214

00:53:05,089 --> 00:53:02,940

big is your database how many years was

1215

00:53:08,150 --> 00:53:05,099

it collected over and uh were those

1216

00:53:09,770 --> 00:53:08,160

observations made and then by few what

1217

00:53:13,910 --> 00:53:09,780

do you mean right no that's a great

1218

00:53:16,730 --> 00:53:13,920

question uh so this chart as I mentioned

1219

00:53:20,930 --> 00:53:16,740

we've updated with our current uh data

1220

00:53:22,690 --> 00:53:20,940

Holdings at the time of my open hearing

1221

00:53:24,370 --> 00:53:22,700

we were at

1222

00:53:28,990 --> 00:53:24,380

650

1223

00:53:32,630 --> 00:53:29,000

cases-ish we are now over 800.

1224

00:53:37,190 --> 00:53:32,640

we are putting together our annual

1225

00:53:40,370 --> 00:53:37,200

report which will be due August 1 to the

1226

00:53:42,290 --> 00:53:40,380

hill and in it and there will be an

1227

00:53:44,569 --> 00:53:42,300

unclassified version as there always has

1228

00:53:46,370 --> 00:53:44,579

been we will have those updated numbers

1229

00:53:48,589 --> 00:53:46,380

at that time

1230

00:53:50,930 --> 00:53:48,599

we roughly get I mean you can do the

1231

00:53:54,430 --> 00:53:50,940

math you know it depends anywhere from

1232

00:53:58,069 --> 00:53:54,440

from 50 to

1233

00:54:00,049 --> 00:53:58,079

100-ish new reports a month now the

1234

00:54:02,750 --> 00:54:00,059

reason we had such a big jumper recently

1235

00:54:04,910 --> 00:54:02,760

is because I got faa's data integrated

1236

00:54:08,510 --> 00:54:04,920

in finally and so we ended up with like

1237

00:54:10,309 --> 00:54:08,520

100 and some odd new cases

1238

00:54:13,309 --> 00:54:10,319

um so there's there's a reason why it's

1239

00:54:17,089 --> 00:54:13,319

going to fluctuate the numbers that I

1240

00:54:20,829 --> 00:54:19,130

we're gonna we're gonna try to do a

1241

00:54:23,450 --> 00:54:20,839

little more uh

1242

00:54:24,710 --> 00:54:23,460

Fidelity on some of the analytics when

1243

00:54:28,250 --> 00:54:24,720

we report out

1244

00:54:29,990 --> 00:54:28,260

but the numbers I would say that we see

1245

00:54:38,089 --> 00:54:30,000

are

1246

00:54:40,910 --> 00:54:38,099

single digit percentages of those that

1247

00:54:53,270 --> 00:54:40,920

total database so maybe

1248

00:54:56,270 --> 00:54:54,890

I'll stand up because I'm on the other

1249

00:54:58,130 --> 00:54:56,280

end of the room

1250

00:55:00,049 --> 00:54:58,140

um thanks Sean for your presentation and

1251
00:55:01,430 --> 00:55:00,059
for the some of the video footage that

1252
00:55:03,410 --> 00:55:01,440
we saw

1253
00:55:05,329 --> 00:55:03,420
um while we're all good scientists on

1254
00:55:07,190 --> 00:55:05,339
this panel I think that I look at it

1255
00:55:10,130 --> 00:55:07,200
with an untrained eye of looking at that

1256
00:55:12,230 --> 00:55:10,140
video and so I see three spots moving

1257
00:55:14,809 --> 00:55:12,240
and everything else in the background

1258
00:55:16,609 --> 00:55:14,819
looks like it's stable can you talk a

1259
00:55:18,170 --> 00:55:16,619
little bit more about either the sensor

1260
00:55:20,089 --> 00:55:18,180
platform or what we're seeing that's

1261
00:55:22,370 --> 00:55:20,099
stable in the background because they've

1262
00:55:25,670 --> 00:55:22,380
been identified as airplanes

1263
00:55:28,190 --> 00:55:25,680

um and there's clear description of of

1264

00:55:30,530 --> 00:55:28,200

from other data sources that came in to

1265

00:55:33,170 --> 00:55:30,540

help clarify that but when I look at

1266

00:55:34,309 --> 00:55:33,180

this what are all of the white spots in

1267

00:55:35,450 --> 00:55:34,319

the background that we're seeing that

1268

00:55:38,390 --> 00:55:35,460

are stable

1269

00:55:40,250 --> 00:55:38,400

so those are these that's a star

1270

00:55:47,329 --> 00:55:40,260

background

1271

00:55:49,680 --> 00:55:47,339

now so you're looking at those planes

1272

00:55:49,910 --> 00:55:49,690

were roughly

1273

00:55:51,650 --> 00:55:49,920

[Music]

1274

00:55:54,890 --> 00:55:51,660

um

1275

00:55:57,049 --> 00:55:54,900

30 to 40-ish miles away if I remember

1276
00:56:00,010 --> 00:55:57,059
correctly and when you see that smaller

1277
00:56:03,230 --> 00:56:00,020
plane that comes in at the bottom

1278
00:56:04,849 --> 00:56:03,240
that one was much much closer it was

1279
00:56:08,390 --> 00:56:04,859
like maybe

1280
00:56:12,230 --> 00:56:08,400
six to ten miles away

1281
00:56:16,930 --> 00:56:12,240
right and so the Jitter in the sensor is

1282
00:56:21,470 --> 00:56:19,790
right okay so the three spots because

1283
00:56:25,130 --> 00:56:21,480
they look like they're moving at about

1284
00:56:28,250 --> 00:56:25,140
the same right they are right and and if

1285
00:56:30,710 --> 00:56:28,260
they were flying together but they're

1286
00:56:33,829 --> 00:56:30,720
not is what I'm hearing they're in the

1287
00:56:35,809 --> 00:56:33,839
center they're in a flight line right so

1288
00:56:38,270 --> 00:56:35,819

they're equally spaced in a flight line

1289

00:56:44,349 --> 00:56:38,280

and the sensor is jittering thank you

1290

00:56:49,010 --> 00:56:46,609

okay if you go to your first slide if

1291

00:56:52,549 --> 00:56:49,020

you don't mind not the title slide but

1292

00:56:54,829 --> 00:56:52,559

the the trends the trends yeah

1293

00:56:57,349 --> 00:56:54,839

um it's the previous slide there you go

1294

00:56:58,849 --> 00:56:57,359

thank you so I want to make sure I

1295

00:57:00,950 --> 00:56:58,859

understand the slide it says typically

1296

00:57:02,390 --> 00:57:00,960

reported characteristics and there are a

1297

00:57:06,349 --> 00:57:02,400

bunch of things here like for example

1298

00:57:09,710 --> 00:57:06,359

size altitude speed if it's being

1299

00:57:12,349 --> 00:57:09,720

observed from a single sensor

1300

00:57:13,790 --> 00:57:12,359

use the example of like the airplanes

1301
00:57:15,170 --> 00:57:13,800
that were coming in and if you don't

1302
00:57:16,970 --> 00:57:15,180
know how far away they are how do you

1303
00:57:18,589 --> 00:57:16,980
assess the size how do you assess the

1304
00:57:19,430 --> 00:57:18,599
speed

1305
00:57:22,010 --> 00:57:19,440
um

1306
00:57:24,290 --> 00:57:22,020
this is what people would report but it

1307
00:57:26,089 --> 00:57:24,300
isn't necessarily what is the real size

1308
00:57:28,190 --> 00:57:26,099
of the object or the speed or the rest

1309
00:57:31,430 --> 00:57:28,200
of it do I understand that correctly

1310
00:57:34,130 --> 00:57:31,440
partially okay so you this is not all

1311
00:57:36,849 --> 00:57:34,140
single sensor observations some of these

1312
00:57:41,030 --> 00:57:36,859
are very much multi-sensor observations

1313
00:57:43,910 --> 00:57:41,040

and this is parameterized to cover the

1314

00:57:47,569 --> 00:57:43,920

range of things for any given parameter

1315

00:57:50,750 --> 00:57:47,579

range of of what's possible and what is

1316

00:57:53,750 --> 00:57:50,760

been observed okay and then on the next

1317

00:57:56,150 --> 00:57:53,760

Slide the one where you've got the or is

1318

00:57:57,950 --> 00:57:56,160

the meatball moving across the the

1319

00:57:58,670 --> 00:57:57,960

screen that one

1320

00:58:01,190 --> 00:57:58,680

um

1321

00:58:05,329 --> 00:58:01,200

so

1322

00:58:09,309 --> 00:58:05,339

was there any look at

1323

00:58:11,630 --> 00:58:09,319

sensor artifact data processing artifact

1324

00:58:13,670 --> 00:58:11,640

I mean

1325

00:58:15,890 --> 00:58:13,680

the first thing that whenever I say

1326
00:58:18,290 --> 00:58:15,900
anything that's anomalous I look at how

1327
00:58:21,770 --> 00:58:18,300
is the data collected yeah

1328
00:58:24,470 --> 00:58:21,780
so yes these are these are um so this is

1329
00:58:29,030 --> 00:58:24,480
an EO sensor on an MQ-9

1330
00:58:31,910 --> 00:58:29,040
and we understand that very very well

1331
00:58:37,309 --> 00:58:31,920
that is that is a real object

1332
00:58:37,319 --> 00:58:43,870
and memory

1333
00:58:49,490 --> 00:58:47,270
techniques or existing data sets or

1334
00:58:51,829 --> 00:58:49,500
possibly some of them are open source

1335
00:58:55,010 --> 00:58:51,839
can you explain a little bit more what

1336
00:58:59,089 --> 00:58:55,020
kind of AIML techniques you are using

1337
00:59:01,370 --> 00:58:59,099
um are these about anomaly detection or

1338
00:59:04,970 --> 00:59:01,380

through natural processing or using

1339

00:59:07,130 --> 00:59:04,980

anything related to computer vision

1340

00:59:08,329 --> 00:59:07,140

so we're looking at a number of

1341

00:59:10,670 --> 00:59:08,339

different

1342

00:59:13,990 --> 00:59:10,680

capabilities that span I think a lot of

1343

00:59:16,430 --> 00:59:14,000

what you've just said so we've got

1344

00:59:18,589 --> 00:59:16,440

we haven't applied it yet we are

1345

00:59:21,049 --> 00:59:18,599

researching how we're going to apply it

1346

00:59:23,630 --> 00:59:21,059

so natural language processing for the

1347

00:59:24,589 --> 00:59:23,640

reports from the pilots absolutely all

1348

00:59:27,470 --> 00:59:24,599

right

1349

00:59:30,289 --> 00:59:27,480

Target recognition so I can train a

1350

00:59:32,750 --> 00:59:30,299

model to look for that thing and go back

1351
00:59:35,870 --> 00:59:32,760
through all of our Holdings and go give

1352
00:59:37,069 --> 00:59:35,880
me how many of these you have right

1353
00:59:40,609 --> 00:59:37,079
and then try to figure out what those

1354
00:59:42,410 --> 00:59:40,619
are right so I have not put anything out

1355
00:59:45,309 --> 00:59:42,420
there yet or have not looked at anything

1356
00:59:50,569 --> 00:59:45,319
yet for

1357
00:59:52,430 --> 00:59:50,579
active targeting in real time because I

1358
00:59:54,710 --> 00:59:52,440
don't know exactly what I would train it

1359
00:59:57,470 --> 00:59:54,720
to go look for I just know what we have

1360
01:00:00,650 --> 00:59:57,480
so I want to get more confidence on what

1361
01:00:03,230 --> 01:00:00,660
we have before I go and do that except

1362
01:00:10,309 --> 01:00:03,240
for balloons right we're trying to get

1363
01:00:13,670 --> 01:00:12,410

so Sean I just wanted to begin by

1364

01:00:15,289 --> 01:00:13,680

thanking you for your service to this

1365

01:00:17,569 --> 01:00:15,299

nation this committee you don't exactly

1366

01:00:19,370 --> 01:00:17,579

have the easiest job in Washington no I

1367

01:00:20,690 --> 01:00:19,380

do not appreciate it I'm glad I don't

1368

01:00:23,450 --> 01:00:20,700

recognize that

1369

01:00:25,370 --> 01:00:23,460

certainly do I also want to commend you

1370

01:00:27,710 --> 01:00:25,380

noting the international Partnerships

1371

01:00:29,690 --> 01:00:27,720

Spain just signed the Artemis Accords

1372

01:00:32,450 --> 01:00:29,700

yesterday increasing the membership to

1373

01:00:35,150 --> 01:00:32,460

25 I think that's a global partnership

1374

01:00:37,069 --> 01:00:35,160

that you could leverage only 170 more

1375

01:00:41,089 --> 01:00:37,079

countries to go now excellent everyone

1376

01:00:43,069 --> 01:00:41,099

signed up I just have two questions one

1377

01:00:46,270 --> 01:00:43,079

relative to what Nadia was asking you

1378

01:00:49,010 --> 01:00:46,280

about the number of anomalous phenomena

1379

01:00:50,750 --> 01:00:49,020

what makes it anomalous in your view

1380

01:00:53,510 --> 01:00:50,760

what is the phenomenology where you're

1381

01:00:56,329 --> 01:00:53,520

pulling those cases out and saying this

1382

01:00:58,069 --> 01:00:56,339

is truly unexplained and then my second

1383

01:01:01,190 --> 01:00:58,079

question would be relative to the stigma

1384

01:01:03,109 --> 01:01:01,200

how damaging is that in your view and

1385

01:01:06,289 --> 01:01:03,119

what in particular do you think NASA can

1386

01:01:07,670 --> 01:01:06,299

do to help remedy the situation

1387

01:01:09,650 --> 01:01:07,680

that's a great question so I'm going to

1388

01:01:11,770 --> 01:01:09,660

take the second one first because I know

1389

01:01:14,390 --> 01:01:11,780

we're getting short on time

1390

01:01:17,210 --> 01:01:14,400

the the stigma has improved

1391

01:01:19,549 --> 01:01:17,220

significantly over the years since the

1392

01:01:21,230 --> 01:01:19,559

Navy first took this on

1393

01:01:24,109 --> 01:01:21,240

some years ago

1394

01:01:27,430 --> 01:01:24,119

it is not gone and in fact I would argue

1395

01:01:29,990 --> 01:01:27,440

the stigma exists inside

1396

01:01:34,549 --> 01:01:30,000

the leadership of all of our our

1397

01:01:35,809 --> 01:01:34,559

buildings right wherever that is

1398

01:01:38,569 --> 01:01:35,819

um

1399

01:01:41,150 --> 01:01:38,579

uh my team and I have also been subject

1400

01:01:44,030 --> 01:01:41,160

to lots of harassment especially coming

1401
01:01:46,010 --> 01:01:44,040
out of my last hearing because people

1402
01:01:48,109 --> 01:01:46,020
don't understand the scientific method

1403
01:01:49,549 --> 01:01:48,119
and why it does why we have to do the

1404
01:01:51,410 --> 01:01:49,559
things we have to do

1405
01:01:54,049 --> 01:01:51,420
all right and because we can't just come

1406
01:01:56,329 --> 01:01:54,059
out and say you know the greatest the

1407
01:01:58,069 --> 01:01:56,339
greatest thing that could happen to me

1408
01:02:00,410 --> 01:01:58,079
is I could come out and say hey I know

1409
01:02:02,690 --> 01:02:00,420
where all these things are here you go

1410
01:02:04,370 --> 01:02:02,700
all right but I don't right and it's

1411
01:02:05,870 --> 01:02:04,380
going to take us time to research all

1412
01:02:06,950 --> 01:02:05,880
that

1413
01:02:11,089 --> 01:02:06,960

um

1414

01:02:14,510 --> 01:02:11,099

people want answers now and so they are

1415

01:02:17,270 --> 01:02:14,520

they're actually feeding the stigma by

1416

01:02:19,670 --> 01:02:17,280

by exhibiting that kind of behavior to

1417

01:02:22,130 --> 01:02:19,680

all of us right that is that is a bad

1418

01:02:24,650 --> 01:02:22,140

thing where can NASA help I made that

1419

01:02:26,750 --> 01:02:24,660

recommendation on NASA should lead to

1420

01:02:28,309 --> 01:02:26,760

Scientific discourse we need to elevate

1421

01:02:30,049 --> 01:02:28,319

this conversation

1422

01:02:32,990 --> 01:02:30,059

all right we need to have this

1423

01:02:34,910 --> 01:02:33,000

conversation in an open environment like

1424

01:02:35,990 --> 01:02:34,920

this where we aren't going to get

1425

01:02:38,569 --> 01:02:36,000

harassed

1426

01:02:40,190 --> 01:02:38,579

because this is a hard problem it is a

1427

01:02:43,490 --> 01:02:40,200

hard target problem we need to

1428

01:02:46,309 --> 01:02:43,500

understand what is the things that are

1429

01:02:48,770 --> 01:02:46,319

in all of our domains space or air or

1430

01:02:52,010 --> 01:02:48,780

undersea and how do we make sense of

1431

01:02:57,530 --> 01:02:54,230

your first question on what makes it

1432

01:02:59,750 --> 01:02:57,540

anomalous to me we actually developed

1433

01:03:01,609 --> 01:02:59,760

some definitions on all of these things

1434

01:03:03,349 --> 01:03:01,619

we gave it both to the White House and

1435

01:03:05,390 --> 01:03:03,359

to Congress I think we've got some of

1436

01:03:08,089 --> 01:03:05,400

that into law now but essentially

1437

01:03:09,250 --> 01:03:08,099

anomalous is anything that is not

1438

01:03:12,829 --> 01:03:09,260

readily

1439

01:03:16,130 --> 01:03:12,839

understandable by the operator or the

1440

01:03:20,870 --> 01:03:18,950

right so it is doing something weird

1441

01:03:23,809 --> 01:03:20,880

whether that's maneuvering

1442

01:03:26,990 --> 01:03:23,819

Against the Wind at Mach 2 with no

1443

01:03:27,650 --> 01:03:27,000

apparent propulsion or it's

1444

01:03:31,010 --> 01:03:27,660

um

1445

01:03:32,510 --> 01:03:31,020

going into the water which we have we

1446

01:03:35,630 --> 01:03:32,520

have shown is not the case that is

1447

01:03:37,370 --> 01:03:35,640

actually a sensor anomaly um that we've

1448

01:03:39,250 --> 01:03:37,380

now figured out and we're going to be

1449

01:03:42,589 --> 01:03:39,260

publishing all that

1450

01:03:47,270 --> 01:03:42,599

you know those kinds of things

1451
01:03:49,789 --> 01:03:47,280
make anomalous signature uh we'll call

1452
01:03:52,370 --> 01:03:49,799
it signature management but it's things

1453
01:03:54,309 --> 01:03:52,380
that are

1454
01:03:57,470 --> 01:03:54,319
not

1455
01:03:59,089 --> 01:03:57,480
readily understandable in the context of

1456
01:04:00,109 --> 01:03:59,099
hey I've got a thing that's out in the

1457
01:04:02,030 --> 01:04:00,119
light

1458
01:04:02,870 --> 01:04:02,040
it should reflect a certain amount of

1459
01:04:04,490 --> 01:04:02,880
light

1460
01:04:08,450 --> 01:04:04,500
if it doesn't reflect that amount of

1461
01:04:12,770 --> 01:04:09,710
I think we have time for one last

1462
01:04:19,309 --> 01:04:15,770
I did uh foreign partnership with NASA

1463
01:04:20,750 --> 01:04:19,319

I'm curious especially given your map uh

1464

01:04:22,370 --> 01:04:20,760

have you as Aero partnered with

1465

01:04:26,510 --> 01:04:22,380

International agencies and those are

1466

01:04:28,370 --> 01:04:26,520

ways for reporting to your

1467

01:04:31,069 --> 01:04:28,380

so that's a great question I want to

1468

01:04:35,510 --> 01:04:31,079

expound on that just a little bit so I

1469

01:04:37,630 --> 01:04:35,520

have just held our first five eyes Forum

1470

01:04:40,490 --> 01:04:37,640

on this subject

1471

01:04:43,609 --> 01:04:40,500

last week I think it was or earlier this

1472

01:04:44,750 --> 01:04:43,619

week I don't know Dan was there uh and

1473

01:04:49,849 --> 01:04:44,760

we

1474

01:04:52,130 --> 01:04:49,859

into discussions with our partners on

1475

01:04:54,170 --> 01:04:52,140

data sharing how do they do reporting

1476

01:04:56,150 --> 01:04:54,180

what kind of analysis can they help us

1477

01:04:57,950 --> 01:04:56,160

with what kind of calibration can they

1478

01:05:00,349 --> 01:04:57,960

help us with what can we help them with

1479

01:05:03,289 --> 01:05:00,359

and we're establishing all of that right

1480

01:05:05,630 --> 01:05:03,299

now and they're going to end up you know

1481

01:05:08,510 --> 01:05:05,640

sending their information and data to us

1482

01:05:10,670 --> 01:05:08,520

to feed into the process that we've laid

1483

01:05:12,770 --> 01:05:10,680

out for how we're going to to do all

1484

01:05:13,549 --> 01:05:12,780

this

1485

01:05:16,910 --> 01:05:13,559

um

1486

01:05:19,010 --> 01:05:16,920

beyond that I have not had either the

1487

01:05:22,250 --> 01:05:19,020

time or the bandwidth to do and that's

1488

01:05:23,890 --> 01:05:22,260

why I would look to NASA to expand the

1489

01:05:26,510 --> 01:05:23,900

scientific and and

1490

01:05:29,990 --> 01:05:26,520

academic relationships that they have

1491

01:05:33,109 --> 01:05:30,000

across all of our allies and partners on

1492

01:05:35,569 --> 01:05:33,119

how can we bring them into the fold

1493

01:05:39,470 --> 01:05:35,579

that's where I think there's a lot of

1494

01:05:43,370 --> 01:05:40,069

um

1495

01:05:45,470 --> 01:05:43,380

great uh thank you one just

1496

01:05:48,589 --> 01:05:45,480

clarifications for people who don't know

1497

01:05:49,849 --> 01:05:48,599

what are the five eyes oh I'm sorry now

1498

01:05:51,890 --> 01:05:49,859

for those of you that aren't familiar

1499

01:05:54,829 --> 01:05:51,900

with the five eyes those are uh that's

1500

01:05:56,690 --> 01:05:54,839

the UK Canada

1501
01:05:59,990 --> 01:05:56,700
um Australia New Zealand and the United

1502
01:06:02,750 --> 01:06:00,000
States so those are the five partners

1503
01:06:10,549 --> 01:06:02,760
terrific so thank you very much thank

1504
01:06:17,030 --> 01:06:12,530
so our next presentation is from Mike

1505
01:06:25,370 --> 01:06:17,040
free on from the FAA talking about the

1506
01:06:28,730 --> 01:06:27,049
would like to thank the panel for the

1507
01:06:31,309 --> 01:06:28,740
opportunity to come and give an overview

1508
01:06:34,549 --> 01:06:31,319
of FAA and and some data points around

1509
01:06:37,130 --> 01:06:34,559
the faa's mission the data the fa

1510
01:06:39,589 --> 01:06:37,140
provides to provide the framing of what

1511
01:06:41,930 --> 01:06:39,599
are the surveillance systems that we can

1512
01:06:44,390 --> 01:06:41,940
bring to bear or there's data around

1513
01:06:46,430 --> 01:06:44,400

Those sensors as well as to frame the

1514

01:06:48,170 --> 01:06:46,440

limitations of those I know Sean talked

1515

01:06:50,329 --> 01:06:48,180

about some of the data points that uh

1516

01:06:51,470 --> 01:06:50,339

that are used and being integrated so

1517

01:06:54,049 --> 01:06:51,480

hopefully this will give you an overview

1518

01:06:58,609 --> 01:06:54,059

of the fa's mission as well as as well

1519

01:07:04,370 --> 01:07:01,609

so the the fa's mission is is quite

1520

01:07:07,069 --> 01:07:04,380

large and complex by by a factor of two

1521

01:07:09,289 --> 01:07:07,079

we operate uh more commercial aircraft

1522

01:07:11,510 --> 01:07:09,299

than any other country I think we're

1523

01:07:13,430 --> 01:07:11,520

second only to Australia in total

1524

01:07:16,250 --> 01:07:13,440

airspace but largely because Australia

1525

01:07:18,650 --> 01:07:16,260

has a very large Oceanic volume that

1526
01:07:21,650 --> 01:07:18,660
they're responsible for for managing so

1527
01:07:23,089 --> 01:07:21,660
it is very complex very large National

1528
01:07:27,109 --> 01:07:23,099
airspace system

1529
01:07:30,109 --> 01:07:27,119
we have over 14 000 controllers uh 520

1530
01:07:33,470 --> 01:07:30,119
Air Traffic Control Towers which are

1531
01:07:35,870 --> 01:07:33,480
located at the the highest density of

1532
01:07:38,569 --> 01:07:35,880
airports and I'll referred to those as

1533
01:07:41,930 --> 01:07:38,579
towers and and subsequent slides

1534
01:07:44,089 --> 01:07:41,940
we have 147 what we call terminal radar

1535
01:07:46,609 --> 01:07:44,099
approach controls or traycons and those

1536
01:07:49,010 --> 01:07:46,619
are manned um

1537
01:07:50,630 --> 01:07:49,020
control facilities at the high and

1538
01:07:53,390 --> 01:07:50,640

medium density airports around the

1539

01:07:55,789 --> 01:07:53,400

nation as well as 21 air Route traffic

1540

01:07:57,589 --> 01:07:55,799

control centers which are which manage

1541

01:07:59,329 --> 01:07:57,599

the control of air traffic in the

1542

01:08:02,870 --> 01:07:59,339

enroute environment

1543

01:08:05,450 --> 01:08:02,880

there's 19 000 over 19 000 airports five

1544

01:08:08,210 --> 01:08:05,460

thousand over five thousand of those are

1545

01:08:10,910 --> 01:08:08,220

associated to public airports with the

1546

01:08:12,710 --> 01:08:10,920

remaining fourteen thousand plus private

1547

01:08:17,090 --> 01:08:12,720

airports

1548

01:08:22,729 --> 01:08:20,209

so the faa's mission is primarily around

1549

01:08:24,470 --> 01:08:22,739

safe and efficient control of manned

1550

01:08:26,510 --> 01:08:24,480

aircraft that has been her our

1551
01:08:28,789 --> 01:08:26,520
historical Mission and and remains our

1552
01:08:31,309 --> 01:08:28,799
primary Mission certainly as we talk

1553
01:08:32,749 --> 01:08:31,319
about a new entrance with uas's and

1554
01:08:35,689 --> 01:08:32,759
Advanced Air mobility and some of those

1555
01:08:37,910 --> 01:08:35,699
things there will be an evolution of the

1556
01:08:41,050 --> 01:08:37,920
fa's mission to include safe operation

1557
01:08:44,269 --> 01:08:41,060
of the nas with those those new entrants

1558
01:08:47,150 --> 01:08:44,279
but the architecture and design of the

1559
01:08:49,910 --> 01:08:47,160
Nas is is geared around safe and

1560
01:08:50,890 --> 01:08:49,920
efficient control of aircraft and manned

1561
01:08:54,470 --> 01:08:50,900
aircraft

1562
01:08:56,030 --> 01:08:54,480
the certainly the the commercial aspect

1563
01:08:57,829 --> 01:08:56,040

the commercial flights are a primary

1564

01:09:02,390 --> 01:08:57,839

focus of the agency we certainly support

1565

01:09:04,669 --> 01:09:02,400

general aviation and flights as well

1566

01:09:06,530 --> 01:09:04,679

um but again our mission is around main

1567

01:09:09,470 --> 01:09:06,540

aircraft and safe and an efficient

1568

01:09:12,950 --> 01:09:09,480

operation of those

1569

01:09:16,570 --> 01:09:12,960

um the uh by the Numbers uh over 16

1570

01:09:19,910 --> 01:09:16,580

million flights yearly uh 5400 flights

1571

01:09:22,910 --> 01:09:19,920

uh at Peak any given uh at the peak the

1572

01:09:26,689 --> 01:09:22,920

time of any given day uh 45

1573

01:09:29,749 --> 01:09:26,699

000 daily flights uh 25 million GA

1574

01:09:32,990 --> 01:09:29,759

flight hours per year a very large very

1575

01:09:35,269 --> 01:09:33,000

complex operation that that we're

1576

01:09:37,849 --> 01:09:35,279

responsible for managing we certainly

1577

01:09:40,430 --> 01:09:37,859

provide a significant contribution to to

1578

01:09:42,590 --> 01:09:40,440

that for the service to to the nation in

1579

01:09:44,749 --> 01:09:42,600

the form of uh you know product uh

1580

01:09:48,709 --> 01:09:44,759

toward a GDP

1581

01:09:53,689 --> 01:09:51,829

so as we get into the discussion of

1582

01:09:55,850 --> 01:09:53,699

surveillance Services I want to provide

1583

01:09:57,350 --> 01:09:55,860

a little bit of framework around the

1584

01:09:59,870 --> 01:09:57,360

categorization of our surveillance

1585

01:10:02,570 --> 01:09:59,880

services and we primarily break those

1586

01:10:04,729 --> 01:10:02,580

into two two bodies The Cooperative

1587

01:10:07,430 --> 01:10:04,739

surveillance which is defined by a

1588

01:10:09,470 --> 01:10:07,440

sensor that's avionics or equipment on

1589

01:10:12,890 --> 01:10:09,480

board the aircraft that works in

1590

01:10:15,590 --> 01:10:12,900

conjunction with ground-based sensors

1591

01:10:17,390 --> 01:10:15,600

the non-cooperative surveillance is

1592

01:10:19,669 --> 01:10:17,400

independent this is basically the

1593

01:10:22,550 --> 01:10:19,679

classic radar RF energy is transmitted

1594

01:10:24,770 --> 01:10:22,560

out reflects off the Target and we

1595

01:10:26,209 --> 01:10:24,780

receive a signal and from that return we

1596

01:10:28,550 --> 01:10:26,219

can determine where that their their

1597

01:10:30,770 --> 01:10:28,560

that aircraft is

1598

01:10:32,570 --> 01:10:30,780

typically these cooperative and

1599

01:10:35,330 --> 01:10:32,580

non-cooperative sensors are co-located

1600

01:10:37,669 --> 01:10:35,340

together one The Cooperative mounted on

1601
01:10:39,470 --> 01:10:37,679
top of the non-cooperative radar

1602
01:10:41,570 --> 01:10:39,480
so for the purpose from a data

1603
01:10:44,209 --> 01:10:41,580
perspective I think in this this panel

1604
01:10:46,310 --> 01:10:44,219
in the study I I think that the

1605
01:10:50,030 --> 01:10:46,320
Cooperative sensors those are neither

1606
01:10:52,970 --> 01:10:50,040
unknown or anomalous so for the purposes

1607
01:10:55,010 --> 01:10:52,980
of this this briefing or the rest of

1608
01:10:58,070 --> 01:10:55,020
this briefing I'm going to focus on the

1609
01:11:02,510 --> 01:10:58,080
the non-cooperative aspect

1610
01:11:08,450 --> 01:11:06,110
so the again from the standpoint of the

1611
01:11:10,610 --> 01:11:08,460
mission of the FAA around it again is is

1612
01:11:12,290 --> 01:11:10,620
primarily around manned aircraft and I

1613
01:11:15,110 --> 01:11:12,300

think that serves as an important

1614

01:11:16,669 --> 01:11:15,120

framework for the data points and the

1615

01:11:18,470 --> 01:11:16,679

type of data that we can bring to bear

1616

01:11:21,350 --> 01:11:18,480

for this panel

1617

01:11:22,810 --> 01:11:21,360

so we break our our systems and the

1618

01:11:25,250 --> 01:11:22,820

design of the systems into different

1619

01:11:28,030 --> 01:11:25,260

types of systems so we have short range

1620

01:11:31,970 --> 01:11:28,040

Radars which are typically located at

1621

01:11:34,310 --> 01:11:31,980

the high and medium density airports and

1622

01:11:36,350 --> 01:11:34,320

those operate from a range I have a

1623

01:11:38,689 --> 01:11:36,360

detection range between 40 and 60 miles

1624

01:11:41,149 --> 01:11:38,699

and an altitude detection capability of

1625

01:11:43,729 --> 01:11:41,159

about 24 000 feet

1626

01:11:45,770 --> 01:11:43,739

the long-range radar systems have a

1627

01:11:49,370 --> 01:11:45,780

detection range of 2 to 250 nautical

1628

01:11:51,470 --> 01:11:49,380

miles with altitude detection up to 100

1629

01:11:54,229 --> 01:11:51,480

000 feet so that provides the basic the

1630

01:11:56,810 --> 01:11:54,239

framework for for those I will mention

1631

01:11:59,630 --> 01:11:56,820

uh the automatic dependent surveillance

1632

01:12:02,330 --> 01:11:59,640

broadcast or adsb only from a context

1633

01:12:04,669 --> 01:12:02,340

that that does serve as a primary data

1634

01:12:06,770 --> 01:12:04,679

source and preferred data source for the

1635

01:12:08,689 --> 01:12:06,780

management of the airspace system but it

1636

01:12:10,729 --> 01:12:08,699

is a Cooperative system and for the

1637

01:12:12,410 --> 01:12:10,739

purposes of the next slides as I get

1638

01:12:14,990 --> 01:12:12,420

into the discussion of the coverage and

1639

01:12:17,570 --> 01:12:15,000

the type of detection for those

1640

01:12:20,090 --> 01:12:17,580

non-cooperative targets it is not

1641

01:12:23,330 --> 01:12:20,100

considered as part of those

1642

01:12:24,770 --> 01:12:23,340

and also surface surveillance is also

1643

01:12:26,810 --> 01:12:24,780

something that we provide but again for

1644

01:12:28,070 --> 01:12:26,820

the purpose of the study I only include

1645

01:12:31,370 --> 01:12:28,080

those for just a completeness

1646

01:12:37,550 --> 01:12:34,250

the one final Point as I talk about

1647

01:12:40,130 --> 01:12:37,560

manned aircraft and primary emission

1648

01:12:42,470 --> 01:12:40,140

for the

1649

01:12:45,530 --> 01:12:42,480

drones and balloons and things of that

1650

01:12:48,050 --> 01:12:45,540

nature their basic premise is to operate

1651
01:12:49,550 --> 01:12:48,060
in a not to interfere basis that they

1652
01:12:52,250 --> 01:12:49,560
are not to interfere with the band

1653
01:12:54,649 --> 01:12:52,260
operations and that's that's a

1654
01:12:56,810 --> 01:12:54,659
fundamental aspect as we talk to the

1655
01:13:00,110 --> 01:12:56,820
data and what we can and can detect with

1656
01:13:01,790 --> 01:13:00,120
respect to those non-band non-band

1657
01:13:05,630 --> 01:13:01,800
systems

1658
01:13:09,550 --> 01:13:07,850
realizing this is an eye chart this I

1659
01:13:12,290 --> 01:13:09,560
would wanted to provide just a a

1660
01:13:15,530 --> 01:13:12,300
graphical or pictorial depiction of

1661
01:13:19,310 --> 01:13:15,540
where our sensors are located uh the

1662
01:13:21,890 --> 01:13:19,320
green blue and pink balloons if you will

1663
01:13:25,430 --> 01:13:21,900

uh represent our short range Radars

1664

01:13:28,430 --> 01:13:25,440

those are are located at airports those

1665

01:13:32,030 --> 01:13:28,440

are where those are are cited

1666

01:13:34,550 --> 01:13:32,040

the uh the two reddish balloons they

1667

01:13:36,950 --> 01:13:34,560

have letters in them a four and a c

1668

01:13:39,649 --> 01:13:36,960

those represent our long-range Radars

1669

01:13:42,830 --> 01:13:39,659

the Arthur fours and karser systems that

1670

01:13:44,630 --> 01:13:42,840

are used in in the context of both from

1671

01:13:46,550 --> 01:13:44,640

an air traffic control perspective as

1672

01:13:49,310 --> 01:13:46,560

well as for a National Defense and

1673

01:13:51,070 --> 01:13:49,320

Homeland Security emission

1674

01:13:54,050 --> 01:13:51,080

and the the

1675

01:13:55,370 --> 01:13:54,060

perimeter the Archer fours are located

1676

01:13:57,649 --> 01:13:55,380

around the perimeter of the country

1677

01:14:01,270 --> 01:13:57,659

equally spaced and the karser systems

1678

01:14:04,310 --> 01:14:01,280

are located on the interior of of the US

1679

01:14:07,729 --> 01:14:04,320

I will point out that this only depicts

1680

01:14:09,110 --> 01:14:07,739

the conus there are systems ATC both

1681

01:14:13,130 --> 01:14:09,120

short range and long-range systems

1682

01:14:15,649 --> 01:14:13,140

Hawaii Alaska and Caribbean

1683

01:14:16,729 --> 01:14:15,659

uh those are not depicted here

1684

01:14:19,250 --> 01:14:16,739

um I didn't think they were necessary

1685

01:14:21,050 --> 01:14:19,260

for the uh the the purpose of

1686

01:14:23,330 --> 01:14:21,060

understanding the surveillance

1687

01:14:24,830 --> 01:14:23,340

um and I will also point out that both

1688

01:14:27,290 --> 01:14:24,840

for this slide and the subsequent

1689

01:14:30,770 --> 01:14:27,300

coverage slide we I do not talk to any

1690

01:14:32,990 --> 01:14:30,780

classified DOD or DHA systems than an

1691

01:14:40,010 --> 01:14:33,000

operation

1692

01:14:46,430 --> 01:14:42,770

so what it is what can the fa detect and

1693

01:14:49,970 --> 01:14:46,440

surveil what can get me not this slide

1694

01:14:51,530 --> 01:14:49,980

gives you a buy altitude slice of what

1695

01:14:53,570 --> 01:14:51,540

it is that we can detect so if you look

1696

01:14:55,490 --> 01:14:53,580

at the the

1697

01:14:56,689 --> 01:14:55,500

Square that's labeled a thousand foot

1698

01:14:59,990 --> 01:14:56,699

AGL

1699

01:15:02,570 --> 01:15:00,000

that depicts by sensor for an aircraft

1700

01:15:04,970 --> 01:15:02,580

that is a thousand feet in altitude what

1701

01:15:06,350 --> 01:15:04,980

is the range at which we can detect that

1702

01:15:09,050 --> 01:15:06,360

aircraft

1703

01:15:10,910 --> 01:15:09,060

and so on as you if you get higher in

1704

01:15:14,149 --> 01:15:10,920

altitude

1705

01:15:15,770 --> 01:15:14,159

detect it at further range and that's

1706

01:15:17,630 --> 01:15:15,780

basically a phenomena of the coverage of

1707

01:15:20,689 --> 01:15:17,640

the Earth in the line of sight aspect of

1708

01:15:23,810 --> 01:15:20,699

these these radar systems so pretty good

1709

01:15:26,330 --> 01:15:23,820

coverage across the the us at 10 000

1710

01:15:29,390 --> 01:15:26,340

feet and above

1711

01:15:31,610 --> 01:15:29,400

this is a mathematical model based of a

1712

01:15:33,229 --> 01:15:31,620

pure line of sight as well as some

1713

01:15:35,510 --> 01:15:33,239

geographical screenings you can see in

1714

01:15:37,189 --> 01:15:35,520

the western part of the U.S there are

1715

01:15:40,970 --> 01:15:37,199

there is screening and due to the

1716

01:15:45,950 --> 01:15:42,470

need to take a little bit of time and

1717

01:15:48,790 --> 01:15:45,960

talk about the the nature of the targets

1718

01:15:52,790 --> 01:15:48,800

these line of sight models

1719

01:15:55,010 --> 01:15:52,800

represent an input of a Target that is

1720

01:15:57,470 --> 01:15:55,020

one square meter so think of a sphere of

1721

01:15:59,209 --> 01:15:57,480

one meter in diameter that's the

1722

01:16:00,890 --> 01:15:59,219

assumption that goes into these models

1723

01:16:03,649 --> 01:16:00,900

so if you think about that in the

1724

01:16:07,070 --> 01:16:03,659

context of other forms or aircraft a

1725

01:16:08,930 --> 01:16:07,080

fourth generation F-15 or F-18 is in the

1726

01:16:10,550 --> 01:16:08,940

proximity of about one square meter

1727

01:16:13,850 --> 01:16:10,560

perhaps a little bit larger

1728

01:16:14,930 --> 01:16:13,860

a large airliner is perhaps a 100 square

1729

01:16:17,450 --> 01:16:14,940

meters

1730

01:16:20,290 --> 01:16:17,460

a small uas

1731

01:16:24,590 --> 01:16:20,300

is perhaps

1732

01:16:26,810 --> 01:16:24,600

one or a 0.01 square meter so the range

1733

01:16:28,790 --> 01:16:26,820

of these detections or the or the size

1734

01:16:33,410 --> 01:16:28,800

and the ability to check these targets

1735

01:16:36,229 --> 01:16:33,420

from an F-15 large airliner 100 times

1736

01:16:39,070 --> 01:16:36,239

larger in size a drone a hundred times

1737

01:16:42,110 --> 01:16:39,080

smaller in size so the detection

1738

01:16:44,149 --> 01:16:42,120

of in a surveillance capability really

1739

01:16:46,130 --> 01:16:44,159

largely depends in part to the the

1740

01:16:49,910 --> 01:16:46,140

Target that we're talking about and the

1741

01:16:49,920 --> 01:16:55,130

all right next slide

1742

01:17:01,430 --> 01:16:58,970

so I do include this adsb coverage slide

1743

01:17:03,830 --> 01:17:01,440

just to give a context of from a

1744

01:17:07,130 --> 01:17:03,840

Cooperative perspective there is very

1745

01:17:10,970 --> 01:17:07,140

good coverage across the U.S to without

1746

01:17:13,910 --> 01:17:10,980

a 1 500 feet above ground level so this

1747

01:17:15,530 --> 01:17:13,920

provided context of what when we look at

1748

01:17:17,149 --> 01:17:15,540

the data and start getting a discussion

1749

01:17:19,850 --> 01:17:17,159

of what it is we can detect this will

1750

01:17:22,850 --> 01:17:19,860

certainly for those Cooperative aircraft

1751
01:17:24,709 --> 01:17:22,860
that have adsb we could certainly detect

1752
01:17:29,630 --> 01:17:24,719
those to a pretty a pretty low altitude

1753
01:17:33,830 --> 01:17:31,729
all right a couple of data points I

1754
01:17:35,330 --> 01:17:33,840
think um I know Sean he talked about

1755
01:17:37,850 --> 01:17:35,340
some of the data points and I can

1756
01:17:39,470 --> 01:17:37,860
provide a little bit of insight from an

1757
01:17:42,830 --> 01:17:39,480
fa perspective

1758
01:17:46,130 --> 01:17:42,840
drones drones are pretty significant

1759
01:17:48,490 --> 01:17:46,140
challenge there's 880 000 registered

1760
01:17:51,950 --> 01:17:48,500
drones in the U.S

1761
01:17:53,510 --> 01:17:51,960
small drones I should say part 107

1762
01:17:55,850 --> 01:17:53,520
drones

1763
01:17:58,970 --> 01:17:55,860

um many tens of thousands of those are

1764

01:18:01,610 --> 01:17:58,980

operate operated on a daily basis for by

1765

01:18:03,709 --> 01:18:01,620

commercial operators it's not clear how

1766

01:18:07,610 --> 01:18:03,719

many private drone operators are taking

1767

01:18:09,229 --> 01:18:07,620

their their drone up for a quick flight

1768

01:18:10,669 --> 01:18:09,239

um but as I said earlier those are

1769

01:18:16,130 --> 01:18:10,679

regulated

1770

01:18:19,790 --> 01:18:16,140

400 feet in altitude so again it's the

1771

01:18:22,070 --> 01:18:19,800

Drone aspect is for those small drones

1772

01:18:24,649 --> 01:18:22,080

in particular and as well as all all

1773

01:18:26,750 --> 01:18:24,659

classes of drones there are regulatory

1774

01:18:29,030 --> 01:18:26,760

restrictions to where they can and

1775

01:18:30,709 --> 01:18:29,040

cannot fly basically avoiding and not

1776

01:18:34,010 --> 01:18:30,719

interfering with manned aircraft

1777

01:18:38,510 --> 01:18:35,689

second data point we talked about

1778

01:18:40,790 --> 01:18:38,520

balloons The Weather Service we know on

1779

01:18:42,370 --> 01:18:40,800

190 or 92 weather stations the release

1780

01:18:45,470 --> 01:18:42,380

balloons twice a day

1781

01:18:49,630 --> 01:18:45,480

at 6 a.m and and

1782

01:18:52,250 --> 01:18:49,640

uh zero zero hundred Zulu and 1200 Zulu

1783

01:18:54,110 --> 01:18:52,260

typically two hour duration they fly up

1784

01:18:56,930 --> 01:18:54,120

to 100 000 feet where the envelope

1785

01:18:59,810 --> 01:18:56,940

bursts and and then the payload uh

1786

01:19:01,850 --> 01:18:59,820

descends back back to Earth so certainly

1787

01:19:04,669 --> 01:19:01,860

um you know 100 at least 184 balloon

1788

01:19:06,649 --> 01:19:04,679

flights daily in the nas you know not to

1789

01:19:08,450 --> 01:19:06,659

consider universities and hobbyist

1790

01:19:12,229 --> 01:19:08,460

balloons that that may be launched but

1791

01:19:15,290 --> 01:19:12,239

those are typically small small in size

1792

01:19:18,110 --> 01:19:15,300

and finally uh Sean did talk about uaps

1793

01:19:20,209 --> 01:19:18,120

and NFA data a couple of data points

1794

01:19:22,149 --> 01:19:20,219

that we do report there is a process by

1795

01:19:27,350 --> 01:19:22,159

which air traffic controllers can report

1796

01:19:28,910 --> 01:19:27,360

UAP sightings or or events uh

1797

01:19:31,550 --> 01:19:28,920

historically those have been in the

1798

01:19:34,669 --> 01:19:31,560

range of about three to five reports per

1799

01:19:38,830 --> 01:19:34,679

month that have been reported we did see

1800

01:19:42,290 --> 01:19:38,840

an uptick of of reports in August of 22

1801
01:19:45,010 --> 01:19:42,300
that went up to about 8 to 10 perhaps

1802
01:19:47,390 --> 01:19:45,020
due to starlink launches

1803
01:19:50,149 --> 01:19:47,400
and finally the

1804
01:19:52,310 --> 01:19:50,159
with the Chinese weather or the Chinese

1805
01:19:54,229 --> 01:19:52,320
balloon incidents in February we did see

1806
01:19:58,450 --> 01:19:54,239
a significant up tick and uptick and

1807
01:20:00,649 --> 01:19:58,460
there's like 68 UAP reports that

1808
01:20:02,390 --> 01:20:00,659
starting in February and we've seen a

1809
01:20:04,729 --> 01:20:02,400
large number you know subsequent to them

1810
01:20:07,490 --> 01:20:04,739
to that

1811
01:20:09,890 --> 01:20:07,500
I think that's all I had

1812
01:20:11,570 --> 01:20:09,900
um any questions

1813
01:20:13,669 --> 01:20:11,580

do you want to take the question

1814

01:20:17,630 --> 01:20:13,679

actually you can call choose the

1815

01:20:20,270 --> 01:20:17,640

questioners it's easy for you all right

1816

01:20:23,030 --> 01:20:20,280

questions two questions about the uh the

1817

01:20:27,050 --> 01:20:23,040

the radar data coverage first one is do

1818

01:20:29,750 --> 01:20:27,060

you retain any of the data or is it um

1819

01:20:32,390 --> 01:20:29,760

just cycled over as there is a retention

1820

01:20:34,490 --> 01:20:32,400

and long-term retention of data I can't

1821

01:20:37,490 --> 01:20:34,500

recall exactly how long retained that is

1822

01:20:38,930 --> 01:20:37,500

certainly a requirement from a retention

1823

01:20:43,070 --> 01:20:38,940

from a

1824

01:20:46,189 --> 01:20:43,080

live legal perspective exactly but I do

1825

01:20:47,810 --> 01:20:46,199

know there is some periodicity in a

1826

01:20:51,050 --> 01:20:47,820

measured in a term of months is it

1827

01:20:53,450 --> 01:20:51,060

retained in terms of like the raw radar

1828

01:20:55,250 --> 01:20:53,460

or is some processed form of data that's

1829

01:20:58,010 --> 01:20:55,260

retained I believe it's a process form

1830

01:21:00,290 --> 01:20:58,020

of data that is what was displayed on

1831

01:21:02,870 --> 01:21:00,300

the uh whether it's in an Indian root

1832

01:21:05,570 --> 01:21:02,880

eram system or the star system and then

1833

01:21:08,090 --> 01:21:05,580

the other question is for The Radars are

1834

01:21:11,689 --> 01:21:08,100

they operated in any sort of a tasked

1835

01:21:13,610 --> 01:21:11,699

mode or are they constant search the

1836

01:21:15,350 --> 01:21:13,620

current systems in our inventory just

1837

01:21:18,169 --> 01:21:15,360

their their fixed face and they just

1838

01:21:19,910 --> 01:21:18,179

rotate at either 12 RPM or 5 RPM

1839

01:21:23,270 --> 01:21:19,920

depending on whether it's an enroute or

1840

01:21:33,350 --> 01:21:23,280

a terminal surveillance requirement all

1841

01:21:38,750 --> 01:21:35,750

that is three to five reports per month

1842

01:21:41,270 --> 01:21:38,760

for all the controllers in all of the US

1843

01:21:42,530 --> 01:21:41,280

so there's a process by which if they

1844

01:21:45,110 --> 01:21:42,540

see something and they want to report

1845

01:21:48,770 --> 01:21:45,120

that they can go to report that to the

1846

01:21:50,090 --> 01:21:48,780

the then we call it but uh report hey I

1847

01:21:52,729 --> 01:21:50,100

saw something I don't know what it was

1848

01:21:55,729 --> 01:21:52,739

so that's three to five per month across

1849

01:21:57,290 --> 01:21:55,739

the entire you have 14 000 controllers

1850

01:21:59,450 --> 01:21:57,300

per month so

1851

01:22:02,270 --> 01:21:59,460

you know 45

1852

01:22:04,490 --> 01:22:02,280

000 operations any given day

1853

01:22:05,870 --> 01:22:04,500

30 months 30 days however many days in a

1854

01:22:08,689 --> 01:22:05,880

month you know it's a very small

1855

01:22:13,070 --> 01:22:10,850

uh

1856

01:22:16,130 --> 01:22:13,080

actually about this how do you do you

1857

01:22:19,010 --> 01:22:16,140

encourage to report do you feel like the

1858

01:22:20,470 --> 01:22:19,020

stigma on uaps is impairing the

1859

01:22:23,750 --> 01:22:20,480

reporting

1860

01:22:25,669 --> 01:22:23,760

I'm not aware of

1861

01:22:29,330 --> 01:22:25,679

I'll answer it this way

1862

01:22:31,729 --> 01:22:29,340

um the the process by which UAP is

1863

01:22:33,830 --> 01:22:31,739

reported is part of the air traffic

1864

01:22:35,510 --> 01:22:33,840

controller order so basically the Air

1865

01:22:37,070 --> 01:22:35,520

Drive controllers are allowed it says

1866

01:22:38,870 --> 01:22:37,080

you know if you see something here's a

1867

01:22:41,209 --> 01:22:38,880

process by which the procedure by which

1868

01:22:44,510 --> 01:22:41,219

you would report it other than that I'm

1869

01:22:48,530 --> 01:22:44,520

not aware of any any specific stigma or

1870

01:22:50,870 --> 01:22:48,540

or limitations and I really probably not

1871

01:22:52,490 --> 01:22:50,880

a good position to you know to speak to

1872

01:22:54,590 --> 01:22:52,500

that other than there is that process

1873

01:22:57,350 --> 01:22:54,600

and that is the process that we used and

1874

01:22:59,570 --> 01:22:57,360

is what represents those numbers I

1875

01:23:01,510 --> 01:22:59,580

talked to and if I may have had a

1876

01:23:03,950 --> 01:23:01,520

question prior to this one how do you

1877

01:23:06,470 --> 01:23:03,960

decide the sites where you deploy you

1878

01:23:08,330 --> 01:23:06,480

saw the map and it has some very good

1879

01:23:10,430 --> 01:23:08,340

coverage on the coastal areas there were

1880

01:23:12,470 --> 01:23:10,440

some areas of lack of coverage yeah so

1881

01:23:15,709 --> 01:23:12,480

if we went if you go back go back one

1882

01:23:18,350 --> 01:23:15,719

slide from what's presented here

1883

01:23:20,810 --> 01:23:18,360

um the what you'll see is in the eastern

1884

01:23:23,090 --> 01:23:20,820

half of the U.S there's a lot better

1885

01:23:25,070 --> 01:23:23,100

coverage but that's because there's a

1886

01:23:27,050 --> 01:23:25,080

lot more population in the East and

1887

01:23:29,870 --> 01:23:27,060

therefore a lot more airports and these

1888

01:23:31,430 --> 01:23:29,880

systems are historically cited at the

1889

01:23:34,130 --> 01:23:31,440

airport in support of those those

1890

01:23:37,370 --> 01:23:34,140

airport operations to the West obviously

1891

01:23:41,090 --> 01:23:37,380

oops to less less dense and fewer

1892

01:23:43,850 --> 01:23:41,100

systems now the that's from an ASR the

1893

01:23:46,490 --> 01:23:43,860

short range radar perspective the long

1894

01:23:48,709 --> 01:23:46,500

range Radars are pretty much equally

1895

01:23:50,630 --> 01:23:48,719

spaced to provide in order to provide

1896

01:23:53,810 --> 01:23:50,640

the maximum coverage from a Homeland

1897

01:23:56,990 --> 01:23:53,820

defense and security perspective as well

1898

01:23:58,189 --> 01:23:57,000

as with a higher altitude flights the en

1899

01:24:04,130 --> 01:23:58,199

route

1900

01:24:09,350 --> 01:24:08,030

Warren uh Mike first thank you in the fa

1901

01:24:11,689 --> 01:24:09,360

for coming to share this information

1902

01:24:13,669 --> 01:24:11,699

with us second uh can you speak to a

1903

01:24:15,890 --> 01:24:13,679

little bit of the filtering techniques

1904

01:24:17,689 --> 01:24:15,900

that we use so with respect to I know

1905

01:24:19,070 --> 01:24:17,699

Walter had a question about the raw data

1906

01:24:20,870 --> 01:24:19,080

and process but can you just talk a

1907

01:24:22,490 --> 01:24:20,880

little bit about we actually aren't

1908

01:24:23,810 --> 01:24:22,500

trying to detect everything you know

1909

01:24:25,669 --> 01:24:23,820

that's actually a very good question and

1910

01:24:29,630 --> 01:24:25,679

a very good point with respect to what

1911

01:24:31,430 --> 01:24:29,640

we can and cannot see so there are you

1912

01:24:34,610 --> 01:24:31,440

know the closer to the ground you point

1913

01:24:37,189 --> 01:24:34,620

a radar certainly you can get lower

1914

01:24:39,530 --> 01:24:37,199

elevations but you also start to see the

1915

01:24:42,050 --> 01:24:39,540

effects of trees and other ground-based

1916

01:24:43,910 --> 01:24:42,060

clutter as we call it that starts to

1917

01:24:46,310 --> 01:24:43,920

interfere so we we have great ability to

1918

01:24:49,070 --> 01:24:46,320

detect a lot of things but but from an

1919

01:24:50,990 --> 01:24:49,080

fa Mission perspective our desire is to

1920

01:24:53,030 --> 01:24:51,000

find that sweet spot of seeing

1921

01:24:54,830 --> 01:24:53,040

everything to as low in altitude as we

1922

01:24:57,770 --> 01:24:54,840

can

1923

01:24:59,810 --> 01:24:57,780

um to maximize our mission around safe

1924

01:25:01,430 --> 01:24:59,820

operations of manned aircraft

1925

01:25:03,290 --> 01:25:01,440

now to pull that thread just a little

1926

01:25:05,390 --> 01:25:03,300

bit further you know there's also a

1927

01:25:07,490 --> 01:25:05,400

limitation with respect to Biologicals

1928

01:25:11,390 --> 01:25:07,500

or or insects and dust and things of

1929

01:25:13,970 --> 01:25:11,400

this this flavor that most aircraft Fly

1930

01:25:17,030 --> 01:25:13,980

Above a certain speed so we typically

1931

01:25:20,270 --> 01:25:17,040

will have filtering settings on our

1932

01:25:22,250 --> 01:25:20,280

systems to get rid of the stuff that

1933

01:25:25,130 --> 01:25:22,260

really is leaves or insects or things of

1934

01:25:29,030 --> 01:25:25,140

that nature so that we provide as clean

1935

01:25:31,669 --> 01:25:29,040

a a display for the controllers so there

1936

01:25:33,590 --> 01:25:31,679

are specific settings that we we can can

1937

01:25:35,570 --> 01:25:33,600

adjust and it's been learned over many

1938

01:25:37,010 --> 01:25:35,580

years to perfect those what we call

1939

01:25:39,950 --> 01:25:37,020

optimization

1940

01:25:41,870 --> 01:25:39,960

of those kinds of filters to get rid of

1941

01:25:44,630 --> 01:25:41,880

what is not a manned aircraft not an

1942

01:25:47,090 --> 01:25:44,640

aircraft and and provide as clean a

1943

01:25:56,870 --> 01:25:47,100

display for the controllers as we can

1944

01:26:01,850 --> 01:25:59,149

um would it be possible to

1945

01:26:04,250 --> 01:26:01,860

um to collect the raw data and save that

1946

01:26:05,810 --> 01:26:04,260

because if it would be possible to do

1947

01:26:07,970 --> 01:26:05,820

some calibration after the fact that

1948

01:26:09,470 --> 01:26:07,980

Sean has mentioned for example he might

1949

01:26:11,930 --> 01:26:09,480

be to capture other phenomenology is

1950

01:26:13,310 --> 01:26:11,940

that possible well when you say raw data

1951

01:26:16,010 --> 01:26:13,320

I think you'd have we'd have to talk a

1952

01:26:18,770 --> 01:26:16,020

little bit about what is meant um so you

1953

01:26:23,030 --> 01:26:18,780

know what from a technical perspective

1954

01:26:25,430 --> 01:26:23,040

pure what we would call inq data is huge

1955

01:26:29,209 --> 01:26:25,440

huge you know gigabyte very very very

1956

01:26:31,370 --> 01:26:29,219

large volumes of data that would

1957

01:26:33,770 --> 01:26:31,380

probably be cost prohibitive and we

1958

01:26:38,090 --> 01:26:33,780

certainly don't do that today

1959

01:26:40,010 --> 01:26:38,100

um the there are again we do record data

1960

01:26:41,810 --> 01:26:40,020

but it is effectively the data that is

1961

01:26:43,610 --> 01:26:41,820

has been through some form of these

1962

01:26:45,950 --> 01:26:43,620

processes and these filterings we do

1963

01:26:48,649 --> 01:26:45,960

that today

1964

01:26:50,209 --> 01:26:48,659

um but it it certainly with enough time

1965

01:26:51,830 --> 01:26:50,219

and money we could certainly collect

1966

01:26:52,550 --> 01:26:51,840

that data and I think it but it would be

1967

01:27:18,590 --> 01:26:52,560

a

1968

01:27:20,390 --> 01:27:18,600

there's very specific requirements so

1969

01:27:21,950 --> 01:27:20,400

for National Weather Service before they

1970

01:27:24,229 --> 01:27:21,960

release those they'll contact the local

1971

01:27:25,610 --> 01:27:24,239

Air Traffic facility they're going to

1972

01:27:27,649 --> 01:27:25,620

say here's what time I'm going to

1973

01:27:29,810 --> 01:27:27,659

release it and when they release it they

1974

01:27:32,750 --> 01:27:29,820

have tracking and they provide that

1975

01:27:36,410 --> 01:27:32,760

tracking to the air traffic control

1976

01:27:38,149 --> 01:27:36,420

facility throughout the flight of of you

1977

01:27:39,890 --> 01:27:38,159

know that particular Bloom there are

1978

01:27:41,750 --> 01:27:39,900

commercial balloons that are also

1979

01:27:44,629 --> 01:27:41,760

launched but those most for the most

1980

01:27:46,310 --> 01:27:44,639

part as I understand that have they

1981

01:27:49,310 --> 01:27:46,320

actually transmit their GPS position

1982

01:27:51,590 --> 01:27:49,320

it's where they're flying so as to

1983

01:27:53,270 --> 01:27:51,600

ensure they're not interfering with with

1984

01:27:55,729 --> 01:27:53,280

their traffic and to ensure they are

1985

01:27:58,669 --> 01:27:55,739

traffic controllers are aware of where

1986

01:28:02,950 --> 01:27:58,679

those those balloons are operating

1987

01:28:07,370 --> 01:28:05,629

from traffic control but what about from

1988

01:28:09,350 --> 01:28:07,380

the non-cooperative surveillance has

1989

01:28:11,870 --> 01:28:09,360

there been anomalies from the sensors

1990

01:28:13,689 --> 01:28:11,880

themselves and if so what is the process

1991

01:28:16,910 --> 01:28:13,699

for that

1992

01:28:19,370 --> 01:28:16,920

I'd say the fa mission is not around

1993

01:28:22,430 --> 01:28:19,380

anomalies with the the non-cooperative

1994

01:28:24,830 --> 01:28:22,440

sensors themselves so as we build an air

1995

01:28:26,209 --> 01:28:24,840

traffic control picture we we have both

1996

01:28:28,129 --> 01:28:26,219

the non-cooperative systems which

1997

01:28:30,770 --> 01:28:28,139

detects the target we have a Cooperative

1998

01:28:33,790 --> 01:28:30,780

system that also detects a Target and we

1999

01:28:36,890 --> 01:28:33,800

will tend to merge those those

2000

01:28:38,990 --> 01:28:36,900

targets together and so on a

2001

01:28:42,110 --> 01:28:39,000

controller's display they'll know is

2002

01:28:44,930 --> 01:28:42,120

this a non-cooperative only or merged or

2003

01:28:47,030 --> 01:28:44,940

combined Target so that they know you

2004

01:28:49,189 --> 01:28:47,040

know basically an increased level of

2005

01:28:51,830 --> 01:28:49,199

confidence that on what it is they're

2006

01:28:54,490 --> 01:28:51,840

seeing is in fact a real aircraft so we

2007

01:28:56,870 --> 01:28:54,500

don't just make any real distinction

2008

01:28:57,770 --> 01:28:56,880

between a non-cooperative and a

2009

01:28:59,990 --> 01:28:57,780

cooperative

2010

01:29:01,790 --> 01:29:00,000

other than how they get combined and put

2011

01:29:04,970 --> 01:29:01,800

on a controller's display

2012

01:29:07,430 --> 01:29:04,980

so I don't know if that answered

2013

01:29:10,430 --> 01:29:07,440

uh so so like a ga flight that does

2014

01:29:13,250 --> 01:29:10,440

notice flying visual flight rules uh

2015

01:29:14,510 --> 01:29:13,260

those will just be picked up by the if

2016

01:29:16,370 --> 01:29:14,520

there anything if they don't if they're

2017

01:29:19,070 --> 01:29:16,380

not equipped with with a court with a

2018

01:29:20,810 --> 01:29:19,080

Cooperative uh avionics those would just

2019

01:29:23,629 --> 01:29:20,820

be picked up by the non-cooperative

2020

01:29:25,910 --> 01:29:23,639

system that if they happen to surveil

2021

01:29:27,229 --> 01:29:25,920

where that aircraft is is flying and so

2022

01:29:29,570 --> 01:29:27,239

that certainly will be put on the

2023

01:29:31,850 --> 01:29:29,580

controller's display and they will be

2024

01:29:34,010 --> 01:29:31,860

able to provide

2025

01:29:37,250 --> 01:29:34,020

um awareness in fact there's a flight

2026

01:29:39,950 --> 01:29:37,260

following a procedure by which GA Pilots

2027

01:29:42,169 --> 01:29:39,960

can ask for hey I'm not I'm not

2028

01:29:45,950 --> 01:29:42,179

squawking I don't have a Cooperative

2029

01:29:47,629 --> 01:29:45,960

system but please help me and just via

2030

01:29:50,570 --> 01:29:47,639

the radio I'm going to going from here

2031

01:29:52,550 --> 01:29:50,580

to here and and providing awareness uh

2032

01:29:54,470 --> 01:29:52,560

situational awareness if the controller

2033

01:29:57,709 --> 01:29:54,480

has the bandwidth to to provide that

2034

01:29:59,270 --> 01:29:57,719

data One Last Question come on yeah so

2035

01:30:01,490 --> 01:29:59,280

I'm not a scientist I'm a recovering

2036

01:30:04,189 --> 01:30:01,500

attorney and I love process and a few

2037

01:30:06,830 --> 01:30:04,199

questions there if I'm a pilot where do

2038

01:30:08,750 --> 01:30:06,840

I find that process for reporting uaps

2039

01:30:10,669 --> 01:30:08,760

where is that articulated or captured

2040

01:30:12,530 --> 01:30:10,679

second when you mentioned that you're

2041

01:30:14,990 --> 01:30:12,540

reporting these incidents who are you

2042

01:30:16,189 --> 01:30:15,000

reporting it to and are those incidents

2043

01:30:18,229 --> 01:30:16,199

pulling on the thread that Reggie

2044

01:30:20,870 --> 01:30:18,239

started are they being archived anywhere

2045

01:30:24,110 --> 01:30:20,880

I believe they are archived they're

2046

01:30:27,290 --> 01:30:24,120

reported to the domestic Network event

2047

01:30:28,330 --> 01:30:27,300

Network it's an fa organization or our

2048

01:30:31,490 --> 01:30:28,340

function

2049

01:30:33,649 --> 01:30:31,500

I don't I I can't speak to whether or

2050

01:30:36,169 --> 01:30:33,659

for whether they would be say part of

2051

01:30:39,290 --> 01:30:36,179

what Sean would include as part of

2052

01:30:41,030 --> 01:30:39,300

his database I presume so

2053

01:30:42,590 --> 01:30:41,040

um so I can think that was the answer to

2054

01:30:44,090 --> 01:30:42,600

the second question uh what was the

2055

01:30:46,550 --> 01:30:44,100

first question again I'm sorry where

2056

01:30:48,590 --> 01:30:46,560

does the reporting process live if I'm a

2057

01:30:50,090 --> 01:30:48,600

pilot I see a uip where do I go to find

2058

01:30:52,070 --> 01:30:50,100

that I don't know the answer to that

2059

01:30:53,689 --> 01:30:52,080

question I said I'm familiar with the

2060

01:30:55,430 --> 01:30:53,699

reporting process from a controller

2061

01:30:58,370 --> 01:30:55,440

perspective and the order that's that's

2062

01:31:00,770 --> 01:30:58,380

used to define how controllers do their

2063

01:31:02,330 --> 01:31:00,780

job I am not I I don't know the answer

2064

01:31:06,169 --> 01:31:02,340

to the question for a pilot perspective

2065

01:31:11,209 --> 01:31:08,510

great so uh thank you Mike for your

2066

01:31:12,830 --> 01:31:11,219

presentation and uh for the all the help

2067

01:31:14,510 --> 01:31:12,840

the FAA has given us as we've been

2068

01:31:15,290 --> 01:31:14,520

learning more about the very impressive

2069

01:31:18,110 --> 01:31:15,300

system

2070

01:31:21,110 --> 01:31:18,120

that the FAA maintains uh thank you I

2071

01:31:23,689 --> 01:31:21,120

know you know for me one of the many

2072

01:31:25,669 --> 01:31:23,699

takeaways from this is uh filling it you

2073

01:31:28,070 --> 01:31:25,679

know just a little bit safer every time

2074

01:31:29,629 --> 01:31:28,080

I fly and thankful for you and your

2075

01:31:30,649 --> 01:31:29,639

colleagues for what they do to make that

2076

01:31:34,370 --> 01:31:30,659

possible

2077

01:31:36,770 --> 01:31:34,380

thank you and we're now going to take a

2078

01:31:38,510 --> 01:31:36,780

quick lunch break we'll be back at 12

2079

01:31:40,490 --> 01:31:38,520

30.

2080

01:32:35,149 --> 01:31:40,500

um and uh

2081

01:32:35,159 --> 01:34:24,070

foreign

2082

01:34:24,080 --> 01:35:07,550

thank you

2083

01:45:41,590 --> 01:36:39,229

foreign

2084

01:45:41,600 --> 01:46:13,189

thank you

2085

01:48:41,050 --> 01:47:21,470

foreign

2086

01:49:07,570 --> 01:49:01,200

[Music]

2087

01:49:13,910 --> 01:49:11,570

welcome back so the next part of our

2088

01:49:16,070 --> 01:49:13,920

session is going to consistently a

2089

01:49:18,109 --> 01:49:16,080

series of short presentations by members

2090

01:49:21,470 --> 01:49:18,119

of the panel and their thoughts on

2091

01:49:23,209 --> 01:49:21,480

different aspects of our charge

2092

01:49:26,030 --> 01:49:23,219

and the format is we're going to have

2093

01:49:27,890 --> 01:49:26,040

them come up to the podium and speak

2094

01:49:29,629 --> 01:49:27,900

and I'm going to ask each of the

2095

01:49:31,850 --> 01:49:29,639

speakers then to take questions it's

2096

01:49:33,890 --> 01:49:31,860

actually the angle with this setup is

2097

01:49:35,689 --> 01:49:33,900

you you can see the people better from

2098

01:49:37,250 --> 01:49:35,699

the podium than I can where it's hard to

2099

01:49:40,910 --> 01:49:37,260

see people behind you

2100

01:49:43,790 --> 01:49:40,920

I'm going to try to keep manage the time

2101

01:49:45,410 --> 01:49:43,800

so as those questions you know come to

2102

01:49:46,550 --> 01:49:45,420

an end I'll cut you off and bring up the

2103

01:49:50,030 --> 01:49:46,560

next speaker

2104

01:49:52,010 --> 01:49:50,040

and we'll move through the the six

2105

01:49:54,669 --> 01:49:52,020

topics and then we'll have some time at

2106

01:49:57,709 --> 01:49:54,679

the end for some general discussion

2107

01:50:06,890 --> 01:49:57,719

the first speaker will be Dr Nadia Drake

2108

01:50:11,950 --> 01:50:09,950

hello and welcome back from lunch

2109

01:50:14,209 --> 01:50:11,960

everybody and uh welcome to those of you

2110

01:50:16,070 --> 01:50:14,219

watching us virtually

2111

01:50:18,229 --> 01:50:16,080

um I'm Nadia I am a Scientist by

2112

01:50:21,350 --> 01:50:18,239

training I'm also a science journalist

2113

01:50:22,970 --> 01:50:21,360

now and my job is to try and synthesize

2114

01:50:26,030 --> 01:50:22,980

the information that we've learned so

2115

01:50:28,550 --> 01:50:26,040

far and summarize the situation so if

2116

01:50:30,530 --> 01:50:28,560

you will put together a framework for

2117

01:50:32,330 --> 01:50:30,540

thinking about UAP

2118

01:50:34,370 --> 01:50:32,340

now I'm going to try and do this in a

2119

01:50:36,290 --> 01:50:34,380

way that reflects the thoughts of the

2120

01:50:38,649 --> 01:50:36,300

entire panel although obviously we have

2121

01:50:40,790 --> 01:50:38,659

a variety of opinions and ideas Among Us

2122

01:50:42,229 --> 01:50:40,800

so I'd like to leave some time at the

2123

01:50:45,410 --> 01:50:42,239

end for you to weigh in with

2124

01:50:48,229 --> 01:50:45,420

disagreements or concurrences as needed

2125

01:50:50,689 --> 01:50:48,239

so first a housekeeping matter the

2126
01:50:52,750 --> 01:50:50,699
definition of UAP changed during the

2127
01:50:55,370 --> 01:50:52,760
seven months of our fact-finding process

2128
01:50:57,530 --> 01:50:55,380
UAP initially stood for unidentified

2129
01:50:59,149 --> 01:50:57,540
aerial phenomena with Ariel referring to

2130
01:51:01,910 --> 01:50:59,159
events occurring in Earth's atmosphere

2131
01:51:04,189 --> 01:51:01,920
that a is now defined as anomalous which

2132
01:51:06,470 --> 01:51:04,199
includes the space air and undersea

2133
01:51:08,209 --> 01:51:06,480
domains as a panel I think we have

2134
01:51:10,250 --> 01:51:08,219
decided to continue focusing our

2135
01:51:11,990 --> 01:51:10,260
recommendations on the aerial domain

2136
01:51:14,149 --> 01:51:12,000
because that is where the majority of

2137
01:51:16,010 --> 01:51:14,159
sightings and events have occurred and

2138
01:51:17,510 --> 01:51:16,020

also because we couldn't fully pivot to

2139

01:51:20,090 --> 01:51:17,520

address the expanded scope of the new

2140

01:51:24,830 --> 01:51:22,189

beyond that there are three points I

2141

01:51:27,410 --> 01:51:24,840

want to make the first is that for a

2142

01:51:30,830 --> 01:51:27,420

number of reasons UAP are obviously

2143

01:51:32,810 --> 01:51:30,840

quite interesting right that is why we

2144

01:51:34,729 --> 01:51:32,820

are here

2145

01:51:36,950 --> 01:51:34,739

recently many credible Witnesses have

2146

01:51:38,810 --> 01:51:36,960

reported seeing unidentified objects in

2147

01:51:42,109 --> 01:51:38,820

the sky some of which are behaving

2148

01:51:44,209 --> 01:51:42,119

rather peculiarly peculiarly

2149

01:51:45,770 --> 01:51:44,219

in some instances these reports include

2150

01:51:48,229 --> 01:51:45,780

corroborating data from various

2151

01:51:51,109 --> 01:51:48,239

instruments various sensors

2152

01:51:52,970 --> 01:51:51,119

the challenge that we have is that the

2153

01:51:55,609 --> 01:51:52,980

data needed to explain these anomalous

2154

01:51:57,590 --> 01:51:55,619

sightings often do not exist or are

2155

01:51:59,450 --> 01:51:57,600

incomplete for generating a conclusive

2156

01:52:02,270 --> 01:51:59,460

analysis

2157

01:52:03,890 --> 01:52:02,280

this includes eyewitness reports which

2158

01:52:06,109 --> 01:52:03,900

on their own can be interesting and

2159

01:52:07,850 --> 01:52:06,119

compelling but often lack the

2160

01:52:11,270 --> 01:52:07,860

information needed to make definitive

2161

01:52:13,310 --> 01:52:11,280

conclusions about an object's provenance

2162

01:52:15,050 --> 01:52:13,320

we as a panel are thinking about the

2163

01:52:17,149 --> 01:52:15,060

types of data that might add value to

2164

01:52:19,070 --> 01:52:17,159

those reports and which could be useful

2165

01:52:22,370 --> 01:52:19,080

on their own

2166

01:52:24,590 --> 01:52:22,380

as a corollary to date in the refereed

2167

01:52:26,330 --> 01:52:24,600

scientific literature there is no

2168

01:52:29,570 --> 01:52:26,340

conclusive evidence suggesting an

2169

01:52:31,850 --> 01:52:29,580

extraterrestrial origin for UAP

2170

01:52:33,950 --> 01:52:31,860

collecting more good data for the

2171

01:52:35,570 --> 01:52:33,960

scientific Community to review in a

2172

01:52:41,450 --> 01:52:35,580

peer-reviewed context will be important

2173

01:52:47,030 --> 01:52:43,550

the second point

2174

01:52:48,950 --> 01:52:47,040

UAP offer an excellent opportunity to

2175

01:52:51,709 --> 01:52:48,960

demonstrate the power of the scientific

2176
01:52:53,330 --> 01:52:51,719
method and of empirically addressing a

2177
01:52:54,530 --> 01:52:53,340
question using a multi-disciplinary

2178
01:52:56,930 --> 01:52:54,540
approach

2179
01:52:58,850 --> 01:52:56,940
it is our job as a panel to make some

2180
01:53:01,490 --> 01:52:58,860
recommendations about how NASA might go

2181
01:53:03,169 --> 01:53:01,500
about tackling this topic scientifically

2182
01:53:06,950 --> 01:53:03,179
taking advantage of the agency's

2183
01:53:09,290 --> 01:53:06,960
resources Global Outreach and reputation

2184
01:53:12,109 --> 01:53:09,300
key points to keep in mind here

2185
01:53:13,070 --> 01:53:12,119
are that science is Sciences hypothesis

2186
01:53:15,290 --> 01:53:13,080
driven

2187
01:53:18,189 --> 01:53:15,300
scientists build confidence in their

2188
01:53:20,390 --> 01:53:18,199

theories by relying on well-calibrated

2189

01:53:22,850 --> 01:53:20,400

well-collected data using

2190

01:53:26,570 --> 01:53:22,860

well-established methods with rigorous

2191

01:53:29,990 --> 01:53:26,580

evaluation and independent corroboration

2192

01:53:31,609 --> 01:53:30,000

in science skepticism is not a bias nor

2193

01:53:34,010 --> 01:53:31,619

is it a bad word

2194

01:53:35,689 --> 01:53:34,020

it is not our job to Define nature but

2195

01:53:38,450 --> 01:53:35,699

to study it in ways that let nature

2196

01:53:40,669 --> 01:53:38,460

reveal itself to us regardless of how

2197

01:53:42,229 --> 01:53:40,679

exciting or disappointing that reality

2198

01:53:43,910 --> 01:53:42,239

might be

2199

01:53:46,129 --> 01:53:43,920

and to that end when we're thinking

2200

01:53:47,390 --> 01:53:46,139

about making recommendations about how

2201

01:53:49,550 --> 01:53:47,400

NASA can tackle this topic

2202

01:53:51,169 --> 01:53:49,560

scientifically I think it's important to

2203

01:53:52,490 --> 01:53:51,179

remember that it's not NASA's job to

2204

01:53:54,530 --> 01:53:52,500

replicate the efforts of the Department

2205

01:53:56,570 --> 01:53:54,540

of Defense but rather to consider

2206

01:53:58,310 --> 01:53:56,580

approaches that are complementary to

2207

01:54:00,830 --> 01:53:58,320

what the all domain anomaly resolution

2208

01:54:02,390 --> 01:54:00,840

office is doing

2209

01:54:04,850 --> 01:54:02,400

and so one of the questions that we as a

2210

01:54:07,129 --> 01:54:04,860

panel I think need to Center is what can

2211

01:54:10,129 --> 01:54:07,139

we recommend that NASA can do that the

2212

01:54:14,629 --> 01:54:12,649

third point to that end what are we even

2213

01:54:15,709 --> 01:54:14,639

looking for how are we defining this

2214

01:54:17,750 --> 01:54:15,719

problem

2215

01:54:20,570 --> 01:54:17,760

and how do the available data Define

2216

01:54:22,070 --> 01:54:20,580

what seems to be to borrow a cliché a

2217

01:54:23,330 --> 01:54:22,080

very slender needle in a very big

2218

01:54:24,709 --> 01:54:23,340

haystack

2219

01:54:28,129 --> 01:54:24,719

we heard a little bit about that today

2220

01:54:31,189 --> 01:54:28,139

from Dr Kirkpatrick who reported that

2221

01:54:33,950 --> 01:54:31,199

there have been 800 events collected

2222

01:54:36,229 --> 01:54:33,960

over about 27 years

2223

01:54:38,030 --> 01:54:36,239

and between two and five percent of

2224

01:54:40,490 --> 01:54:38,040

those events display signatures that

2225

01:54:42,470 --> 01:54:40,500

could be anomalous defined as anything

2226

01:54:44,870 --> 01:54:42,480

that is not readily understandable by

2227

01:54:47,750 --> 01:54:44,880

the operator or the sensor something

2228

01:54:50,330 --> 01:54:47,760

that is doing something weird

2229

01:54:52,490 --> 01:54:50,340

Mr free and some of the experts on our

2230

01:54:54,950 --> 01:54:52,500

panel have defined the background on

2231

01:54:57,649 --> 01:54:54,960

which those events exist the amount of

2232

01:54:59,390 --> 01:54:57,659

stuff in the sky at any given time like

2233

01:55:02,149 --> 01:54:59,400

so

2234

01:55:04,729 --> 01:55:02,159

on average FAA or traffic control

2235

01:55:07,910 --> 01:55:04,739

handles 45 000 flights per day in U.S

2236

01:55:09,350 --> 01:55:07,920

airspace with 5400 aircraft in the sky

2237

01:55:11,270 --> 01:55:09,360

at Peak time

2238

01:55:13,910 --> 01:55:11,280

worldwide on average there are about

2239

01:55:16,430 --> 01:55:13,920

1600 weather balloon launches per day

2240

01:55:17,810 --> 01:55:16,440

in the US there are at least 184 of

2241

01:55:19,310 --> 01:55:17,820

those balloons launched and that doesn't

2242

01:55:20,930 --> 01:55:19,320

include private companies or research

2243

01:55:23,209 --> 01:55:20,940

flights

2244

01:55:25,850 --> 01:55:23,219

there are about 1.69 million

2245

01:55:27,410 --> 01:55:25,860

recreational or model small uncrewed

2246

01:55:30,350 --> 01:55:27,420

aircraft systems

2247

01:55:32,930 --> 01:55:30,360

and an additional 880 000 drones are

2248

01:55:34,370 --> 01:55:32,940

registered for commercial use

2249

01:55:36,229 --> 01:55:34,380

and these are not controlled by air

2250

01:55:37,850 --> 01:55:36,239

traffic control and they are not

2251

01:55:42,169 --> 01:55:37,860

scheduled flights

2252

01:55:45,590 --> 01:55:43,850

so when making recommendations as a

2253

01:55:47,870 --> 01:55:45,600

panel I think we need to look at what

2254

01:55:49,609 --> 01:55:47,880

kind of imprint we want to leave what

2255

01:55:51,770 --> 01:55:49,619

does the situation look like five years

2256

01:55:52,729 --> 01:55:51,780

from now what does it look like 10 years

2257

01:55:55,550 --> 01:55:52,739

from now

2258

01:55:56,930 --> 01:55:55,560

why are we making these recommendations

2259

01:55:59,570 --> 01:55:56,940

we heard a little bit about this this

2260

01:56:01,070 --> 01:55:59,580

morning from both Mike and David who

2261

01:56:03,169 --> 01:56:01,080

noted that many discoveries in science

2262

01:56:05,030 --> 01:56:03,179

are rooted and initially unexplained and

2263

01:56:07,729 --> 01:56:05,040

bizarre phenomena

2264

01:56:09,470 --> 01:56:07,739

so by carefully scrutinizing the sky or

2265

01:56:11,570 --> 01:56:09,480

however we end up defining our search

2266

01:56:13,609 --> 01:56:11,580

space and by collaborating across

2267

01:56:16,729 --> 01:56:13,619

disciplines we are likely to learn new

2268

01:56:18,590 --> 01:56:16,739

things about our planet that's a fact

2269

01:56:19,609 --> 01:56:18,600

and that's the commensal science case we

2270

01:56:21,709 --> 01:56:19,619

might want to consider when making

2271

01:56:24,350 --> 01:56:21,719

recommendations here

2272

01:56:31,669 --> 01:56:26,090

does anyone have thoughts questions

2273

01:56:50,950 --> 01:56:34,250

um Carly

2274

01:56:55,609 --> 01:56:53,510

mostly what we've seen and I think

2275

01:56:58,430 --> 01:56:55,619

Nations

2276

01:57:02,930 --> 01:57:01,010

I agree with you and I think that is a

2277

01:57:05,750 --> 01:57:02,940

parameter that we need to Define as a

2278

01:57:10,490 --> 01:57:08,510

uh quickly jump in and Echo some remarks

2279

01:57:13,070 --> 01:57:10,500

I made this morning that yes the a

2280

01:57:14,570 --> 01:57:13,080

change from aerial to anomalous but it's

2281

01:57:16,250 --> 01:57:14,580

also accurate to say that the

2282

01:57:18,709 --> 01:57:16,260

preponderance or events

2283

01:57:21,169 --> 01:57:18,719

are in the aerial domain that being said

2284

01:57:23,089 --> 01:57:21,179

your panel scope has expanded outwards

2285

01:57:26,510 --> 01:57:23,099

and I think we'll hear a little bit from

2286

01:57:29,089 --> 01:57:26,520

David later on that very subject

2287

01:57:31,250 --> 01:57:29,099

I mean I think anomalous

2288

01:57:34,189 --> 01:57:31,260

people often think about it as going

2289

01:57:36,109 --> 01:57:34,199

down and including ocean but I think

2290

01:57:39,950 --> 01:57:36,119

what's very relevant for NASA is going

2291

01:57:41,689 --> 01:57:39,960

out right and you know looking at things

2292

01:57:44,330 --> 01:57:41,699

in our solar system

2293

01:57:45,589 --> 01:57:44,340

and I think in some sense

2294

01:57:48,709 --> 01:57:45,599

um I think there's certain

2295

01:57:51,410 --> 01:57:48,719

responsibilities in you know we look at

2296

01:57:55,129 --> 01:57:51,420

airspace there's FAA responsibilities

2297

01:57:57,189 --> 01:57:55,139

there's DOD responsibilities as you get

2298

01:58:00,050 --> 01:57:57,199

further and further away from the earth

2299

01:58:02,450 --> 01:58:00,060

eventually it's all massive

2300

01:58:04,189 --> 01:58:02,460

once you get out you know towards the

2301

01:58:06,709 --> 01:58:04,199

you know most certainly much of the

2302

01:58:10,609 --> 01:58:06,719

solar system and out uh to our galaxy

2303

01:58:12,890 --> 01:58:10,619

that's all messed up and uh when we

2304

01:58:15,530 --> 01:58:12,900

start you know thinking about things

2305

01:58:16,970 --> 01:58:15,540

like uh you know and this will be you

2306

01:58:18,890 --> 01:58:16,980

know David will get to this observations

2307

01:58:21,709 --> 01:58:18,900

beyond the Earth's atmosphere I think

2308

01:58:25,189 --> 01:58:21,719

this change in language lets us also

2309

01:58:28,550 --> 01:58:25,199

think about uh out you know further out

2310

01:58:30,350 --> 01:58:28,560

in the solar system as well

2311

01:58:32,810 --> 01:58:30,360

good yeah

2312

01:58:35,209 --> 01:58:32,820

other thoughts

2313

01:58:42,950 --> 01:58:35,219

great did I summarize everything totally

2314

01:58:42,960 --> 01:58:52,550

foreign

2315

01:58:57,169 --> 01:58:54,229

all right thank you

2316

01:58:59,750 --> 01:58:57,179

so I thought that was the perfect uh

2317

01:59:03,770 --> 01:58:59,760

intro and segue by Dr Drake for

2318

01:59:07,490 --> 01:59:03,780

addressing why NASA what what is or what

2319

01:59:11,089 --> 01:59:07,500

are NASA's roles in UAP studies

2320

01:59:12,589 --> 01:59:11,099

so NASA primarily is a science-driven

2321

01:59:15,109 --> 01:59:12,599

agency

2322

01:59:17,870 --> 01:59:15,119

it's committed to exploring and

2323

01:59:19,910 --> 01:59:17,880

understanding air and space and this

2324

01:59:22,129 --> 01:59:19,920

includes as we were just discussing the

2325

01:59:24,290 --> 01:59:22,139

unknown right whether that's the

2326

01:59:26,870 --> 01:59:24,300

farthest reaches of the universe or

2327

01:59:29,810 --> 01:59:26,880

right here on our home planet

2328

01:59:32,570 --> 01:59:29,820

in that light NASA has over 60 years of

2329

01:59:36,229 --> 01:59:32,580

experience measuring phenomena in air

2330

01:59:38,689 --> 01:59:36,239

and space in space in air that might be

2331

01:59:40,609 --> 01:59:38,699

Aeronautics astronomy

2332

01:59:43,669 --> 01:59:40,619

as well as measuring other Earth

2333

01:59:46,070 --> 01:59:43,679

phenomena and this may include aquatic

2334

01:59:47,689 --> 01:59:46,080

or atmospheric phenomena as well and

2335

01:59:49,550 --> 01:59:47,699

they do this using the unique vantage

2336

01:59:52,729 --> 01:59:49,560

point of space

2337

01:59:55,609 --> 01:59:52,739

NASA's Mission data and Technical

2338

01:59:58,450 --> 01:59:55,619

expertise in science and engineering

2339

02:00:01,430 --> 01:59:58,460

may also help investigate and understand

2340

02:00:04,310 --> 02:00:01,440

any of the reported phenomena

2341

02:00:06,770 --> 02:00:04,320

it makes sense to explore what new

2342

02:00:09,350 --> 02:00:06,780

observations or measurements or studies

2343

02:00:11,510 --> 02:00:09,360

might contribute to the understanding of

2344

02:00:14,390 --> 02:00:11,520

reported phenomena

2345

02:00:16,189 --> 02:00:14,400

in that light Dr Fox made this point

2346

02:00:19,430 --> 02:00:16,199

this morning there's a tremendous

2347

02:00:21,410 --> 02:00:19,440

Archive of NASA data these are from

2348

02:00:23,330 --> 02:00:21,420

satellites and other space-based and

2349

02:00:25,129 --> 02:00:23,340

ground networks as well as other assets

2350

02:00:28,070 --> 02:00:25,139

and these are freely and openly

2351

02:00:31,669 --> 02:00:28,080

available to the public

2352

02:00:34,790 --> 02:00:31,679

NASA research as was mentioned also

2353

02:00:37,330 --> 02:00:34,800

supports a wide range of methods

2354

02:00:40,490 --> 02:00:37,340

this includes Advanced Data analysis

2355

02:00:43,010 --> 02:00:40,500

modeling Cutting Edge computational and

2356

02:00:45,950 --> 02:00:43,020

data visualization tools and these are

2357

02:00:47,450 --> 02:00:45,960

all useful for investigating unexplained

2358

02:00:50,330 --> 02:00:47,460

observations

2359

02:00:53,149 --> 02:00:50,340

which may be crucial in studying these

2360

02:00:57,290 --> 02:00:56,089

discoveries and results are all publicly

2361

02:00:58,910 --> 02:00:57,300

available

2362

02:01:00,649 --> 02:00:58,920

and this can be something from the

2363

02:01:02,870 --> 02:01:00,659

characterization of extraterrestrial

2364

02:01:04,910 --> 02:01:02,880

solar planets or the whole in the ozone

2365

02:01:07,070 --> 02:01:04,920

layer and these are communicated

2366

02:01:09,169 --> 02:01:07,080

publicly through many outlets through

2367

02:01:11,870 --> 02:01:09,179

the agency

2368

02:01:13,010 --> 02:01:11,880

NASA also has a long-standing public

2369

02:01:15,530 --> 02:01:13,020

Trust

2370

02:01:18,310 --> 02:01:15,540

this is essential to communicate those

2371

02:01:21,109 --> 02:01:18,320

findings about phenomena to the public

2372

02:01:23,510 --> 02:01:21,119

and as was mentioned several times very

2373

02:01:26,209 --> 02:01:23,520

important to destigmatize

2374

02:01:30,589 --> 02:01:26,219

the reporting and raise awareness of

2375

02:01:33,229 --> 02:01:30,599

cultural and social barriers to doing so

2376

02:01:35,089 --> 02:01:33,239

NASA has a unique strength in leveraging

2377

02:01:37,430 --> 02:01:35,099

public and private Partnerships that

2378

02:01:38,990 --> 02:01:37,440

could result in new technologies that

2379

02:01:41,390 --> 02:01:39,000

may be useful in observing and

2380

02:01:43,070 --> 02:01:41,400

understanding reported phenomena

2381

02:01:44,750 --> 02:01:43,080

these Partners could include other

2382

02:01:48,589 --> 02:01:44,760

federal agencies we've heard from the

2383

02:01:50,450 --> 02:01:48,599

FAA today as well as NOAA was identified

2384

02:01:52,970 --> 02:01:50,460

and they may collect data that could

2385

02:01:54,410 --> 02:01:52,980

help to understand reported phenomena

2386

02:01:56,450 --> 02:01:54,420

in addition

2387

02:01:58,910 --> 02:01:56,460

NASA has a strong

2388

02:02:01,129 --> 02:01:58,920

record of international collaboration

2389

02:02:03,410 --> 02:02:01,139

which could be beneficial

2390

02:02:06,050 --> 02:02:03,420

to study any of these phenomena as that

2391

02:02:08,270 --> 02:02:06,060

may require Global cooperation and data

2392

02:02:09,410 --> 02:02:08,280

sharing

2393

02:02:12,709 --> 02:02:09,420

and then

2394

02:02:15,470 --> 02:02:12,719

one thing that really strikes me is that

2395

02:02:16,729 --> 02:02:15,480

new understanding of anomalous events

2396

02:02:19,129 --> 02:02:16,739

really comes from when we bring

2397

02:02:20,750 --> 02:02:19,139

communities together interdisciplinary

2398

02:02:22,850 --> 02:02:20,760

communities that would not necessarily

2399

02:02:24,890 --> 02:02:22,860

collaborate

2400

02:02:26,629 --> 02:02:24,900

um in in my world that might be

2401
02:02:28,189 --> 02:02:26,639
biological and physical oceanographers

2402
02:02:29,390 --> 02:02:28,199
and I tell people to think a little more

2403
02:02:31,729 --> 02:02:29,400
broadly what if we brought together

2404
02:02:33,109 --> 02:02:31,739
astronomers and earth scientists like we

2405
02:02:35,750 --> 02:02:33,119
did on this panel

2406
02:02:37,910 --> 02:02:35,760
so um that those interdisciplinary

2407
02:02:40,430 --> 02:02:37,920
research teams as well as citizen

2408
02:02:43,370 --> 02:02:40,440
scientists could explore historical and

2409
02:02:45,530 --> 02:02:43,380
current NASA and partner data for events

2410
02:02:47,750 --> 02:02:45,540
or more importantly for environmental

2411
02:02:49,490 --> 02:02:47,760
conditions around the time of reported

2412
02:02:51,290 --> 02:02:49,500
events this may help in our

2413
02:02:54,169 --> 02:02:51,300

understanding

2414

02:02:56,510 --> 02:02:54,179

and then finally given NASA's experience

2415

02:02:59,689 --> 02:02:56,520

with long-term missions long-term

2416

02:03:02,270 --> 02:02:59,699

projects and scientific Focus the agency

2417

02:03:04,689 --> 02:03:02,280

is really well equipped to handle the

2418

02:03:08,689 --> 02:03:04,699

extensive and ongoing study of phenomena

2419

02:03:11,450 --> 02:03:08,699

investigation that this likely requires

2420

02:03:14,149 --> 02:03:11,460

so hopefully that gave you some thoughts

2421

02:03:16,729 --> 02:03:14,159

as to why NASA I don't know if any of my

2422

02:03:21,290 --> 02:03:16,739

fellow panelists agree or disagree

2423

02:03:29,270 --> 02:03:25,490

yes father thank you so NASA has a great

2424

02:03:31,790 --> 02:03:29,280

visibility in the community and not and

2425

02:03:34,189 --> 02:03:31,800

uaps are obviously of great interest to

2426
02:03:35,510 --> 02:03:34,199
a very diverse range of people so can

2427
02:03:39,709 --> 02:03:35,520
you speak a bit about the opportunity

2428
02:03:41,330 --> 02:03:39,719
that this provides for NASA to expand

2429
02:03:43,010 --> 02:03:41,340
um you know the knowledge of the

2430
02:03:44,330 --> 02:03:43,020
understanding of the scientific method

2431
02:03:47,209 --> 02:03:44,340
yes

2432
02:03:49,370 --> 02:03:47,219
um so it's a great question uh there are

2433
02:03:50,810 --> 02:03:49,380
multiple opportunities I think UAP

2434
02:03:52,729 --> 02:03:50,820
present

2435
02:03:55,970 --> 02:03:52,739
um the first as I mentioned I think is

2436
02:03:58,250 --> 02:03:55,980
to bring together interdisciplinary

2437
02:04:00,950 --> 02:03:58,260
research teams and scientists and

2438
02:04:03,470 --> 02:04:00,960

citizen scientists to really take a look

2439

02:04:04,510 --> 02:04:03,480

at with an objective and perhaps unique

2440

02:04:07,490 --> 02:04:04,520

eye

2441

02:04:10,850 --> 02:04:07,500

what the NASA data archive actually

2442

02:04:12,410 --> 02:04:10,860

means blend in the Partnerships A

2443

02:04:14,270 --> 02:04:12,420

Renewed partnership that's at the

2444

02:04:17,270 --> 02:04:14,280

federal the international and the

2445

02:04:20,270 --> 02:04:17,280

private level right so I think there are

2446

02:04:22,550 --> 02:04:20,280

any number of Pathways that people could

2447

02:04:25,370 --> 02:04:22,560

pursue that could be really advantageous

2448

02:04:30,950 --> 02:04:25,380

for helping us to understand what's

2449

02:04:30,960 --> 02:04:34,970

the questions

2450

02:04:39,770 --> 02:04:37,970

thank you Paula this is Jolly Wright um

2451
02:04:42,430 --> 02:04:39,780
actually my question and comment

2452
02:04:45,290 --> 02:04:42,440
actually goes to both uh you and Nadia

2453
02:04:48,229 --> 02:04:45,300
uh Dr Kirkpatrick gave us a definition

2454
02:04:50,089 --> 02:04:48,239
of anomalous that was that it was not

2455
02:04:51,589 --> 02:04:50,099
readily understandable to the operator

2456
02:04:54,109 --> 02:04:51,599
or the sensor

2457
02:04:56,209 --> 02:04:54,119
and from the NASA's perspective I'm for

2458
02:04:58,370 --> 02:04:56,219
our panel I think we have to consider a

2459
02:05:01,189 --> 02:04:58,380
broader definition if we're talking

2460
02:05:03,410 --> 02:05:01,199
about citizen science and I'm curious of

2461
02:05:05,149 --> 02:05:03,420
how we incorporate that especially

2462
02:05:08,030 --> 02:05:05,159
within the communication avenues that we

2463
02:05:11,629 --> 02:05:10,189

it's a good question

2464

02:05:12,770 --> 02:05:11,639

um so

2465

02:05:15,709 --> 02:05:12,780

um

2466

02:05:17,870 --> 02:05:15,719

not all data in an archive are user

2467

02:05:20,870 --> 02:05:17,880

friendly right right out of the the gate

2468

02:05:23,689 --> 02:05:20,880

but uh I think NASA does an excellent

2469

02:05:25,910 --> 02:05:23,699

job making things like quick look or

2470

02:05:27,950 --> 02:05:25,920

browse products available if you can go

2471

02:05:29,629 --> 02:05:27,960

on the NASA website you can look at

2472

02:05:31,910 --> 02:05:29,639

different aspects of different things

2473

02:05:35,870 --> 02:05:31,920

that the agency has in its mission to

2474

02:05:37,490 --> 02:05:35,880

study and I think if nothing else people

2475

02:05:39,169 --> 02:05:37,500

have become a lot more in touch with

2476

02:05:42,470 --> 02:05:39,179

their surroundings and their environment

2477

02:05:44,229 --> 02:05:42,480

and the changes happening there and so I

2478

02:05:47,629 --> 02:05:44,239

think there's probably an opportunity

2479

02:05:50,629 --> 02:05:47,639

for people to maybe not become overnight

2480

02:05:53,450 --> 02:05:50,639

experts in how to process satellite data

2481

02:05:56,209 --> 02:05:53,460

and use it for basic research in a

2482

02:05:57,770 --> 02:05:56,219

complex fashion but there are ways to

2483

02:06:00,290 --> 02:05:57,780

utilize those data to look at your

2484

02:06:02,570 --> 02:06:00,300

environment if you think you've you know

2485

02:06:05,570 --> 02:06:02,580

seen something or you wish to report

2486

02:06:07,310 --> 02:06:05,580

something so communication engagement in

2487

02:06:10,370 --> 02:06:07,320

the public I think is a really important

2488

02:06:11,750 --> 02:06:10,380

part of the destigmatization for sure

2489

02:06:13,910 --> 02:06:11,760

Nadia I don't know if you have anything

2490

02:06:16,490 --> 02:06:13,920

to add

2491

02:06:18,229 --> 02:06:16,500

um I was I was struck by the phrase not

2492

02:06:20,570 --> 02:06:18,239

readily understandable I felt like that

2493

02:06:22,669 --> 02:06:20,580

was actually doing a lot of work

2494

02:06:24,410 --> 02:06:22,679

um so I think for our purposes we

2495

02:06:26,089 --> 02:06:24,420

probably want to come up with a slightly

2496

02:06:32,209 --> 02:06:26,099

more specific definition of what

2497

02:06:44,750 --> 02:06:36,770

okay that's good thanks Federica rope

2498

02:06:49,729 --> 02:06:46,550

hello everybody my name is Federica

2499

02:06:51,530 --> 02:06:49,739

Bianco I am an astrophysicist and a data

2500

02:06:53,810 --> 02:06:51,540

scientist and I bring this perspective

2501
02:06:55,669 --> 02:06:53,820
to the panel so for the next few minutes

2502
02:06:56,810 --> 02:06:55,679
I want to emphasize some of the things

2503
02:06:59,030 --> 02:06:56,820
that my colleagues have already

2504
02:07:01,790 --> 02:06:59,040
mentioned about the data particularly

2505
02:07:04,310 --> 02:07:01,800
the status of the data that exist and

2506
02:07:07,609 --> 02:07:04,320
what the data that we should collect

2507
02:07:08,570 --> 02:07:07,619
um to really understand what maybe

2508
02:07:11,089 --> 02:07:08,580
um

2509
02:07:12,649 --> 02:07:11,099
we've already heard in a few cases by a

2510
02:07:14,450 --> 02:07:12,659
few people that NASA's role is to

2511
02:07:16,550 --> 02:07:14,460
explore the universe through the

2512
02:07:18,470 --> 02:07:16,560
scientific method the application of the

2513
02:07:21,350 --> 02:07:18,480

scientific method to Discovery requires

2514

02:07:23,930 --> 02:07:21,360

that the data meets some standards that

2515

02:07:25,189 --> 02:07:23,940

allow the data-driven approach and there

2516

02:07:26,689 --> 02:07:25,199

are many standards that have been

2517

02:07:29,089 --> 02:07:26,699

established in the scientific community

2518

02:07:31,129 --> 02:07:29,099

over the years I can mentioned one for

2519

02:07:33,370 --> 02:07:31,139

example it's called the fair standard

2520

02:07:35,350 --> 02:07:33,380

where Fair stands for findability

2521

02:07:39,350 --> 02:07:35,360

accessibility

2522

02:07:42,169 --> 02:07:39,360

interoperability and reusability

2523

02:07:44,930 --> 02:07:42,179

the current status of the of the data

2524

02:07:46,850 --> 02:07:44,940

about uaps does not meet these standards

2525

02:07:48,890 --> 02:07:46,860

the their collection is inconsistent

2526

02:07:51,589 --> 02:07:48,900

it's in homogeneous it's uncalibrated

2527

02:07:54,830 --> 02:07:51,599

the data are poorly documented and

2528

02:07:59,030 --> 02:07:56,689

um they're also not systematically

2529

02:08:00,830 --> 02:07:59,040

retrievable which causes the problem in

2530

02:08:03,109 --> 02:08:00,840

automation of the analysis

2531

02:08:04,790 --> 02:08:03,119

so web could benefit from data science

2532

02:08:06,290 --> 02:08:04,800

and machine learning methods from

2533

02:08:08,570 --> 02:08:06,300

artificial intelligence that is

2534

02:08:10,669 --> 02:08:08,580

developing at a rapid Pace but machine

2535

02:08:13,370 --> 02:08:10,679

learning and AI cannot be applied until

2536

02:08:15,470 --> 02:08:13,380

the data mean these standards even to

2537

02:08:17,390 --> 02:08:15,480

study a single event currently requires

2538

02:08:19,790 --> 02:08:17,400

a significant lift in retrieving the

2539

02:08:22,609 --> 02:08:19,800

data and the metadata that may or may

2540

02:08:24,709 --> 02:08:22,619

not be available and this lift is at the

2541

02:08:26,750 --> 02:08:24,719

moment entirely person power which means

2542

02:08:28,490 --> 02:08:26,760

that it cannot be automated to apply

2543

02:08:31,370 --> 02:08:28,500

machine learning methods

2544

02:08:33,050 --> 02:08:31,380

organized repositories need to exist to

2545

02:08:35,209 --> 02:08:33,060

enable the automation of retrieval of

2546

02:08:37,310 --> 02:08:35,219

the data and the metadata and this is a

2547

02:08:39,709 --> 02:08:37,320

necessary premise to enable the

2548

02:08:41,750 --> 02:08:39,719

systematic scientific approach to the

2549

02:08:43,609 --> 02:08:41,760

study of uuaps

2550

02:08:46,129 --> 02:08:43,619

anomaly detection is a well-developed

2551
02:08:47,810 --> 02:08:46,139
although notoriously hard discipline and

2552
02:08:49,550 --> 02:08:47,820
which has seen tremendous advances

2553
02:08:50,810 --> 02:08:49,560
recently with data science and machine

2554
02:08:53,990 --> 02:08:50,820
learning

2555
02:08:56,390 --> 02:08:54,000
usually this means detecting rare and

2556
02:08:59,030 --> 02:08:56,400
unusual signals in a complex that is

2557
02:08:59,810 --> 02:08:59,040
noisy and Rich with phenomena that we

2558
02:09:02,209 --> 02:08:59,820
know

2559
02:09:03,950 --> 02:09:02,219
so there are two general approaches to

2560
02:09:06,649 --> 02:09:03,960
anomaly detection in the scientific

2561
02:09:08,870 --> 02:09:06,659
Community one is the following if we

2562
02:09:10,550 --> 02:09:08,880
know the signal that we expect we can

2563
02:09:12,950 --> 02:09:10,560

model it and we can simulate it and

2564

02:09:15,709 --> 02:09:12,960

maybe inject it in our data so we can

2565

02:09:18,410 --> 02:09:15,719

develop methods that are specific to

2566

02:09:20,149 --> 02:09:18,420

finding those exact signals or signals

2567

02:09:21,950 --> 02:09:20,159

that are similar to those

2568

02:09:23,570 --> 02:09:21,960

and we might be able to conceptualize

2569

02:09:25,970 --> 02:09:23,580

signals coming from physical systems

2570

02:09:27,770 --> 02:09:25,980

that responds to the laws of physics as

2571

02:09:29,870 --> 02:09:27,780

we know them but we cannot

2572

02:09:32,570 --> 02:09:29,880

comprehensively produce all possible

2573

02:09:35,450 --> 02:09:32,580

signals that could relate to or explain

2574

02:09:37,669 --> 02:09:35,460

uaps so the alternative approach in

2575

02:09:40,129 --> 02:09:37,679

detecting anomalies requires a thorough

2576
02:09:43,669 --> 02:09:40,139
and deep understanding of what is normal

2577
02:09:46,129 --> 02:09:43,679
and usual to tease out what is unusual

2578
02:09:48,530 --> 02:09:46,139
and unlike the rest

2579
02:09:50,450 --> 02:09:48,540
these methods typically found in the

2580
02:09:51,830 --> 02:09:50,460
realm of what we call unsupervised

2581
02:09:53,030 --> 02:09:51,840
machine learning

2582
02:09:55,669 --> 02:09:53,040
uh

2583
02:09:57,770 --> 02:09:55,679
what is usual maybe the balloons the

2584
02:10:00,229 --> 02:09:57,780
aircrafts and what wealth of natural

2585
02:10:02,750 --> 02:10:00,239
phenomena that we have heard of and what

2586
02:10:05,209 --> 02:10:02,760
is unusual what is an anomaly means

2587
02:10:07,189 --> 02:10:05,219
anything in there is not consistent with

2588
02:10:08,870 --> 02:10:07,199

the way in which those things look in

2589

02:10:11,149 --> 02:10:08,880

our data

2590

02:10:13,250 --> 02:10:11,159

once the enormous signal is detected it

2591

02:10:15,589 --> 02:10:13,260

can be studied in more depth either

2592

02:10:17,990 --> 02:10:15,599

through the discovery data itself but

2593

02:10:19,850 --> 02:10:18,000

that may not be sufficient so then we

2594

02:10:22,729 --> 02:10:19,860

may need to collect additional data for

2595

02:10:24,709 --> 02:10:22,739

to study these on these anomalies and

2596

02:10:27,470 --> 02:10:24,719

this is something in astrophysics we

2597

02:10:30,050 --> 02:10:27,480

typically refer to as follow-up data

2598

02:10:32,149 --> 02:10:30,060

this can be very hard especially if the

2599

02:10:34,250 --> 02:10:32,159

phenomena there are anomalies are also

2600

02:10:37,070 --> 02:10:34,260

ephemeral in time so you have to

2601
02:10:39,290 --> 02:10:37,080
promptly respond to the detection and

2602
02:10:41,390 --> 02:10:39,300
set up follow-up observations it's an

2603
02:10:43,070 --> 02:10:41,400
extremely hard game but it's something

2604
02:10:45,410 --> 02:10:43,080
that is seeing a large developing in

2605
02:10:47,510 --> 02:10:45,420
astrophysics in recent years with the

2606
02:10:49,129 --> 02:10:47,520
study of anomalous detections in the

2607
02:10:51,530 --> 02:10:49,139
universe

2608
02:10:52,850 --> 02:10:51,540
this approach relies entirely on a

2609
02:10:54,890 --> 02:10:52,860
comprehensive and systematic

2610
02:10:57,229 --> 02:10:54,900
organization of the data which is

2611
02:11:00,350 --> 02:10:57,239
Paramount and on a deep understanding of

2612
02:11:02,149 --> 02:11:00,360
all the data that is actually usual and

2613
02:11:03,830 --> 02:11:02,159

known

2614

02:11:05,270 --> 02:11:03,840

the data that we might want to collect

2615

02:11:07,970 --> 02:11:05,280

ideally will be collected in a

2616

02:11:11,209 --> 02:11:07,980

multi-sensor and multi-platform and

2617

02:11:13,089 --> 02:11:11,219

multi-site manner eyewitnesses reports I

2618

02:11:16,129 --> 02:11:13,099

want to elevate with Dr Drake said

2619

02:11:17,870 --> 02:11:16,139

cannot a certain the nature of uaps

2620

02:11:19,129 --> 02:11:17,880

however they should be considered

2621

02:11:21,350 --> 02:11:19,139

because they may contain important

2622

02:11:24,290 --> 02:11:21,360

information for example persistent

2623

02:11:27,169 --> 02:11:24,300

citing locations or seasonality but they

2624

02:11:30,410 --> 02:11:27,179

only really work if joined with

2625

02:11:31,910 --> 02:11:30,420

quantitative data collected by sensors

2626

02:11:33,410 --> 02:11:31,920

as well as biophysical and

2627

02:11:34,790 --> 02:11:33,420

psychophysical assessments of the

2628

02:11:37,250 --> 02:11:34,800

witness and the impact that the

2629

02:11:40,729 --> 02:11:37,260

experience has on them to really reveal

2630

02:11:43,669 --> 02:11:41,450

um

2631

02:11:46,189 --> 02:11:43,679

you've heard it from from my colleagues

2632

02:11:47,990 --> 02:11:46,199

a number of times the data needs to be

2633

02:11:50,930 --> 02:11:48,000

collected by sensors they need to be

2634

02:11:53,390 --> 02:11:50,940

calibrated or calibratable so we need to

2635

02:11:55,850 --> 02:11:53,400

collect not only the data images sounds

2636

02:11:58,850 --> 02:11:55,860

Spectrum characterization of what we see

2637

02:12:00,589 --> 02:11:58,860

but metadata the sensor type the brand

2638

02:12:02,629 --> 02:12:00,599

the brand of the sensor the noise

2639

02:12:04,729 --> 02:12:02,639

characteristics time of the acquisition

2640

02:12:07,850 --> 02:12:04,739

instrument sensitivity as well as

2641

02:12:09,290 --> 02:12:07,860

information about the circumstances of

2642

02:12:11,990 --> 02:12:09,300

the data collection for example

2643

02:12:14,030 --> 02:12:12,000

temperature or the location or the

2644

02:12:16,550 --> 02:12:14,040

conditions in which the sensor is at the

2645

02:12:18,350 --> 02:12:16,560

time of collecting the data the data

2646

02:12:20,750 --> 02:12:18,360

should be collected simultaneously by

2647

02:12:22,790 --> 02:12:20,760

different platforms ideally ideally in

2648

02:12:25,310 --> 02:12:22,800

different locations in a multi-sensor

2649

02:12:27,169 --> 02:12:25,320

system so some of the data that we may

2650

02:12:29,450 --> 02:12:27,179

want to collect are images but also

2651
02:12:31,609 --> 02:12:29,460
temperature sound recording spectral

2652
02:12:35,810 --> 02:12:31,619
data emissivity that tells you the color

2653
02:12:38,390 --> 02:12:35,820
in a very fine grid as well as other as

2654
02:12:39,770 --> 02:12:38,400
well as monitoring the motion of objects

2655
02:12:42,890 --> 02:12:39,780
which has been very important to

2656
02:12:44,570 --> 02:12:42,900
identify what we have seen as uaps that

2657
02:12:47,030 --> 02:12:44,580
have been reported

2658
02:12:48,470 --> 02:12:47,040
much of this certainly can be achieved

2659
02:12:51,709 --> 02:12:48,480
with professional grade infrastructure

2660
02:12:54,530 --> 02:12:51,719
and both new and existing infrastructure

2661
02:12:56,569 --> 02:12:54,540
to do that such as astrophysical and

2662
02:12:58,729 --> 02:12:56,579
geographical observatories both on the

2663
02:13:00,530 --> 02:12:58,739

ground and satellites some Modern

2664

02:13:02,270 --> 02:13:00,540

observatories in particular are designed

2665

02:13:04,550 --> 02:13:02,280

for the reflection of time anomalies

2666

02:13:06,410 --> 02:13:04,560

specifically as well as for the

2667

02:13:09,350 --> 02:13:06,420

detection of objects that move rapidly

2668

02:13:12,350 --> 02:13:09,360

in space near Earth objects asteroids

2669

02:13:14,450 --> 02:13:12,360

meteors Etc so those could be leveraged

2670

02:13:16,970 --> 02:13:14,460

for the study of uaps

2671

02:13:18,890 --> 02:13:16,980

there is also some effort in ongoing in

2672

02:13:20,750 --> 02:13:18,900

the developing of facilities that are

2673

02:13:23,629 --> 02:13:20,760

specifically to detect designed to

2674

02:13:25,129 --> 02:13:23,639

detect uaps and many of those comply

2675

02:13:26,689 --> 02:13:25,139

with the characteristics that I just

2676

02:13:28,669 --> 02:13:26,699

described

2677

02:13:31,370 --> 02:13:28,679

this level of information though can

2678

02:13:33,589 --> 02:13:31,380

also be obtained by the public we could

2679

02:13:36,950 --> 02:13:33,599

crowdsource the data collection if a

2680

02:13:38,810 --> 02:13:36,960

platform to crowdsource exists that

2681

02:13:40,850 --> 02:13:38,820

supports the collection of data and

2682

02:13:43,310 --> 02:13:40,860

metadata and the transmission of data

2683

02:13:44,990 --> 02:13:43,320

and metadata and we think that NASA

2684

02:13:47,649 --> 02:13:45,000

might be able to play an important role

2685

02:13:52,430 --> 02:13:47,659

in the development of this platform

2686

02:13:54,050 --> 02:13:52,440

to Echo Dr Bon Tempe said NASA has a

2687

02:13:56,149 --> 02:13:54,060

wealth of experience in coordinating

2688

02:13:58,189 --> 02:13:56,159

scientific studies efforts across

2689

02:13:59,930 --> 02:13:58,199

discipline and domains serving as a

2690

02:14:02,089 --> 02:13:59,940

bridge between communities in the

2691

02:14:04,729 --> 02:14:02,099

interdisciplinary studies and studies

2692

02:14:07,550 --> 02:14:04,739

across different countries

2693

02:14:09,649 --> 02:14:07,560

all of these can be supported all of

2694

02:14:12,169 --> 02:14:09,659

this can be leveraged to support the

2695

02:14:14,450 --> 02:14:12,179

work of the other agencies in the

2696

02:14:18,530 --> 02:14:14,460

identification and explaining explaining

2697

02:14:21,050 --> 02:14:18,540

uaps NASA also has a really important

2698

02:14:23,270 --> 02:14:21,060

experience in data curation we have

2699

02:14:25,490 --> 02:14:23,280

heard about the sophistication of the

2700

02:14:28,069 --> 02:14:25,500

analysis of the data that NASA provides

2701
02:14:30,669 --> 02:14:28,079
of the sophistication of the calibration

2702
02:14:33,350 --> 02:14:30,679
the data that NASA shares

2703
02:14:37,189 --> 02:14:33,360
arrives to we have heard about the open

2704
02:14:39,109 --> 02:14:37,199
data policy that NASA data goes under

2705
02:14:41,510 --> 02:14:39,119
furthermore NASA has recently

2706
02:14:44,330 --> 02:14:41,520
spearheaded an effort to review NASA and

2707
02:14:47,089 --> 02:14:44,340
nazam partner archival data to prepare

2708
02:14:48,589 --> 02:14:47,099
them for machine learning and AI so that

2709
02:14:51,709 --> 02:14:48,599
data can be served to the community

2710
02:14:53,750 --> 02:14:51,719
directly and ready to apply AI methods

2711
02:14:56,089 --> 02:14:53,760
on it this is an important experience

2712
02:14:58,850 --> 02:14:56,099
that could be leveraged in the study of

2713
02:15:02,030 --> 02:14:58,860

uaps however we do want to emphasize

2714

02:15:04,729 --> 02:15:02,040

that the current status of the UAP data

2715

02:15:07,129 --> 02:15:04,739

will make this list really hard compared

2716

02:15:08,930 --> 02:15:07,139

to even what is being done by NASA for

2717

02:15:11,330 --> 02:15:08,940

astrophysical data

2718

02:15:12,890 --> 02:15:11,340

and finally I wanted to emphasize what

2719

02:15:15,830 --> 02:15:12,900

my colleague said NASA has a great

2720

02:15:18,589 --> 02:15:15,840

visibility uaps have a great power of

2721

02:15:21,169 --> 02:15:18,599

great public interest and this could be

2722

02:15:23,149 --> 02:15:21,179

an opportunity to really increase the

2723

02:15:25,370 --> 02:15:23,159

reach of science help people understand

2724

02:15:27,530 --> 02:15:25,380

the scientific process and maybe

2725

02:15:30,050 --> 02:15:27,540

diversify the scientific Community by

2726

02:15:32,030 --> 02:15:30,060

attracting new Talent into the

2727

02:15:34,010 --> 02:15:32,040

scientific Community due to the

2728

02:15:38,569 --> 02:15:34,020

visibility of the problem

2729

02:15:40,729 --> 02:15:38,579

and I think that's one of my remarks

2730

02:15:43,010 --> 02:15:40,739

questions

2731

02:15:46,069 --> 02:15:43,020

do you want to go Reggie

2732

02:15:48,970 --> 02:15:46,079

so on the whole crowdsourcing front and

2733

02:15:51,410 --> 02:15:48,980

getting reports from citizen scientists

2734

02:15:53,750 --> 02:15:51,420

uh what do you think along those lines

2735

02:15:57,169 --> 02:15:53,760

is it providing a set of guidelines for

2736

02:15:59,930 --> 02:15:57,179

how you report is it open sourcing a set

2737

02:16:02,770 --> 02:15:59,940

of applications for cell phones to be

2738

02:16:06,530 --> 02:16:02,780

able to pull in a lot the right metadata

2739

02:16:08,810 --> 02:16:06,540

what does that look like yeah so um I

2740

02:16:12,950 --> 02:16:08,820

think guidance would just a settle

2741

02:16:14,689 --> 02:16:12,960

guidance of best practices Etc would

2742

02:16:17,689 --> 02:16:14,699

just now be sufficient I think what

2743

02:16:19,430 --> 02:16:17,699

needs to be provided is a platform you

2744

02:16:21,129 --> 02:16:19,440

mentioned cell phones cell phones have

2745

02:16:23,569 --> 02:16:21,139

been used for

2746

02:16:26,750 --> 02:16:23,579

crowdsourcing the study and detection of

2747

02:16:28,910 --> 02:16:26,760

a number of things in astrophysics in

2748

02:16:32,030 --> 02:16:28,920

space science so that can definitely be

2749

02:16:36,049 --> 02:16:32,040

done the issue I think is going to be to

2750

02:16:37,669 --> 02:16:36,059

make sure that this platform is that

2751

02:16:40,490 --> 02:16:37,679

this platform reaches a large enough

2752

02:16:42,230 --> 02:16:40,500

Community to really have a crowd to

2753

02:16:44,150 --> 02:16:42,240

Source the problem and coordination

2754

02:16:46,549 --> 02:16:44,160

something that this could achieve for

2755

02:16:48,469 --> 02:16:46,559

example is the follow-up that I

2756

02:16:51,349 --> 02:16:48,479

mentioned earlier right so we need this

2757

02:16:54,110 --> 02:16:51,359

community that would use the

2758

02:16:56,750 --> 02:16:54,120

crowdsourcing facilities to be connected

2759

02:16:59,990 --> 02:16:56,760

so that if something is cited by one

2760

02:17:01,730 --> 02:17:00,000

person that message can go across and a

2761

02:17:04,730 --> 02:17:01,740

broader Community can point their

2762

02:17:07,969 --> 02:17:04,740

sensors to the problem

2763

02:17:09,650 --> 02:17:07,979

to the sighting and the data has to be

2764

02:17:10,849 --> 02:17:09,660

transmitted to that has to be

2765

02:17:14,290 --> 02:17:10,859

transmitted to a place that can

2766

02:17:16,610 --> 02:17:14,300

centralize it and curate it

2767

02:17:18,049 --> 02:17:16,620

yeah please feel free to say this is a

2768

02:17:20,509 --> 02:17:18,059

bad idea but if you thought about

2769

02:17:21,650 --> 02:17:20,519

synthetic data as you were talking I was

2770

02:17:24,230 --> 02:17:21,660

thinking you know given the fact we

2771

02:17:26,750 --> 02:17:24,240

don't have enough quality data to train

2772

02:17:28,370 --> 02:17:26,760

a net a neural net if we're to generate

2773

02:17:30,410 --> 02:17:28,380

synthetic data based on the information

2774

02:17:32,089 --> 02:17:30,420

we do have and then filling out the

2775

02:17:34,009 --> 02:17:32,099

other characteristics as we might guess

2776

02:17:37,129 --> 02:17:34,019

because that that help us train

2777

02:17:39,230 --> 02:17:37,139

something to iterate an AI to be to find

2778

02:17:41,690 --> 02:17:39,240

other correlations within data as we get

2779

02:17:44,089 --> 02:17:41,700

it so we do it all the time in data

2780

02:17:46,910 --> 02:17:44,099

science right we do generate data sets

2781

02:17:48,770 --> 02:17:46,920

where the data sets our sparse or scars

2782

02:17:51,290 --> 02:17:48,780

and we cannot train machine learning

2783

02:17:53,270 --> 02:17:51,300

models it's a risky business because in

2784

02:17:55,610 --> 02:17:53,280

the data that we generate we embed the

2785

02:17:57,169 --> 02:17:55,620

bias that we have so we invite are

2786

02:17:59,570 --> 02:17:57,179

thinking about the data the way in which

2787

02:18:01,009 --> 02:17:59,580

we think the data looks and the way in

2788

02:18:03,110 --> 02:18:01,019

which the things that they anomalies

2789

02:18:05,690 --> 02:18:03,120

look so a particularly in anomaly

2790

02:18:07,070 --> 02:18:05,700

detection it is a very difficult thing

2791

02:18:08,929 --> 02:18:07,080

to do

2792

02:18:11,150 --> 02:18:08,939

um to try to make sure that you don't

2793

02:18:13,790 --> 02:18:11,160

buy and see your models to well you know

2794

02:18:15,709 --> 02:18:13,800

I want to come back to this topic of

2795

02:18:17,509 --> 02:18:15,719

anomaly discussion in our general

2796

02:18:19,910 --> 02:18:17,519

discussion we're sort of starting to run

2797

02:18:22,190 --> 02:18:19,920

a little late so I want to cut off

2798

02:18:25,490 --> 02:18:22,200

questions now but we do have a little

2799

02:18:27,530 --> 02:18:25,500

time later at the end so don't forget

2800

02:18:29,270 --> 02:18:27,540

don't forget your questions bring them

2801

02:18:31,190 --> 02:18:29,280

up again in discussion and we'll we'll

2802

02:18:40,490 --> 02:18:31,200

talk more more later

2803

02:18:43,849 --> 02:18:42,169

all right good afternoon

2804

02:18:46,129 --> 02:18:43,859

my name is David grinspoon I'm a

2805

02:18:48,770 --> 02:18:46,139

planetary scientist and astrobiologist

2806

02:18:51,349 --> 02:18:48,780

and I'm going to talk for uh just a

2807

02:18:56,389 --> 02:18:51,359

couple of minutes about how observations

2808

02:18:58,849 --> 02:18:56,399

beyond Earth are relevant to um our uh

2809

02:19:00,290 --> 02:18:58,859

study of uaps

2810

02:19:03,169 --> 02:19:00,300

um

2811

02:19:05,270 --> 02:19:03,179

many of NASA's missions are at least in

2812

02:19:09,009 --> 02:19:05,280

part focused on answering the question

2813

02:19:11,509 --> 02:19:09,019

of whether life exists beyond Earth

2814

02:19:14,270 --> 02:19:11,519

astrobiology is the study of the origin

2815

02:19:16,370 --> 02:19:14,280

Evolution distribution and future of

2816

02:19:19,070 --> 02:19:16,380

life in the universe

2817

02:19:21,830 --> 02:19:19,080

as part of this we consider how to

2818

02:19:23,929 --> 02:19:21,840

search for biosignatures observations we

2819

02:19:27,349 --> 02:19:23,939

can make of other planets which may

2820

02:19:30,230 --> 02:19:27,359

might betray the presence of life so we

2821

02:19:32,629 --> 02:19:30,240

look for things like anomalous gases in

2822

02:19:35,690 --> 02:19:32,639

the atmospheres of planets and other

2823

02:19:38,209 --> 02:19:35,700

anomalies which may possibly reveal the

2824

02:19:40,370 --> 02:19:38,219

presence of life when we discover such

2825

02:19:42,830 --> 02:19:40,380

an anomaly we don't

2826

02:19:45,410 --> 02:19:42,840

conclude that we've discovered life we

2827

02:19:48,469 --> 02:19:45,420

seek more data to understand what we're

2828

02:19:49,910 --> 02:19:48,479

seeing and often this leads to other new

2829

02:19:51,889 --> 02:19:49,920

discoveries

2830

02:19:54,650 --> 02:19:51,899

similarly we can talk about looking for

2831

02:19:56,510 --> 02:19:54,660

techno signatures observations we can

2832

02:19:59,690 --> 02:19:56,520

make which might reveal the presence of

2833

02:20:01,790 --> 02:19:59,700

technological activity somewhere else

2834

02:20:04,250 --> 02:20:01,800

NASA is also supporting some research

2835

02:20:07,310 --> 02:20:04,260

studying techno signatures

2836

02:20:09,110 --> 02:20:07,320

while there is a present no evidence

2837

02:20:11,750 --> 02:20:09,120

we're aware of suggesting an

2838

02:20:13,849 --> 02:20:11,760

extraterrestrial source for uaps

2839

02:20:16,429 --> 02:20:13,859

these existing NASA programs are

2840

02:20:19,490 --> 02:20:16,439

relevant to the question of uaps in at

2841

02:20:21,950 --> 02:20:19,500

least two ways is it a known or unknown

2842

02:20:23,830 --> 02:20:21,960

natural phenomenon must it be

2843

02:20:27,770 --> 02:20:23,840

technological

2844

02:20:29,990 --> 02:20:27,780

is it known terrestrial technology

2845

02:20:31,910 --> 02:20:30,000

so these scientific communities have

2846

02:20:34,190 --> 02:20:31,920

relevant experience in determining and

2847

02:20:36,590 --> 02:20:34,200

communicating about whether observations

2848

02:20:39,530 --> 02:20:36,600

which first appeared to reveal

2849

02:20:43,370 --> 02:20:39,540

extraordinary evidence actually justify

2850

02:20:47,210 --> 02:20:44,990

second

2851
02:20:49,790 --> 02:20:47,220
if we do acknowledge an extraterrestrial

2852
02:20:53,030 --> 02:20:49,800
Source however unlikely as one

2853
02:20:54,830 --> 02:20:53,040
possibility for uaps then these objects

2854
02:20:57,550 --> 02:20:54,840
must have traveled through the solar

2855
02:21:01,370 --> 02:20:57,560
system to get here

2856
02:21:03,349 --> 02:21:01,380
Within the scientific Community there's

2857
02:21:06,170 --> 02:21:03,359
a widespread

2858
02:21:07,969 --> 02:21:06,180
but by no means Universal belief that

2859
02:21:10,610 --> 02:21:07,979
there are extraterrestrial civilizations

2860
02:21:12,410 --> 02:21:10,620
and we have a well-developed rationale

2861
02:21:14,270 --> 02:21:12,420
there's a lot of literature for

2862
02:21:17,030 --> 02:21:14,280
discussing this which I I won't go into

2863
02:21:18,290 --> 02:21:17,040

now uh in the interest of brevity but it

2864

02:21:20,630 --> 02:21:18,300

has to do with the vast numbers of

2865

02:21:22,730 --> 02:21:20,640

exoplanets and the time scales of

2866

02:21:24,469 --> 02:21:22,740

evolution and the possibility of

2867

02:21:26,389 --> 02:21:24,479

convergent evolution on different

2868

02:21:29,170 --> 02:21:26,399

planets leading to somewhat similar

2869

02:21:32,990 --> 02:21:29,180

outcomes it's a fascinating subject but

2870

02:21:35,090 --> 02:21:33,000

uh the the relevant Point here is that

2871

02:21:36,910 --> 02:21:35,100

the same rationale which support

2872

02:21:39,530 --> 02:21:36,920

supports the idea the extra

2873

02:21:42,830 --> 02:21:39,540

extraterrestrial civilizations may exist

2874

02:21:44,450 --> 02:21:42,840

and may be detectable also supports the

2875

02:21:47,150 --> 02:21:44,460

idea that finding extraterrestrial

2876

02:21:49,010 --> 02:21:47,160

artifacts in our own solar system is at

2877

02:21:51,349 --> 02:21:49,020

least plausible

2878

02:21:53,030 --> 02:21:51,359

NASA is the lead Agency for solar system

2879

02:21:55,250 --> 02:21:53,040

exploration

2880

02:21:56,870 --> 02:21:55,260

it already has an active program of

2881

02:21:59,270 --> 02:21:56,880

detecting objects in our Solar

2882

02:22:01,790 --> 02:21:59,280

neighborhood using both ground-based and

2883

02:22:03,349 --> 02:22:01,800

space-based facilities and it could

2884

02:22:05,570 --> 02:22:03,359

leverage those capabilities to search

2885

02:22:07,190 --> 02:22:05,580

for objects in space with anomalous

2886

02:22:09,429 --> 02:22:07,200

motion

2887

02:22:12,830 --> 02:22:09,439

anomalous trajectories

2888

02:22:15,650 --> 02:22:12,840

unusual light curves anomalous spectral

2889

02:22:17,929 --> 02:22:15,660

signatures or other characteristics

2890

02:22:20,870 --> 02:22:17,939

uh most of the solar system has not been

2891

02:22:23,750 --> 02:22:20,880

searched for artifacts or anomalies and

2892

02:22:26,210 --> 02:22:23,760

these modest data analysis efforts could

2893

02:22:28,490 --> 02:22:26,220

potentially be applied to existing and

2894

02:22:31,550 --> 02:22:28,500

planned planetary missions

2895

02:22:33,290 --> 02:22:31,560

the Galaxy does not stop at the edge of

2896

02:22:36,410 --> 02:22:33,300

the solar system and the solar system

2897

02:22:38,570 --> 02:22:36,420

does not stop at the top of the Earth's

2898

02:22:42,290 --> 02:22:38,580

atmosphere it's all a Continuum of

2899

02:22:44,750 --> 02:22:42,300

possibilities worthy of Investigation

2900

02:22:47,690 --> 02:22:44,760

if NASA applies the same rigorous

2901
02:22:49,730 --> 02:22:47,700
methodology toward uaps that it applies

2902
02:22:52,910 --> 02:22:49,740
to the study of possible life elsewhere

2903
02:22:54,710 --> 02:22:52,920
than we stand to learn something new and

2904
02:22:57,710 --> 02:22:54,720
interesting whatever the ultimate

2905
02:23:00,650 --> 02:22:57,720
explanation is of those phenomena

2906
02:23:03,770 --> 02:23:00,660
and that's all I wanted to say right now

2907
02:23:08,630 --> 02:23:03,780
we have time for uh one or two comments

2908
02:23:11,929 --> 02:23:10,070
yeah

2909
02:23:13,910 --> 02:23:11,939
um thank you for that you know it struck

2910
02:23:17,809 --> 02:23:13,920
me while you were speaking

2911
02:23:19,969 --> 02:23:17,819
um about bio signatures that we do a lot

2912
02:23:21,849 --> 02:23:19,979
of that type of analysis right and our

2913
02:23:24,830 --> 02:23:21,859

home planet in in different capacities

2914

02:23:26,450 --> 02:23:24,840

and so it's more of a comment but I

2915

02:23:28,910 --> 02:23:26,460

wondered your thoughts on you know

2916

02:23:31,610 --> 02:23:28,920

bringing together those communities that

2917

02:23:34,450 --> 02:23:31,620

might not work together and whether that

2918

02:23:37,969 --> 02:23:34,460

would Aid in you know not only

2919

02:23:40,250 --> 02:23:37,979

establishing what's normal but you know

2920

02:23:42,650 --> 02:23:40,260

enabling the detection or maybe the

2921

02:23:45,770 --> 02:23:42,660

understanding explanation of a UAP if

2922

02:23:47,030 --> 02:23:45,780

reported absolutely I mean uh you know

2923

02:23:49,370 --> 02:23:47,040

the focus of my talk was was

2924

02:23:51,889 --> 02:23:49,380

observations elsewhere but in fact most

2925

02:23:53,750 --> 02:23:51,899

of what the field of astrobiology has to

2926

02:23:55,429 --> 02:23:53,760

study is here on Earth because after all

2927

02:23:56,929 --> 02:23:55,439

it's our one example of an inhabited

2928

02:24:00,170 --> 02:23:56,939

planet and it's a little bit easier to

2929

02:24:02,690 --> 02:24:00,180

get to to make observations so yes uh

2930

02:24:05,570 --> 02:24:02,700

any any insights do you have uh in that

2931

02:24:06,710 --> 02:24:05,580

area or any any suggestions for uh for

2932

02:24:08,270 --> 02:24:06,720

uh collaboration between those

2933

02:24:14,030 --> 02:24:08,280

communities uh would be would be very

2934

02:24:18,950 --> 02:24:17,270

so of course NASA has been researching

2935

02:24:20,630 --> 02:24:18,960

the Techno signature field for very long

2936

02:24:23,270 --> 02:24:20,640

and there's been a stigma with techno

2937

02:24:25,190 --> 02:24:23,280

signatures for many decades are there

2938

02:24:27,830 --> 02:24:25,200

any Lessons Learned

2939

02:24:30,349 --> 02:24:27,840

we can impose from the Techno signature

2940

02:24:33,530 --> 02:24:30,359

in the study Community to the UAP and

2941

02:24:34,910 --> 02:24:33,540

solar system studies

2942

02:24:36,410 --> 02:24:34,920

so really

2943

02:24:38,929 --> 02:24:36,420

good question

2944

02:24:41,270 --> 02:24:38,939

um I guess the immediate thought it

2945

02:24:43,610 --> 02:24:41,280

Sparks in me is that uh

2946

02:24:47,450 --> 02:24:43,620

yeah techno signatures

2947

02:24:49,550 --> 02:24:47,460

were kind of treated uh at kept at arm's

2948

02:24:50,889 --> 02:24:49,560

length for a long time by NASA because

2949

02:24:54,170 --> 02:24:50,899

of stigma

2950

02:24:56,090 --> 02:24:54,180

and ultimately uh

2951

02:24:58,550 --> 02:24:56,100

can't be kept

2952

02:25:00,650 --> 02:24:58,560

away forever if you're if you are an

2953

02:25:02,030 --> 02:25:00,660

agency curiosity driven trying to

2954

02:25:03,889 --> 02:25:02,040

understand the whole universe you have

2955

02:25:05,690 --> 02:25:03,899

to move Beyond stigmas and just try to

2956

02:25:07,790 --> 02:25:05,700

honestly look at whatever evidence there

2957

02:25:12,889 --> 02:25:07,800

is and so I think in that broad sense

2958

02:25:17,690 --> 02:25:15,530

um so someone who has been working in

2959

02:25:21,349 --> 02:25:17,700

astrobiology and data Sciences for some

2960

02:25:23,990 --> 02:25:21,359

time now it strikes me when both Dr

2961

02:25:25,330 --> 02:25:24,000

Bianco and you talked that the

2962

02:25:27,590 --> 02:25:25,340

differences that seem to me between

2963

02:25:31,429 --> 02:25:27,600

biosignatures and techno signatures

2964

02:25:33,110 --> 02:25:31,439

fields and UAP field again relies on the

2965

02:25:36,050 --> 02:25:33,120

data so biosignatures and techno

2966

02:25:38,330 --> 02:25:36,060

signatures they have are very well

2967

02:25:40,809 --> 02:25:38,340

standardized data sets they have collect

2968

02:25:43,370 --> 02:25:40,819

been collecting data sets for some time

2969

02:25:45,170 --> 02:25:43,380

and they are able to apply machine

2970

02:25:47,570 --> 02:25:45,180

learning artificial intelligence

2971

02:25:50,809 --> 02:25:47,580

algorithms while it's a totally

2972

02:25:52,969 --> 02:25:50,819

different question with uaps in how we

2973

02:25:56,090 --> 02:25:52,979

can apply artificial intelligence here

2974

02:26:00,250 --> 02:25:56,100

so again just like Dr Bianca how she

2975

02:26:05,330 --> 02:26:00,260

said it's about data standardization so

2976

02:26:07,070 --> 02:26:05,340

I hope that the UAP field will learn how

2977

02:26:08,870 --> 02:26:07,080

to work with the data from the

2978

02:26:09,830 --> 02:26:08,880

biosignatures and techno signatures

2979

02:26:11,630 --> 02:26:09,840

fields

2980

02:26:13,309 --> 02:26:11,640

yeah that's a good point the one the one

2981

02:26:15,590 --> 02:26:13,319

uh point I pushed back on a little bit

2982

02:26:18,349 --> 02:26:15,600

is whether techno signatures has been

2983

02:26:20,990 --> 02:26:18,359

has a lot of data in that sense the the

2984

02:26:23,510 --> 02:26:21,000

one part of techno signatures which is

2985

02:26:24,889 --> 02:26:23,520

looking for signals from radio and

2986

02:26:26,870 --> 02:26:24,899

Optical and that sort of thing that's

2987

02:26:28,250 --> 02:26:26,880

been you know associated with seti for a

2988

02:26:29,630 --> 02:26:28,260

long time you're right there's a lot of

2989

02:26:32,150 --> 02:26:29,640

data there that we've been collecting

2990

02:26:35,330 --> 02:26:32,160

but the term techno signature is this

2991

02:26:36,590 --> 02:26:35,340

sort of newly being adopted in it uh in

2992

02:26:38,990 --> 02:26:36,600

a way it reminds me of the distinction

2993

02:26:40,730 --> 02:26:39,000

we heard from the FAA about a

2994

02:26:43,429 --> 02:26:40,740

cooperative and you know non-cooperative

2995

02:26:44,270 --> 02:26:43,439

uh that with Techna signatures we're

2996

02:26:46,550 --> 02:26:44,280

looking

2997

02:26:47,870 --> 02:26:46,560

um there's more of an emphasis on

2998

02:26:49,370 --> 02:26:47,880

finding

2999

02:26:51,830 --> 02:26:49,380

um technology that is not necessarily

3000

02:26:54,170 --> 02:26:51,840

intended to Signal us but just sort of

3001

02:26:55,910 --> 02:26:54,180

uh doing what technology does and

3002

02:26:57,889 --> 02:26:55,920

finding ways to you know so it's not

3003

02:26:59,809 --> 02:26:57,899

looking for signals as much and in that

3004

02:27:01,910 --> 02:26:59,819

domain we have not necessarily been

3005

02:27:03,770 --> 02:27:01,920

collecting information for that long but

3006

02:27:05,630 --> 02:27:03,780

but your point is well taken that there

3007

02:27:07,730 --> 02:27:05,640

are lessons learned from uh certainly

3008

02:27:09,530 --> 02:27:07,740

the astrobiology and the the sort of

3009

02:27:11,690 --> 02:27:09,540

classical seti field where we've had a

3010

02:27:14,210 --> 02:27:11,700

lot of data and we could look at how

3011

02:27:16,910 --> 02:27:14,220

that is analyzed and try to collect the

3012

02:27:19,849 --> 02:27:16,920

data for uaps that will be amenable to

3013

02:27:31,849 --> 02:27:19,859

that same sort of analysis

3014

02:27:36,230 --> 02:27:34,550

hello everybody I'm Carlin toner a mon

3015

02:27:38,210 --> 02:27:36,240

aerospace engineer

3016

02:27:40,010 --> 02:27:38,220

you know it really struck me when Dr

3017

02:27:42,770 --> 02:27:40,020

Drake opened up this afternoon and

3018

02:27:44,990 --> 02:27:42,780

talked about this really small needle in

3019

02:27:47,870 --> 02:27:45,000

a really big Haystack that we're looking

3020

02:27:50,389 --> 02:27:47,880

for and I'm going to talk to you about

3021

02:27:52,969 --> 02:27:50,399

reporting a theme that we've heard a lot

3022

02:27:55,130 --> 02:27:52,979

how can we make that Haystack smaller

3023

02:27:57,950 --> 02:27:55,140

and that needle bigger

3024

02:28:00,410 --> 02:27:57,960

so reporting of uip events has received

3025

02:28:02,450 --> 02:28:00,420

a lot of attention recently but I think

3026
02:28:04,309 --> 02:28:02,460
that there are still barriers for people

3027
02:28:06,469 --> 02:28:04,319
to report

3028
02:28:09,469 --> 02:28:06,479
how or where should they report

3029
02:28:12,290 --> 02:28:09,479
will someone take action on their report

3030
02:28:14,450 --> 02:28:12,300
will the reporter be believed or will

3031
02:28:16,910 --> 02:28:14,460
they be shamed

3032
02:28:19,610 --> 02:28:16,920
we've heard over the course of our

3033
02:28:22,849 --> 02:28:19,620
fact-finding that many scientists and

3034
02:28:25,429 --> 02:28:22,859
aviators consider the study of uaps to

3035
02:28:27,530 --> 02:28:25,439
be Fringe at best

3036
02:28:29,750 --> 02:28:27,540
so this suggests there's a significant

3037
02:28:32,330 --> 02:28:29,760
negative stigma associated with

3038
02:28:34,150 --> 02:28:32,340

reporting or even researching such

3039

02:28:37,150 --> 02:28:34,160

phenomena

3040

02:28:39,830 --> 02:28:37,160

that said by encouraging military

3041

02:28:41,990 --> 02:28:39,840

aviators to disclose anomalies that

3042

02:28:44,090 --> 02:28:42,000

they've seen or detected the Department

3043

02:28:47,030 --> 02:28:44,100

of Defense is receiving many more

3044

02:28:49,309 --> 02:28:47,040

reports I think in the time that we've

3045

02:28:51,530 --> 02:28:49,319

been looking at this topic growing from

3046

02:28:53,450 --> 02:28:51,540

an odir report that was something like

3047

02:28:55,190 --> 02:28:53,460

500 to I think this morning we heard

3048

02:28:56,870 --> 02:28:55,200

something like 800 now so that's

3049

02:29:00,050 --> 02:28:56,880

accelerating

3050

02:29:02,389 --> 02:29:00,060

and a DOD will soon also mandate if not

3051
02:29:04,670 --> 02:29:02,399
already reporting by pilots which will

3052
02:29:07,790 --> 02:29:04,680
even grow that set

3053
02:29:10,190 --> 02:29:07,800
I would propose to this panel that NASA

3054
02:29:12,950 --> 02:29:10,200
can help make it safer for researchers

3055
02:29:16,070 --> 02:29:12,960
to explore data in the Civil airspace

3056
02:29:18,590 --> 02:29:16,080
domain it's simply by starting that work

3057
02:29:20,990 --> 02:29:18,600
internally

3058
02:29:22,849 --> 02:29:21,000
NASA could look at how civil anomaly

3059
02:29:26,090 --> 02:29:22,859
data is shared

3060
02:29:28,610 --> 02:29:26,100
study how to incentivize reporting

3061
02:29:30,230 --> 02:29:28,620
assess the possibility of crowdsourcing

3062
02:29:31,910 --> 02:29:30,240
data which I think we've heard a bit

3063
02:29:33,650 --> 02:29:31,920

about this afternoon

3064

02:29:37,730 --> 02:29:33,660

we're sponsor and participate in

3065

02:29:41,030 --> 02:29:37,740

conferences on UAP detection

3066

02:29:44,210 --> 02:29:41,040

our team has really only seen I'd say a

3067

02:29:46,610 --> 02:29:44,220

few unclassified images of UAP

3068

02:29:49,790 --> 02:29:46,620

which lack the contextual data that's

3069

02:29:51,889 --> 02:29:49,800

needed to understand their true nature

3070

02:29:54,110 --> 02:29:51,899

and I believe we've heard a single

3071

02:29:56,510 --> 02:29:54,120

firsthand account from a former military

3072

02:29:59,330 --> 02:29:56,520

Aviator

3073

02:30:01,969 --> 02:29:59,340

so one of my colleagues Josh has an

3074

02:30:05,870 --> 02:30:01,979

example to show just why it would be

3075

02:30:10,969 --> 02:30:05,880

important for NASA to also help shape

3076
02:30:13,610 --> 02:30:10,979
how the data and information is reported

3077
02:30:15,349 --> 02:30:13,620
before I turn the mic over to Josh I

3078
02:30:17,510 --> 02:30:15,359
want to make a recommendation to my

3079
02:30:21,050 --> 02:30:17,520
fellow panelists that we consider

3080
02:30:23,929 --> 02:30:21,060
advising NASA to more fully assess the

3081
02:30:25,730 --> 02:30:23,939
cultural and social barriers to studying

3082
02:30:28,670 --> 02:30:25,740
and Reporting UAP

3083
02:30:30,950 --> 02:30:28,680
and for NASA to implement a plan to

3084
02:30:37,910 --> 02:30:30,960
leverage its brand image to start

3085
02:30:37,920 --> 02:30:42,230
and then we'll we'll take discussions

3086
02:30:56,570 --> 02:30:44,210
so you can call them slide deck if you

3087
02:31:02,090 --> 02:30:58,610
so it's not it's not the charge of our

3088
02:31:03,889 --> 02:31:02,100

panel to evaluate UAP evidence but part

3089

02:31:06,830 --> 02:31:03,899

of our statement of task is to assess

3090

02:31:08,330 --> 02:31:06,840

the scientific analysis techniques that

3091

02:31:10,730 --> 02:31:08,340

are available you don't have to start it

3092

02:31:12,830 --> 02:31:10,740

just yet and the um

3093

02:31:15,830 --> 02:31:12,840

and how we might use them to determine

3094

02:31:18,410 --> 02:31:15,840

physical constraints on UAP

3095

02:31:20,750 --> 02:31:18,420

uh you know the UAP reports with the

3096

02:31:23,150 --> 02:31:20,760

most detailed contextual information are

3097

02:31:26,210 --> 02:31:23,160

the ones from the Navy aviators uh and

3098

02:31:28,490 --> 02:31:26,220

they're using a combination of um of

3099

02:31:30,590 --> 02:31:28,500

ranging and uh infrared Imaging

3100

02:31:32,389 --> 02:31:30,600

information and for these cases we can

3101

02:31:35,510 --> 02:31:32,399

directly calculate critical parameters

3102

02:31:38,750 --> 02:31:35,520

of a UAP such as altitude and velocity

3103

02:31:40,010 --> 02:31:38,760

under certain assumptions and it's you

3104

02:31:42,349 --> 02:31:40,020

know the main point I want to make here

3105

02:31:44,990 --> 02:31:42,359

is that this multi-sensor approach is

3106

02:31:47,630 --> 02:31:45,000

absolutely critical to um charting a

3107

02:31:49,790 --> 02:31:47,640

path forward for UAP investigations and

3108

02:31:51,770 --> 02:31:49,800

that pertains to NASA as well so I'm

3109

02:31:53,750 --> 02:31:51,780

going to provide one example here just

3110

02:31:56,469 --> 02:31:53,760

to illustrate the crucial role of

3111

02:31:58,070 --> 02:31:56,479

Science and scientific analysis

3112

02:32:00,530 --> 02:31:58,080

and

3113

02:32:03,170 --> 02:32:00,540

the role of scientific analysis to avoid

3114

02:32:06,050 --> 02:32:03,180

misinterpretation in some sense next

3115

02:32:06,060 --> 02:32:10,910

hit space

3116

02:32:15,050 --> 02:32:13,429

yeah okay so this is um

3117

02:32:16,849 --> 02:32:15,060

this video was recorded by

3118

02:32:19,969 --> 02:32:16,859

um Pilots deployed from the aircraft

3119

02:32:22,130 --> 02:32:19,979

carrier USS Theodore Roosevelt in 2015.

3120

02:32:24,650 --> 02:32:22,140

the example has been given the nickname

3121

02:32:26,389 --> 02:32:24,660

go fast because it gives an impression

3122

02:32:28,910 --> 02:32:26,399

of an object moving very rapidly against

3123

02:32:30,410 --> 02:32:28,920

the ocean surface and uh you know the

3124

02:32:32,389 --> 02:32:30,420

question is is this impression correct

3125

02:32:34,610 --> 02:32:32,399

and you know if not what can we say

3126
02:32:37,190 --> 02:32:34,620
quantitatively about what that object is

3127
02:32:40,130 --> 02:32:37,200
doing in uh kind of earth-centered

3128
02:32:41,690 --> 02:32:40,140
coordinate system

3129
02:32:43,670 --> 02:32:41,700
um fortunately the information needed to

3130
02:32:45,230 --> 02:32:43,680
determine the altitude and velocity of

3131
02:32:47,510 --> 02:32:45,240
this object is contained on the display

3132
02:32:49,190 --> 02:32:47,520
so go ahead and

3133
02:32:51,170 --> 02:32:49,200
next

3134
02:32:53,750 --> 02:32:51,180
and uh

3135
02:32:55,070 --> 02:32:53,760
this includes the elevation angle of the

3136
02:32:59,270 --> 02:32:55,080
camera

3137
02:33:02,270 --> 02:32:59,280
the target range in nautical miles

3138
02:33:04,990 --> 02:33:02,280

aircraft altitude the time reference in

3139

02:33:07,370 --> 02:33:05,000

seconds indicated air speed and Knots

3140

02:33:08,990 --> 02:33:07,380

you know this information in this video

3141

02:33:12,170 --> 02:33:09,000

in particular has been discussed quite a

3142

02:33:15,770 --> 02:33:12,180

bit on the on the web

3143

02:33:19,670 --> 02:33:15,780

so let's begin with the object altitude

3144

02:33:24,110 --> 02:33:21,830

so knowing the Jet's altitude and the

3145

02:33:26,690 --> 02:33:24,120

bearing to the Target we can apply basic

3146

02:33:28,929 --> 02:33:26,700

trigonometry to figure out where that

3147

02:33:31,610 --> 02:33:28,939

object is in altitude space and it's

3148

02:33:34,910 --> 02:33:31,620

turns out to be you know provided the

3149

02:33:36,530 --> 02:33:34,920

range information is accurate which can

3150

02:33:38,929 --> 02:33:36,540

have some uncertainties associated with

3151
02:33:43,010 --> 02:33:38,939
it but the object appears to be at about

3152
02:33:44,690 --> 02:33:43,020
13 000 feet an important aspect of this

3153
02:33:48,230 --> 02:33:44,700
here is that it's sort of midway between

3154
02:33:50,030 --> 02:33:48,240
the uh the jet and the ocean so it's the

3155
02:33:53,809 --> 02:33:50,040
ocean that looks like it's right behind

3156
02:33:56,630 --> 02:33:53,819
it is actually 4.2 miles away and this

3157
02:33:58,490 --> 02:33:56,640
is our first indication that some or

3158
02:34:01,790 --> 02:33:58,500
most of the motion that we observe the

3159
02:34:04,130 --> 02:34:01,800
apparent motion of the object is in fact

3160
02:34:06,590 --> 02:34:04,140
due to the rapid motion of the sensing

3161
02:34:08,809 --> 02:34:06,600
platform which is about 430 miles per

3162
02:34:12,349 --> 02:34:08,819
hour in this case

3163
02:34:14,150 --> 02:34:12,359

uh but we don't have to guess about this

3164

02:34:17,210 --> 02:34:14,160

so we have enough information on this

3165

02:34:20,929 --> 02:34:17,220

display to actually reconstruct

3166

02:34:22,309 --> 02:34:20,939

um the encounter go to the next slide

3167

02:34:24,469 --> 02:34:22,319

please

3168

02:34:26,150 --> 02:34:24,479

and uh so this is what this is this is

3169

02:34:30,170 --> 02:34:26,160

using additional information on the

3170

02:34:32,450 --> 02:34:30,180

screen including the time axis and um so

3171

02:34:34,190 --> 02:34:32,460

we know that this aircraft is banking

3172

02:34:36,889 --> 02:34:34,200

about 15 degrees left and you can

3173

02:34:38,990 --> 02:34:36,899

compute through a simple calculator the

3174

02:34:41,870 --> 02:34:39,000

radius approximate radius of curvature

3175

02:34:43,670 --> 02:34:41,880

of the flight and you the bottom line is

3176

02:34:45,349 --> 02:34:43,680

I won't go into detail here but if you

3177

02:34:47,150 --> 02:34:45,359

can get the bearing and range to the

3178

02:34:48,889 --> 02:34:47,160

Target at two locations with known

3179

02:34:50,809 --> 02:34:48,899

separation in time you can figure out

3180

02:34:54,290 --> 02:34:50,819

how far it moved in this case this

3181

02:34:57,170 --> 02:34:54,300

object moved about 390 meters

3182

02:35:00,590 --> 02:34:57,180

um in 22 seconds and that corresponds to

3183

02:35:02,330 --> 02:35:00,600

a velocity of just 40 miles per hour

3184

02:35:05,030 --> 02:35:02,340

and so that's a velocity is consistent

3185

02:35:07,070 --> 02:35:05,040

with wind speeds at 13 000 feet

3186

02:35:09,590 --> 02:35:07,080

so it's not our task to conjecture what

3187

02:35:11,630 --> 02:35:09,600

this object is but it's an example that

3188

02:35:13,250 --> 02:35:11,640

illustrates the type of data needed to

3189

02:35:15,590 --> 02:35:13,260

determine critical parameters that will

3190

02:35:16,929 --> 02:35:15,600

help us identify such objects going

3191

02:35:18,889 --> 02:35:16,939

forward

3192

02:35:20,750 --> 02:35:18,899

in addition to the importance of

3193

02:35:22,309 --> 02:35:20,760

quantitative analysis this example also

3194

02:35:24,170 --> 02:35:22,319

serves to illustrate the kind of

3195

02:35:27,530 --> 02:35:24,180

cognitive bias we have to contend with

3196

02:35:30,950 --> 02:35:27,540

for uaps recorded from unfamiliar

3197

02:35:32,809 --> 02:35:30,960

perspectives and uh Sean Kirkpatrick

3198

02:35:36,710 --> 02:35:32,819

showed another example of that this is

3199

02:35:38,389 --> 02:35:36,720

um this is a parallax effect case

3200

02:35:40,969 --> 02:35:38,399

foreign

3201

02:35:42,590 --> 02:35:40,979

thank you

3202

02:35:44,090 --> 02:35:42,600

any questions thanks

3203

02:35:46,429 --> 02:35:44,100

um actually before we have questions

3204

02:35:48,590 --> 02:35:46,439

actually a good moment uh Sean and I

3205

02:35:51,230 --> 02:35:48,600

want to comment on his

3206

02:35:53,870 --> 02:35:51,240

one of the questions if we bring Sean up

3207

02:36:01,429 --> 02:35:53,880

and then take questions for everybody on

3208

02:36:05,210 --> 02:36:02,990

thanks that was that was actually very

3209

02:36:07,370 --> 02:36:05,220

helpful for everyone I'm sure

3210

02:36:09,110 --> 02:36:07,380

um just one piece of clarification on

3211

02:36:11,990 --> 02:36:09,120

the video that we showed the second one

3212

02:36:15,050 --> 02:36:12,000

that was the new and we released one had

3213

02:36:16,969 --> 02:36:15,060

the three uh aircraft in it the question

3214

02:36:18,950 --> 02:36:16,979

was asked about if it was a stabilized

3215

02:36:22,250 --> 02:36:18,960

background against which the Jitter was

3216

02:36:24,230 --> 02:36:22,260

showing I I am not 100 certain of that

3217

02:36:26,750 --> 02:36:24,240

answer it might just be a bunch of dust

3218

02:36:29,270 --> 02:36:26,760

on that sensor but let me go back and

3219

02:36:32,030 --> 02:36:29,280

get you a more Folsom answer it is

3220

02:36:34,250 --> 02:36:32,040

either stabilized background or it's

3221

02:36:36,590 --> 02:36:34,260

just garbage but in either event the

3222

02:36:39,530 --> 02:36:36,600

three aircraft are

3223

02:36:41,330 --> 02:36:39,540

um jittering because of the platform but

3224

02:36:42,889 --> 02:36:41,340

that's another example of exactly what

3225

02:36:45,469 --> 02:36:42,899

you're saying right it's the perception

3226

02:36:47,150 --> 02:36:45,479

of the of the operator who thinks it's

3227

02:36:50,510 --> 02:36:47,160

doing something else when it's actually

3228

02:36:52,969 --> 02:36:50,520

just your own camera

3229

02:36:55,130 --> 02:36:52,979

yeah if I could just Sean in your event

3230

02:36:57,050 --> 02:36:55,140

it seemed to me that what you mean by

3231

02:36:58,849 --> 02:36:57,060

Jitter in this case is the the plane is

3232

02:37:01,490 --> 02:36:58,859

actually making motions that are causing

3233

02:37:04,429 --> 02:37:01,500

a parallax so it's actually more than

3234

02:37:05,990 --> 02:37:04,439

that uh so the plane will move and

3235

02:37:07,130 --> 02:37:06,000

that'll cause The Parallax that you just

3236

02:37:10,550 --> 02:37:07,140

showed

3237

02:37:12,530 --> 02:37:10,560

but the sensor itself the a lot of these

3238

02:37:14,210 --> 02:37:12,540

cameras are in gimbals

3239

02:37:16,010 --> 02:37:14,220

for those of you not certain what a

3240

02:37:18,170 --> 02:37:16,020

gimbal is it's the thing that your your

3241

02:37:20,690 --> 02:37:18,180

cameras sit on your telescopes sit on it

3242

02:37:25,070 --> 02:37:20,700

moves it around in different directions

3243

02:37:26,570 --> 02:37:25,080

uh those can sometimes be stabilized in

3244

02:37:29,750 --> 02:37:26,580

which case they

3245

02:37:30,830 --> 02:37:29,760

they uh damp out the motion of the

3246

02:37:33,170 --> 02:37:30,840

platform

3247

02:37:34,730 --> 02:37:33,180

and in other cases they're not and they

3248

02:37:37,070 --> 02:37:34,740

they jump around and so what you're

3249

02:37:40,070 --> 02:37:37,080

actually seeing in that video is what we

3250

02:37:42,590 --> 02:37:40,080

call Jitter of the sensor against the

3251
02:37:44,210 --> 02:37:42,600
platform so the platform's moving and

3252
02:37:47,690 --> 02:37:44,220
the sensor is moving it's not as

3253
02:37:50,030 --> 02:37:47,700
stabilized against the target but the

3254
02:37:52,370 --> 02:37:50,040
once it's collected sometimes in

3255
02:37:54,170 --> 02:37:52,380
processing the background is stabilized

3256
02:37:59,030 --> 02:37:54,180
frame to frame just like some of those

3257
02:38:02,809 --> 02:38:00,830
yeah I just wanted to jump in here I

3258
02:38:05,929 --> 02:38:02,819
think uh make a couple of comments to

3259
02:38:10,550 --> 02:38:05,939
just follow up on what uh Josh said in

3260
02:38:13,550 --> 02:38:10,560
my experience of flying you know over 15

3261
02:38:16,070 --> 02:38:13,560
000 hours 30 something years in

3262
02:38:19,370 --> 02:38:16,080
airplanes and and both in space

3263
02:38:22,130 --> 02:38:19,380

and the environment that we fly in space

3264

02:38:25,550 --> 02:38:22,140

or you know an atmospheric flight very

3265

02:38:28,610 --> 02:38:25,560

very conducive to optical illusions so I

3266

02:38:30,590 --> 02:38:28,620

get why these Pilots would look at that

3267

02:38:32,929 --> 02:38:30,600

go fast video and think it was going

3268

02:38:34,730 --> 02:38:32,939

really really fast

3269

02:38:36,770 --> 02:38:34,740

um I remember one time I was flying in

3270

02:38:39,590 --> 02:38:36,780

the warning areas off of Virginia Beach

3271

02:38:41,270 --> 02:38:39,600

Military operating area there and my Rio

3272

02:38:44,510 --> 02:38:41,280

thought the guy that sits in the back of

3273

02:38:45,830 --> 02:38:44,520

the Tomcat was convinced we flew by a

3274

02:38:48,530 --> 02:38:45,840

UFO

3275

02:38:51,530 --> 02:38:48,540

so I didn't see it we turned around we

3276

02:38:56,150 --> 02:38:51,540

went to go look at it it turns out it

3277

02:39:00,590 --> 02:38:58,790

you know oftentimes in space I would see

3278

02:39:03,590 --> 02:39:00,600

things and I was like oh that's really

3279

02:39:06,230 --> 02:39:03,600

not behaving like it should it's not it

3280

02:39:07,969 --> 02:39:06,240

doesn't have a trajectory of a satellite

3281

02:39:11,270 --> 02:39:07,979

or a planet on the back of the star

3282

02:39:13,550 --> 02:39:11,280

field and every single time when I would

3283

02:39:16,910 --> 02:39:13,560

look at it long enough I would realize

3284

02:39:18,830 --> 02:39:16,920

that it was atmospheric lensing it was

3285

02:39:20,690 --> 02:39:18,840

the fact that what what I was looking at

3286

02:39:22,730 --> 02:39:20,700

was actually flying behind the

3287

02:39:24,710 --> 02:39:22,740

atmosphere and because of variations in

3288

02:39:26,150 --> 02:39:24,720

the atmosphere it made the trajectory

3289

02:39:27,830 --> 02:39:26,160

look like it wasn't going in a straight

3290

02:39:29,510 --> 02:39:27,840

line it was going like this and they'd

3291

02:39:32,090 --> 02:39:29,520

go like that and it would turn in the

3292

02:39:33,050 --> 02:39:32,100

other direction always was always the

3293

02:39:37,550 --> 02:39:33,060

case

3294

02:39:41,090 --> 02:39:37,560

my brother uh Mark Kelly a former NASA

3295

02:39:44,270 --> 02:39:41,100

astronaut and uh also now a U.S senator

3296

02:39:45,710 --> 02:39:44,280

I was with him for dinner last night he

3297

02:39:47,990 --> 02:39:45,720

shared a story

3298

02:39:49,910 --> 02:39:48,000

with me again that he had shared years

3299

02:39:52,250 --> 02:39:49,920

ago but I had kind of forgotten about it

3300

02:39:55,150 --> 02:39:52,260

and I think it's worth sharing and that

3301

02:39:58,730 --> 02:39:55,160

that is when he was the commander of SDS

3302

02:40:00,170 --> 02:39:58,740

124 I think it was in 2008. they were

3303

02:40:02,090 --> 02:40:00,180

getting ready to close the payload bay

3304

02:40:05,090 --> 02:40:02,100

doors of the Space Shuttle

3305

02:40:07,250 --> 02:40:05,100

and before they do that you got to make

3306

02:40:08,570 --> 02:40:07,260

sure nothing interferes with the doors

3307

02:40:10,490 --> 02:40:08,580

because if the doors don't close

3308

02:40:12,110 --> 02:40:10,500

properly the space shuttle can't

3309

02:40:13,730 --> 02:40:12,120

re-enter the atmosphere it would come

3310

02:40:16,490 --> 02:40:13,740

apart it's part of the structural

3311

02:40:18,770 --> 02:40:16,500

Integrity of the vehicle so they see

3312

02:40:21,710 --> 02:40:18,780

something in the payload Bay and they

3313

02:40:23,870 --> 02:40:21,720

thought it was a tool maybe a bolt they

3314

02:40:25,670 --> 02:40:23,880

couldn't quite figure it out they were

3315

02:40:28,550 --> 02:40:25,680

potentially going to have to go and do a

3316

02:40:30,410 --> 02:40:28,560

spacewalk to retrieve it

3317

02:40:32,090 --> 02:40:30,420

but before they did that my brother

3318

02:40:34,250 --> 02:40:32,100

grabbed the camera they took a picture

3319

02:40:38,809 --> 02:40:34,260

of it and when they blew up the picture

3320

02:40:41,150 --> 02:40:38,819

they realized that this is not a bolt or

3321

02:40:42,950 --> 02:40:41,160

a tool in the payload Bay it was

3322

02:40:45,290 --> 02:40:42,960

actually the International Space Station

3323

02:40:48,050 --> 02:40:45,300

that was 80 miles away

3324

02:40:51,469 --> 02:40:48,060

I mean that's just a really good example

3325

02:40:53,630 --> 02:40:51,479

of how this environment we operate in is

3326

02:40:55,849 --> 02:40:53,640

so so conducive topic optical illusions

3327

02:40:57,830 --> 02:40:55,859

oftentimes guys fly into the water and

3328

02:41:00,110 --> 02:40:57,840

there are cases where you know Pilots

3329

02:41:02,330 --> 02:41:00,120

have rendezvoused on a buoy because they

3330

02:41:04,309 --> 02:41:02,340

thought that was their wingman it's just

3331

02:41:05,870 --> 02:41:04,319

very very

3332

02:41:08,210 --> 02:41:05,880

um challenging environment to work and

3333

02:41:10,670 --> 02:41:08,220

especially at night and

3334

02:41:13,309 --> 02:41:10,680

in my experience the sensors kind of

3335

02:41:19,610 --> 02:41:13,319

have the same issues as the you know the

3336

02:41:23,270 --> 02:41:21,950

so per what Scott just said I think we

3337

02:41:25,610 --> 02:41:23,280

need to take it as an action to

3338

02:41:29,510 --> 02:41:25,620

investigate unidentified animated

3339

02:41:32,210 --> 02:41:29,520

phenomena to go after Bart Simpson I I

3340

02:41:35,090 --> 02:41:32,220

think what Josh and Scott said is very

3341

02:41:37,429 --> 02:41:35,100

very helpful and shows why we need

3342

02:41:39,590 --> 02:41:37,439

multiple sources of data

3343

02:41:42,110 --> 02:41:39,600

were their radar hits were there other

3344

02:41:44,389 --> 02:41:42,120

sightings unless we can look at this

3345

02:41:47,929 --> 02:41:44,399

from a holistic perspective it's very

3346

02:41:49,730 --> 02:41:47,939

difficult to draw conclusions and

3347

02:41:52,190 --> 02:41:49,740

relative to stigma I appreciate the

3348

02:41:53,570 --> 02:41:52,200

reports that our colleagues gave I think

3349

02:41:55,130 --> 02:41:53,580

there's plenty of stigma right here in

3350

02:41:58,550 --> 02:41:55,140

this building and I'm sure Dan you

3351

02:42:00,469 --> 02:41:58,560

suffered from it at times and I just

3352

02:42:02,990 --> 02:42:00,479

want to commend administrator although

3353

02:42:05,090 --> 02:42:03,000

who's always be Senator Nelson to me for

3354

02:42:08,030 --> 02:42:05,100

his leadership and candidly courage and

3355

02:42:11,030 --> 02:42:08,040

getting an asset to tackle this issue

3356

02:42:12,889 --> 02:42:11,040

and as we look at what Sean had

3357

02:42:15,770 --> 02:42:12,899

articulated that what he wants NASA to

3358

02:42:17,690 --> 02:42:15,780

do as we look at the recommendations for

3359

02:42:20,510 --> 02:42:17,700

reporting and how we need to collate

3360

02:42:22,429 --> 02:42:20,520

that reporting I'm very concerned that

3361

02:42:26,330 --> 02:42:22,439

this could be effectively done on an ad

3362

02:42:30,469 --> 02:42:26,340

hoc basis and I've been a part of far

3363

02:42:33,230 --> 02:42:30,479

too many panels and studies that end up

3364

02:42:35,870 --> 02:42:33,240

sitting on the shelf I don't want this

3365

02:42:37,849 --> 02:42:35,880

to be one of those exercises and we can

3366

02:42:40,790 --> 02:42:37,859

discuss this further but I would call

3367

02:42:43,790 --> 02:42:40,800

for and recommend a permanent office

3368

02:42:46,370 --> 02:42:43,800

within NASA to support this activity

3369

02:42:47,990 --> 02:42:46,380

albeit likely a modest one but to

3370

02:42:51,170 --> 02:42:48,000

collate this information collate that

3371

02:42:54,230 --> 02:42:51,180

data to Archive the information and act

3372

02:42:57,710 --> 02:42:54,240

as the open forward-facing counterpart

3373

02:42:59,389 --> 02:42:57,720

to Sean and aaro I think then we could

3374

02:43:01,910 --> 02:42:59,399

continue and actually accomplish the

3375

02:43:04,010 --> 02:43:01,920

reporting the stigma issues that have

3376

02:43:07,670 --> 02:43:04,020

been raised and we could do so in a

3377

02:43:09,650 --> 02:43:07,680

relatively affordable fashion because

3378

02:43:14,210 --> 02:43:09,660

again I don't want all of our work to

3379

02:43:18,349 --> 02:43:15,590

so now

3380

02:43:20,210 --> 02:43:18,359

Jen's going to turn to our charge

3381

02:43:26,870 --> 02:43:20,220

and

3382

02:43:29,330 --> 02:43:26,880

convened with a set of questions that we

3383

02:43:31,730 --> 02:43:29,340

were charged to address we've been

3384

02:43:33,650 --> 02:43:31,740

addressing them through the topics we've

3385

02:43:35,750 --> 02:43:33,660

talked about and through things as we've

3386

02:43:37,790 --> 02:43:35,760

been thinking this through but we're

3387

02:43:40,010 --> 02:43:37,800

going to organize the next part of the

3388

02:43:42,410 --> 02:43:40,020

discussion with Jen presenting these

3389

02:43:44,510 --> 02:43:42,420

things and this is also a chance to get

3390

02:43:47,389 --> 02:43:44,520

into some of the discussion phase

3391

02:43:50,630 --> 02:43:47,399

because we can look at each of these

3392

02:43:52,910 --> 02:43:50,640

questions as the topics that we make we

3393

02:43:55,309 --> 02:43:52,920

want to make sure we address as part of

3394

02:43:57,770 --> 02:43:55,319

the report Jen

3395

02:44:01,010 --> 02:43:57,780

thanks David and I want to thank the

3396

02:44:02,510 --> 02:44:01,020

panelists all for all of your work all

3397

02:44:05,570 --> 02:44:02,520

of the knowledge that I've gained from

3398

02:44:08,690 --> 02:44:05,580

from each of you through this time I

3399

02:44:11,270 --> 02:44:08,700

took it upon myself in preparing for

3400

02:44:14,389 --> 02:44:11,280

today's meeting to draft a statement

3401

02:44:18,830 --> 02:44:14,399

that answers the eight questions that we

3402

02:44:22,070 --> 02:44:18,840

were provided at the beginning of the

3403

02:44:23,690 --> 02:44:22,080

uh last summer when the panel was was

3404

02:44:26,090 --> 02:44:23,700

created so I'm going to read the

3405

02:44:28,910 --> 02:44:26,100

question out loud I'm going to read my

3406

02:44:30,530 --> 02:44:28,920

statement and I'm going to pause let you

3407

02:44:32,510 --> 02:44:30,540

think and reflect and if there's

3408

02:44:34,010 --> 02:44:32,520

remember this isn't all of the details

3409

02:44:36,349 --> 02:44:34,020

associated with each of these answers

3410

02:44:38,030 --> 02:44:36,359

right this is to be a kind of high level

3411

02:44:39,230 --> 02:44:38,040

make sure we've got the major points

3412

02:44:42,590 --> 02:44:39,240

there

3413

02:44:44,510 --> 02:44:42,600

um and and this is an initial take for

3414

02:44:47,750 --> 02:44:44,520

for these answers

3415

02:44:50,510 --> 02:44:47,760

so the first question goes what types of

3416

02:44:53,630 --> 02:44:50,520

scientific data currently collected and

3417

02:44:55,910 --> 02:44:53,640

archived by NASA or other civilian

3418

02:44:59,809 --> 02:44:55,920

government entities should be

3419

02:45:02,330 --> 02:44:59,819

synthesized and analyzed prior to

3420

02:45:04,250 --> 02:45:02,340

potentially shed light on the nature and

3421

02:45:07,490 --> 02:45:04,260

origins of UAP

3422

02:45:11,150 --> 02:45:07,500

so the panel reviewed data sources

3423

02:45:15,170 --> 02:45:11,160

analytic tools data architectures from

3424

02:45:15,710 --> 02:45:15,180

NASA NOAA FAA Commerce and others

3425

02:45:19,969 --> 02:45:15,720

um

3426

02:45:22,309 --> 02:45:19,979

the data that we recognize were not

3427

02:45:23,389 --> 02:45:22,319

collected for the purpose of identifying

3428

02:45:25,550 --> 02:45:23,399

UAP

3429

02:45:28,250 --> 02:45:25,560

which leaves bias in the data that was

3430

02:45:30,469 --> 02:45:28,260

collected even though there is an

3431

02:45:33,349 --> 02:45:30,479

immense amount of data available it is

3432

02:45:36,070 --> 02:45:33,359

hard to access and the sensors that were

3433

02:45:42,650 --> 02:45:36,080

used were not well calibrated for

3434

02:45:47,650 --> 02:45:45,110

no questions moving forward question

3435

02:45:50,990 --> 02:45:47,660

number two I kind of feel like Jeopardy

3436

02:45:53,090 --> 02:45:51,000

what what types of scientific data

3437

02:45:56,150 --> 02:45:53,100

currently collected and held by

3438

02:45:58,190 --> 02:45:56,160

non-profits and companies should be

3439

02:46:00,290 --> 02:45:58,200

synthesized and analyzed to potentially

3440

02:46:02,450 --> 02:46:00,300

shed light on the nature and origins of

3441

02:46:05,389 --> 02:46:02,460

UAP

3442

02:46:07,969 --> 02:46:05,399

many organizations exist to track

3443

02:46:09,830 --> 02:46:07,979

sightings of anomalous phenomena in the

3444

02:46:13,490 --> 02:46:09,840

Earth's atmosphere

3445

02:46:15,410 --> 02:46:13,500

both non-profit for-profit and otherwise

3446

02:46:16,969 --> 02:46:15,420

the study panel concluded that much of

3447

02:46:18,650 --> 02:46:16,979

the inputs collected by these

3448

02:46:22,130 --> 02:46:18,660

organizations are not considered

3449

02:46:24,469 --> 02:46:22,140

scientific data in nature and that they

3450

02:46:27,410 --> 02:46:24,479

do not contain unbiased information

3451

02:46:30,530 --> 02:46:27,420

they're not repeatable and they

3452

02:46:33,170 --> 02:46:30,540

typically come with eyewitness accounts

3453

02:46:34,910 --> 02:46:33,180

which we've heard even today that

3454

02:46:37,309 --> 02:46:34,920

there's uh

3455

02:46:42,710 --> 02:46:37,319

hesitations with using only eyewitness

3456

02:46:47,510 --> 02:46:45,650

um to the point about commercial or

3457

02:46:50,809 --> 02:46:47,520

companies there are a lot of space

3458

02:46:54,050 --> 02:46:50,819

companies that some lobbied hard to get

3459

02:46:55,969 --> 02:46:54,060

in to present to us they have trolls of

3460

02:46:57,770 --> 02:46:55,979

data but they're collected for a variety

3461

02:47:00,290 --> 02:46:57,780

of different purposes than the purpose

3462

02:47:02,570 --> 02:47:00,300

of UAP and those systems while they are

3463

02:47:05,809 --> 02:47:02,580

well calibrated are only one source of

3464

02:47:06,469 --> 02:47:05,819

many that could be used

3465

02:47:09,889 --> 02:47:06,479

um

3466

02:47:12,170 --> 02:47:09,899

questions comments concerns yes Carlin

3467

02:47:12,889 --> 02:47:12,180

I'll bite on that one Jen

3468

02:47:16,730 --> 02:47:12,899

um

3469

02:47:19,490 --> 02:47:16,740

you know I I think your answer is

3470

02:47:21,830 --> 02:47:19,500

correct as to what we've seen but where

3471

02:47:23,870 --> 02:47:21,840

I would go is if we made a

3472

02:47:25,969 --> 02:47:23,880

recommendation to NASA that you know

3473

02:47:29,630 --> 02:47:25,979

we're really asking them to build a

3474

02:47:32,270 --> 02:47:29,640

roadmap and we haven't done a robust

3475

02:47:34,309 --> 02:47:32,280

catalog and we've looked at sources

3476

02:47:37,130 --> 02:47:34,319

mentioned sources that we think might be

3477

02:47:39,290 --> 02:47:37,140

relevant but perhaps a more robust

3478

02:47:41,030 --> 02:47:39,300

effort cataloging would be a good modest

3479

02:47:44,750 --> 02:47:41,040

start yeah

3480

02:47:46,250 --> 02:47:44,760

that's good I I will only in slight

3481

02:47:48,230 --> 02:47:46,260

defense of trying to answer the exact

3482

02:47:50,030 --> 02:47:48,240

question as opposed to the panel rather

3483

02:47:52,309 --> 02:47:50,040

than trying to add recommendations at

3484

02:47:54,770 --> 02:47:52,319

this point but yes Point well taken

3485

02:47:56,750 --> 02:47:54,780

thank you yeah I mean I think one of the

3486

02:47:59,090 --> 02:47:56,760

data sets so we just learned about you

3487

02:48:00,650 --> 02:47:59,100

know heard more about today and thinking

3488

02:48:04,309 --> 02:48:00,660

about sort of calibrating things is the

3489

02:48:06,110 --> 02:48:04,319

FAA data on a normal you know tracking

3490

02:48:09,650 --> 02:48:06,120

events right and I think this is

3491

02:48:12,290 --> 02:48:09,660

something where if we had you know

3492

02:48:14,690 --> 02:48:12,300

some imaging software people you know

3493

02:48:17,870 --> 02:48:14,700

sell citizen scientists with cell phone

3494

02:48:20,630 --> 02:48:17,880

cameras Identify some event that looks

3495

02:48:24,290 --> 02:48:20,640

interesting one of the places you'd like

3496

02:48:26,090 --> 02:48:24,300

to be able to turn is the FAA data and

3497

02:48:28,130 --> 02:48:26,100

having

3498

02:48:30,490 --> 02:48:28,140

um you know if there is to go back to

3499

02:48:33,590 --> 02:48:30,500

you know having a NASA

3500

02:48:34,670 --> 02:48:33,600

responsibility for data NASA makes you

3501

02:48:37,490 --> 02:48:34,680

know

3502

02:48:38,690 --> 02:48:37,500

has a lot of experience in serving as a

3503

02:48:41,690 --> 02:48:38,700

Clearing House

3504

02:48:43,550 --> 02:48:41,700

for data from across the government for

3505

02:48:45,830 --> 02:48:43,560

civilian data right this is something we

3506

02:48:47,630 --> 02:48:45,840

do in lots of different areas and I I

3507

02:48:49,790 --> 02:48:47,640

think there are some opportunities with

3508

02:48:51,770 --> 02:48:49,800

data sets there and I think the the

3509

02:48:54,050 --> 02:48:51,780

radar data is one that comes to mind is

3510

02:48:57,110 --> 02:48:54,060

one we don't want to forget about as an

3511

02:48:59,570 --> 02:48:57,120

available data center yeah absolutely

3512

02:49:02,090 --> 02:48:59,580

um question three I think goes more

3513

02:49:04,250 --> 02:49:02,100

towards the recommendations of what

3514

02:49:07,849 --> 02:49:04,260

other types of scientific data should be

3515

02:49:09,230 --> 02:49:07,859

collected by NASA to enhance the

3516

02:49:11,210 --> 02:49:09,240

potential for developing an

3517

02:49:13,730 --> 02:49:11,220

understanding of the nature and origins

3518

02:49:14,929 --> 02:49:13,740

of UAP so we've heard now from two of

3519

02:49:18,230 --> 02:49:14,939

the panelists on some of the information

3520

02:49:19,849 --> 02:49:18,240

that should be collected or the way that

3521

02:49:21,650 --> 02:49:19,859

some of that data should be organized in

3522

02:49:25,130 --> 02:49:21,660

a manner to make it available for people

3523

02:49:28,070 --> 02:49:25,140

to analyze that information

3524

02:49:28,990 --> 02:49:28,080

um and the only other thoughts that I

3525

02:49:33,170 --> 02:49:29,000

had

3526

02:49:35,330 --> 02:49:33,180

here was was really recognizing the

3527

02:49:38,690 --> 02:49:35,340

difference in

3528

02:49:41,389 --> 02:49:38,700

um the sensor thresholds right so we

3529

02:49:43,490 --> 02:49:41,399

can't always tune a sensor all the way

3530

02:49:45,050 --> 02:49:43,500

to the resolution that we might need or

3531

02:49:47,389 --> 02:49:45,060

we might want

3532

02:49:49,130 --> 02:49:47,399

um and and as we collect that data to

3533

02:49:50,210 --> 02:49:49,140

recognize for the scientists that are

3534

02:49:52,670 --> 02:49:50,220

doing

3535

02:49:54,410 --> 02:49:52,680

um those analyzes the bounds of each of

3536

02:49:57,170 --> 02:49:54,420

the systems that they're that they're

3537

02:50:02,330 --> 02:49:59,450

yeah

3538

02:50:05,090 --> 02:50:02,340

what strikes me on that one when you

3539

02:50:06,770 --> 02:50:05,100

were reading the the answer the proposed

3540

02:50:07,370 --> 02:50:06,780

answer was

3541

02:50:11,450 --> 02:50:07,380

um

3542

02:50:14,809 --> 02:50:11,460

what may be new maybe something that's

3543

02:50:17,809 --> 02:50:14,819

new to NASA in the sense of like a Time

3544

02:50:20,330 --> 02:50:17,819

series so we can know what's normal so

3545

02:50:23,570 --> 02:50:20,340

we can perhaps identify what's not

3546

02:50:25,610 --> 02:50:23,580

normal or anomalous right so I'm not

3547

02:50:28,309 --> 02:50:25,620

sure to what extent

3548

02:50:29,929 --> 02:50:28,319

um it's like the most unsexy thing to

3549

02:50:31,849 --> 02:50:29,939

sell on the face of the planet right is

3550

02:50:34,250 --> 02:50:31,859

making consistent long-term observations

3551
02:50:36,530 --> 02:50:34,260
but I think that the agency may be set

3552
02:50:39,230 --> 02:50:36,540
up to do just that for multiple reasons

3553
02:50:41,570 --> 02:50:39,240
right yeah persistent yeah data

3554
02:50:42,590 --> 02:50:41,580
collection the agency does that in a lot

3555
02:50:44,990 --> 02:50:42,600
of cases for us through physical

3556
02:50:46,910 --> 02:50:45,000
purposes so the infrastructure of course

3557
02:50:47,809 --> 02:50:46,920
you know pointing up and pointing at a

3558
02:50:50,150 --> 02:50:47,819
different distance but the

3559
02:50:52,370 --> 02:50:50,160
infrastructure for collecting this kind

3560
02:50:55,790 --> 02:50:52,380
of data organizing and keeping it and

3561
02:50:57,410 --> 02:50:55,800
that does exist yeah and there are

3562
02:50:59,570 --> 02:50:57,420
in their defense a lot of satellite

3563
02:51:05,030 --> 02:50:59,580

companies that are doing that persistent

3564

02:51:10,969 --> 02:51:07,969

question for which scientific analysis

3565

02:51:12,830 --> 02:51:10,979

techniques currently in production could

3566

02:51:16,130 --> 02:51:12,840

be employed to assess the nature and

3567

02:51:18,110 --> 02:51:16,140

origins of UAP which types of analysis

3568

02:51:22,010 --> 02:51:18,120

techniques should be developed so this

3569

02:51:24,830 --> 02:51:22,020

is a two-part with what exists today and

3570

02:51:26,230 --> 02:51:24,840

what should be so we're looking also at

3571

02:51:29,150 --> 02:51:26,240

recommendations

3572

02:51:31,550 --> 02:51:29,160

based on the information provided by the

3573

02:51:33,349 --> 02:51:31,560

presenters to the panel there are very

3574

02:51:35,290 --> 02:51:33,359

few credible analysis technique

3575

02:51:37,630 --> 02:51:35,300

techniques available

3576

02:51:41,330 --> 02:51:37,640

that currently exist

3577

02:51:43,550 --> 02:51:41,340

to assess the nature and origins of UAP

3578

02:51:45,410 --> 02:51:43,560

the onset of artificial intelligence and

3579

02:51:48,530 --> 02:51:45,420

automated analysis techniques give

3580

02:51:50,570 --> 02:51:48,540

promise to being able to do that in the

3581

02:51:52,429 --> 02:51:50,580

future

3582

02:51:54,349 --> 02:51:52,439

um I wanted to add something to that

3583

02:51:56,870 --> 02:51:54,359

perhaps which is that really to design

3584

02:51:59,150 --> 02:51:56,880

the analysis you need to know what the

3585

02:52:00,950 --> 02:51:59,160

data looks like right so

3586

02:52:03,830 --> 02:52:00,960

um you know we can't really say what

3587

02:52:05,090 --> 02:52:03,840

kind of analysis should be uh created on

3588

02:52:07,250 --> 02:52:05,100

the hypothetical data that we're

3589

02:52:09,830 --> 02:52:07,260

recommending should be collected in a in

3590

02:52:12,110 --> 02:52:09,840

a in some you know somewhat specified

3591

02:52:14,450 --> 02:52:12,120

fashion if it's all hypothetical and we

3592

02:52:16,429 --> 02:52:14,460

want to collect all of this data and we

3593

02:52:18,170 --> 02:52:16,439

know what format it's going to be in we

3594

02:52:20,150 --> 02:52:18,180

can design analysis techniques around it

3595

02:52:22,190 --> 02:52:20,160

and at that point it's likely that there

3596

02:52:24,290 --> 02:52:22,200

are analysis techniques that are that

3597

02:52:26,990 --> 02:52:24,300

already exist absolutely lots of anomaly

3598

02:52:28,969 --> 02:52:27,000

detection work we just don't know which

3599

02:52:31,010 --> 02:52:28,979

one will be more suitable because the

3600

02:52:32,269 --> 02:52:31,020

data as it should be it doesn't exist

3601

02:52:33,769 --> 02:52:32,279

yet correct

3602

02:52:35,330 --> 02:52:33,779

you said exactly what I was going to say

3603

02:52:36,889 --> 02:52:35,340

yeah and that that's what I was getting

3604

02:52:38,750 --> 02:52:36,899

at with my point not that those analysis

3605

02:52:40,490 --> 02:52:38,760

techniques don't exist in the scientific

3606

02:52:41,929 --> 02:52:40,500

Community just that they're not being

3607

02:52:44,150 --> 02:52:41,939

applied to this problem set right now

3608

02:52:47,750 --> 02:52:44,160

and it's hard to apply them when we

3609

02:52:50,570 --> 02:52:47,760

don't have the the known data of what

3610

02:52:52,130 --> 02:52:50,580

would go into those David yeah I I think

3611

02:52:54,650 --> 02:52:52,140

something we want to stress here is the

3612

02:52:56,750 --> 02:52:54,660

importance of uniform data yes and the

3613

02:52:59,210 --> 02:52:56,760

way it's collected because particularly

3614

02:53:01,490 --> 02:52:59,220

when you're looking for outliers if you

3615

02:53:03,889 --> 02:53:01,500

have data coming from many different

3616

02:53:06,530 --> 02:53:03,899

observing techniques right and just

3617

02:53:08,750 --> 02:53:06,540

having a uniform set of cameras a

3618

02:53:10,849 --> 02:53:08,760

uniform set of detectors so you

3619

02:53:12,710 --> 02:53:10,859

understand and characterize them right

3620

02:53:15,889 --> 02:53:12,720

because this is a a needle in the

3621

02:53:18,769 --> 02:53:15,899

haystack problem and you know every

3622

02:53:22,250 --> 02:53:18,779

camera I mean I'd mentioned in the uh

3623

02:53:24,290 --> 02:53:22,260

opening session ghosting in Optics yes

3624

02:53:25,670 --> 02:53:24,300

now that's going to be different in

3625

02:53:27,530 --> 02:53:25,680

every different detector everything

3626

02:53:29,750 --> 02:53:27,540

right and you

3627

02:53:31,250 --> 02:53:29,760

um before we get to the analysis

3628

02:53:34,429 --> 02:53:31,260

techniques we want to make sure we

3629

02:53:36,349 --> 02:53:34,439

design the data collection so that the

3630

02:53:38,630 --> 02:53:36,359

analysis techniques can effectively be

3631

02:53:42,830 --> 02:53:38,640

used on it right David can I take a

3632

02:53:47,630 --> 02:53:44,510

it sounds like you're implying that you

3633

02:53:49,190 --> 02:53:47,640

need a single way of collecting the data

3634

02:53:51,050 --> 02:53:49,200

I'd argue it's really you need to

3635

02:53:52,429 --> 02:53:51,060

understand the various ways in which

3636

02:53:55,190 --> 02:53:52,439

you're collecting the data and you're

3637

02:53:56,570 --> 02:53:55,200

able to cross calibrate across those

3638

02:53:58,550 --> 02:53:56,580

different approaches

3639

02:54:01,610 --> 02:53:58,560

uh because I seriously doubt that there

3640

02:54:04,429 --> 02:54:01,620

is a single detector

3641

02:54:06,950 --> 02:54:04,439

I I think a handful of ways though that

3642

02:54:08,809 --> 02:54:06,960

you're yeah I'm well characterized

3643

02:54:11,210 --> 02:54:08,819

things things need to be well

3644

02:54:13,969 --> 02:54:11,220

characterized to be useful I guess is

3645

02:54:16,309 --> 02:54:13,979

the way I would state it and uh it takes

3646

02:54:18,110 --> 02:54:16,319

time and energy to well characterize

3647

02:54:19,540 --> 02:54:18,120

things so that that's that's I think the

3648

02:54:22,250 --> 02:54:19,550

challenge

3649

02:54:23,990 --> 02:54:22,260

[Music]

3650

02:54:25,849 --> 02:54:24,000

it's where we can actually apply

3651
02:54:27,769 --> 02:54:25,859
artificial intelligence so we cannot

3652
02:54:30,230 --> 02:54:27,779
apply Artificial Intelligence on the

3653
02:54:33,250 --> 02:54:30,240
current data but we can apply artificial

3654
02:54:35,630 --> 02:54:33,260
intelligence in a way that we can design

3655
02:54:37,969 --> 02:54:35,640
characteristics for the data that we

3656
02:54:40,630 --> 02:54:37,979
need and how we can collect the data

3657
02:54:42,769 --> 02:54:40,640
that we need so

3658
02:54:44,269 --> 02:54:42,779
this is probably more of a frustration

3659
02:54:46,910 --> 02:54:44,279
than anything else so I don't know how

3660
02:54:48,950 --> 02:54:46,920
helpful it'll be but I think we're not

3661
02:54:51,110 --> 02:54:48,960
looking for a needle in Haystack we're

3662
02:54:52,190 --> 02:54:51,120
looking for anomaly in Haystack we don't

3663
02:54:55,429 --> 02:54:52,200

even know that we're looking for a

3664

02:54:56,290 --> 02:54:55,439

needle that it's just a discolored piece

3665

02:54:58,550 --> 02:54:56,300

of hay

3666

02:55:00,290 --> 02:54:58,560

I'm from Montana so I love good hay

3667

02:55:02,570 --> 02:55:00,300

analogy

3668

02:55:03,889 --> 02:55:02,580

I don't know what the phenomenology is

3669

02:55:06,410 --> 02:55:03,899

that we're looking for

3670

02:55:08,150 --> 02:55:06,420

we say Anonymous again in this question

3671

02:55:10,190 --> 02:55:08,160

earlier what does that mean anomalous

3672

02:55:12,410 --> 02:55:10,200

acceleration like I think as we try to

3673

02:55:14,809 --> 02:55:12,420

look at the data we're starting from an

3674

02:55:16,730 --> 02:55:14,819

almost impossible position when if we

3675

02:55:18,910 --> 02:55:16,740

don't know what we're looking for is it

3676

02:55:20,870 --> 02:55:18,920

a radiation signature is it something

3677

02:55:23,450 --> 02:55:20,880

electromagnetic is it something like

3678

02:55:25,490 --> 02:55:23,460

that is why this is so challenging and

3679

02:55:27,650 --> 02:55:25,500

frustrating to me that we're talking

3680

02:55:29,210 --> 02:55:27,660

about monitoring something that we don't

3681

02:55:32,090 --> 02:55:29,220

even know what we're supposed to Monitor

3682

02:55:34,990 --> 02:55:32,100

and let me just offer Josh before you

3683

02:55:37,389 --> 02:55:35,000

jump in the the scientific process of

3684

02:55:41,809 --> 02:55:37,399

hypothesis-driven research

3685

02:55:44,150 --> 02:55:41,819

of that while we don't know all of the

3686

02:55:47,030 --> 02:55:44,160

possible outcomes in the entire world we

3687

02:55:50,809 --> 02:55:47,040

can ask very specific questions and go

3688

02:55:53,510 --> 02:55:50,819

about it in a very scientific process to

3689

02:55:55,610 --> 02:55:53,520

understand so you're right we don't know

3690

02:55:58,429 --> 02:55:55,620

exactly what we're looking for but we

3691

02:56:02,630 --> 02:55:58,439

know hot spots as we've seen from both

3692

02:56:04,370 --> 02:56:02,640

FAA and arrow we do know some of those

3693

02:56:06,650 --> 02:56:04,380

conditions that we might be looking for

3694

02:56:09,410 --> 02:56:06,660

so if you start with with kind of what

3695

02:56:11,630 --> 02:56:09,420

you know or places to start to go and

3696

02:56:14,030 --> 02:56:11,640

look and you start with the data that we

3697

02:56:17,030 --> 02:56:14,040

have available to us

3698

02:56:19,190 --> 02:56:17,040

we might start being able to untangle

3699

02:56:21,050 --> 02:56:19,200

the chicken and egg problem

3700

02:56:23,990 --> 02:56:21,060

Ken what is the phenomena that we're

3701

02:56:29,210 --> 02:56:26,469

so we've heard them from Sean

3702

02:56:30,769 --> 02:56:29,220

I would pull up Sean's chart but I can't

3703

02:56:32,630 --> 02:56:30,779

quickly do that

3704

02:56:34,790 --> 02:56:32,640

um of the criteria that he said on the

3705

02:56:38,269 --> 02:56:34,800

trends I use word criteria he said

3706

02:56:40,070 --> 02:56:38,279

trends of six or seven

3707

02:56:44,929 --> 02:56:40,080

um

3708

02:56:48,230 --> 02:56:44,939

uh phenomena I guess of specific size or

3709

02:56:49,429 --> 02:56:48,240

within a specific motion range and it's

3710

02:56:51,170 --> 02:56:49,439

something

3711

02:56:53,750 --> 02:56:51,180

different than what we've seen before

3712

02:56:55,250 --> 02:56:53,760

something we don't recognize

3713

02:56:57,230 --> 02:56:55,260

and so when you go to look for something

3714

02:57:00,710 --> 02:56:57,240

that you don't recognize

3715

02:57:02,809 --> 02:57:00,720

it it can be pretty easy and that we've

3716

02:57:04,809 --> 02:57:02,819

fooled ourselves today and even watching

3717

02:57:07,190 --> 02:57:04,819

some of these videos of what's going on

3718

02:57:09,950 --> 02:57:07,200

but when you're able to corroborate that

3719

02:57:11,750 --> 02:57:09,960

with three or four other sources it

3720

02:57:13,550 --> 02:57:11,760

starts to make sense

3721

02:57:16,190 --> 02:57:13,560

right so something that looks like magic

3722

02:57:17,950 --> 02:57:16,200

to the naked eye or to that camera in

3723

02:57:20,990 --> 02:57:17,960

that sensor

3724

02:57:22,849 --> 02:57:21,000

isn't once you understand all of the

3725

02:57:24,650 --> 02:57:22,859

effects of what was going on in the

3726

02:57:26,870 --> 02:57:24,660

surrounding environment

3727

02:57:28,070 --> 02:57:26,880

it's a good question can we um because I

3728

02:57:31,490 --> 02:57:28,080

got the same frustration you do right

3729

02:57:33,290 --> 02:57:31,500

it's it's regardless of um what you're

3730

02:57:34,790 --> 02:57:33,300

looking for if you don't know what it is

3731

02:57:36,830 --> 02:57:34,800

whether you're using AI or match

3732

02:57:38,330 --> 02:57:36,840

filtering techniques you can't find it

3733

02:57:40,130 --> 02:57:38,340

right you can't find it so because the

3734

02:57:42,170 --> 02:57:40,140

question I have is can we use social

3735

02:57:43,429 --> 02:57:42,180

media that kind of thing as a way of

3736

02:57:44,450 --> 02:57:43,439

cueing

3737

02:57:45,889 --> 02:57:44,460

um to know where something's happening

3738

02:57:47,690 --> 02:57:45,899

because we know Google searches can lead

3739

02:57:49,490 --> 02:57:47,700

you to better understand where outbreaks

3740

02:57:50,929 --> 02:57:49,500

happen right disease outbreaks can you

3741

02:57:52,250 --> 02:57:50,939

use similar type of conflation of data

3742

02:57:54,410 --> 02:57:52,260

to start saying well something's going

3743

02:57:55,550 --> 02:57:54,420

on here let's start cueing sensors in

3744

02:57:57,830 --> 02:57:55,560

that area and that requires some

3745

02:58:00,950 --> 02:57:57,840

real-time capability but is that

3746

02:58:03,889 --> 02:58:00,960

something we can think about

3747

02:58:05,630 --> 02:58:03,899

can I object to that just a bit uh you

3748

02:58:08,870 --> 02:58:05,640

can find things that you don't know how

3749

02:58:10,849 --> 02:58:08,880

they look okay there there is a lot of

3750

02:58:12,830 --> 02:58:10,859

the algorithms in anomaly detection are

3751

02:58:15,889 --> 02:58:12,840

really based on let's know let's find

3752

02:58:18,050 --> 02:58:15,899

out how what we know looks like so that

3753

02:58:20,030 --> 02:58:18,060

anything that doesn't look like that can

3754

02:58:21,290 --> 02:58:20,040

be identified and spotted and then we

3755

02:58:23,690 --> 02:58:21,300

can think whether or not we understand

3756

02:58:26,990 --> 02:58:23,700

you right and so I think the point about

3757

02:58:29,630 --> 02:58:27,000

the homogeneous detectors really is

3758

02:58:31,969 --> 02:58:29,640

about that we need to have a solid

3759

02:58:34,490 --> 02:58:31,979

understanding of the normal abnormal was

3760

02:58:37,490 --> 02:58:34,500

really Our Lives as we sometimes perhaps

3761

02:58:40,550 --> 02:58:37,500

more often call them in in science right

3762

02:58:41,809 --> 02:58:40,560

yeah absolutely I do want to be cautious

3763

02:58:43,790 --> 02:58:41,819

of time

3764

02:58:46,370 --> 02:58:43,800

we were supposed to end this about 10

3765

02:58:47,750 --> 02:58:46,380

minutes ago right so but this is drifted

3766

02:58:50,330 --> 02:58:47,760

into discussion but I think we're doing

3767

02:58:51,590 --> 02:58:50,340

discussion so do you have any last topic

3768

02:58:53,090 --> 02:58:51,600

you want to hit if not then we'll just

3769

02:58:54,290 --> 02:58:53,100

open up to General discussion I have

3770

02:58:56,330 --> 02:58:54,300

four more questions that we're

3771

02:58:59,110 --> 02:58:56,340

technically supposed to answer all right

3772

02:59:01,730 --> 02:58:59,120

let's do one

3773

02:59:05,450 --> 02:59:01,740

we can do four questions in two minutes

3774

02:59:07,429 --> 02:59:05,460

right okay speed round

3775

02:59:10,010 --> 02:59:07,439

considering all of this

3776

02:59:11,809 --> 02:59:10,020

what basic physical constraints can be

3777

02:59:13,250 --> 02:59:11,819

placed on the nature and origins of UAP

3778

02:59:15,190 --> 02:59:13,260

Mike would you like to take this

3779

02:59:18,230 --> 02:59:15,200

question

3780

02:59:22,610 --> 02:59:18,240

okay got it

3781

02:59:24,830 --> 02:59:22,620

um I uh in my my notes to answer this

3782

02:59:27,469 --> 02:59:24,840

knew that Sean had presented some Trends

3783

02:59:28,670 --> 02:59:27,479

so I I used that kind of as the basis

3784

02:59:30,530 --> 02:59:28,680

for

3785

02:59:31,969 --> 02:59:30,540

um what basic physical constraints could

3786

02:59:34,490 --> 02:59:31,979

be available

3787

02:59:36,530 --> 02:59:34,500

um and also the Josh's presentation that

3788

02:59:38,570 --> 02:59:36,540

he just presented of we know some of

3789

02:59:40,550 --> 02:59:38,580

these are still in the realm of

3790

02:59:42,230 --> 02:59:40,560

understanding we just haven't applied

3791

02:59:43,969 --> 02:59:42,240

basic physics to understand what's there

3792

02:59:47,269 --> 02:59:43,979

what we have

3793

02:59:49,910 --> 02:59:47,279

uh question six what civilian airspace

3794

02:59:52,969 --> 02:59:49,920

data related to uaps have been collected

3795

02:59:56,630 --> 02:59:52,979

by government agencies and are available

3796

02:59:58,309 --> 02:59:56,640

for analysis to a inform efforts to

3797

03:00:02,269 --> 02:59:58,319

better understand the nature and origins

3798

03:00:04,910 --> 03:00:02,279

of uaps and B determine the risk of uaps

3799

03:00:05,630 --> 03:00:04,920

to the National airspace

3800

03:00:08,210 --> 03:00:05,640

um

3801
03:00:12,170 --> 03:00:08,220
so

3802
03:00:13,429 --> 03:00:12,180
examples from today to kind of move

3803
03:00:14,750 --> 03:00:13,439
quickly

3804
03:00:18,290 --> 03:00:14,760
um some of this in Mike freeze

3805
03:00:20,630 --> 03:00:18,300
presentation and talking about the error

3806
03:00:22,130 --> 03:00:20,640
risks right that FAA is always looking

3807
03:00:22,969 --> 03:00:22,140
out for

3808
03:00:24,950 --> 03:00:22,979
um

3809
03:00:28,070 --> 03:00:24,960
we know

3810
03:00:29,809 --> 03:00:28,080
um by altitude and by sensor and

3811
03:00:32,389 --> 03:00:29,819
curvature of the earth and line of sight

3812
03:00:34,490 --> 03:00:32,399
and as you get higher that you can see

3813
03:00:36,710 --> 03:00:34,500

more right so we have a lot of Civilian

3814

03:00:37,929 --> 03:00:36,720

airspace data that can start to

3815

03:00:41,510 --> 03:00:37,939

understand

3816

03:00:43,330 --> 03:00:41,520

the nature and origins of the UAP and

3817

03:00:46,730 --> 03:00:43,340

determining the risk

3818

03:00:49,010 --> 03:00:46,740

is based on how much you know right so

3819

03:00:50,570 --> 03:00:49,020

you think about I I go straight to the

3820

03:00:53,750 --> 03:00:50,580

space and I think about satellites and

3821

03:00:55,849 --> 03:00:53,760

one's um tiny piece of space debris you

3822

03:00:57,650 --> 03:00:55,859

can destroy an entire satellite because

3823

03:01:00,710 --> 03:00:57,660

they're moving really really fast in in

3824

03:01:04,849 --> 03:01:00,720

the vacuum of space it's not necessarily

3825

03:01:07,849 --> 03:01:04,859

so true in airspace right but something

3826
03:01:10,969 --> 03:01:07,859
that we don't know could have a severe

3827
03:01:15,070 --> 03:01:10,979
impact on pilots and their flight plan

3828
03:01:18,769 --> 03:01:15,080
and all of that which then could really

3829
03:01:20,750 --> 03:01:18,779
wreak havoc on all of all of the United

3830
03:01:22,490 --> 03:01:20,760
States airspace and so being able to

3831
03:01:24,110 --> 03:01:22,500
understand and identify what those are

3832
03:01:27,349 --> 03:01:24,120
phenomena are

3833
03:01:29,210 --> 03:01:27,359
um will help de-risk the the air flight

3834
03:01:31,130 --> 03:01:29,220
safety

3835
03:01:34,969 --> 03:01:31,140
the in the National airspace

3836
03:01:36,469 --> 03:01:34,979
um question seven what current reporting

3837
03:01:39,170 --> 03:01:36,479
protocols and air traffic management

3838
03:01:41,630 --> 03:01:39,180

data acquisition systems can be modified

3839

03:01:44,750 --> 03:01:41,640

to acquire additional data on past and

3840

03:01:46,370 --> 03:01:44,760

future uaps we've heard a lot of the

3841

03:01:49,309 --> 03:01:46,380

reporting structures it was talked about

3842

03:01:51,889 --> 03:01:49,319

earlier today those probably can be

3843

03:01:53,809 --> 03:01:51,899

adapted and improved and it's up to us

3844

03:01:56,809 --> 03:01:53,819

in discussion as the panel on what those

3845

03:01:59,389 --> 03:01:56,819

recommendations might be question eight

3846

03:02:01,910 --> 03:01:59,399

and I'll get off stage what potential

3847

03:02:04,490 --> 03:02:01,920

enhancements to the Future air traffic

3848

03:02:07,370 --> 03:02:04,500

management development efforts can be

3849

03:02:10,130 --> 03:02:07,380

recommended to acquire data concerning

3850

03:02:11,809 --> 03:02:10,140

future reported uaps to assist in the

3851
03:02:14,750 --> 03:02:11,819
effort to better understand the nature

3852
03:02:15,469 --> 03:02:14,760
and origins of the uaps

3853
03:02:18,469 --> 03:02:15,479
um

3854
03:02:20,630 --> 03:02:18,479
the potential enhancements

3855
03:02:23,330 --> 03:02:20,640
automatic filtering of the knowns has

3856
03:02:24,050 --> 03:02:23,340
come up as a talking point

3857
03:02:25,809 --> 03:02:24,060
um

3858
03:02:31,130 --> 03:02:25,819
these are

3859
03:02:31,969 --> 03:02:31,140
uh specific really to acquiring data

3860
03:02:35,050 --> 03:02:31,979
um

3861
03:02:39,290 --> 03:02:35,060
the tuning of those sensor platforms

3862
03:02:41,750 --> 03:02:39,300
the multimodal Spectrum collection and

3863
03:02:44,769 --> 03:02:41,760

being able to kind of time stamp or

3864

03:02:48,170 --> 03:02:44,779

geostamp each of those to collaborate

3865

03:02:50,269 --> 03:02:48,180

the the sightings so I will leave the

3866

03:02:52,250 --> 03:02:50,279

panel with that with time to continue

3867

03:02:56,150 --> 03:02:52,260

discussion

3868

03:02:56,160 --> 03:03:08,570

okay great let me go up to let me uh

3869

03:03:13,849 --> 03:03:11,110

but before I open it up I just wanted to

3870

03:03:15,769 --> 03:03:13,859

restate federica's answer to Mike for

3871

03:03:18,469 --> 03:03:15,779

hey

3872

03:03:19,370 --> 03:03:18,479

if you know the properties of hay very

3873

03:03:21,469 --> 03:03:19,380

well

3874

03:03:23,269 --> 03:03:21,479

and you can you go through your Haystack

3875

03:03:25,969 --> 03:03:23,279

and say

3876

03:03:27,950 --> 03:03:25,979

I don't know what this is but it doesn't

3877

03:03:29,870 --> 03:03:27,960

look like hey

3878

03:03:32,090 --> 03:03:29,880

you don't need to have a match filter

3879

03:03:40,309 --> 03:03:32,100

looking for a needle in a haystack if

3880

03:03:47,030 --> 03:03:44,450

now as a New York City resident

3881

03:03:48,469 --> 03:03:47,040

impression as we go through hay with

3882

03:03:50,929 --> 03:03:48,479

your you don't want to do it with your

3883

03:03:57,050 --> 03:03:53,570

but I I defer to you

3884

03:04:05,389 --> 03:04:02,030

I think I am yeah so um I want to

3885

03:04:07,250 --> 03:04:05,399

in the final minutes we have here before

3886

03:04:09,410 --> 03:04:07,260

the public session

3887

03:04:11,809 --> 03:04:09,420

look to the Future

3888

03:04:13,550 --> 03:04:11,819

I think a lot of us have looked at the

3889

03:04:15,290 --> 03:04:13,560

data we have now with a sense of

3890

03:04:19,250 --> 03:04:15,300

dissatisfaction

3891

03:04:21,530 --> 03:04:19,260

and say what data would you want and how

3892

03:04:23,570 --> 03:04:21,540

would you want to collect it

3893

03:04:26,570 --> 03:04:23,580

um and just think about you know we

3894

03:04:29,210 --> 03:04:26,580

don't need to design the detectors but

3895

03:04:31,849 --> 03:04:29,220

think about the characterization that we

3896

03:04:33,710 --> 03:04:31,859

we'd like what wavelengths we'd like and

3897

03:04:37,309 --> 03:04:33,720

you know just to kind of throw that out

3898

03:04:41,809 --> 03:04:37,319

as a one way to think about uh

3899

03:04:48,769 --> 03:04:45,889

pull so one thing that strikes me in

3900

03:04:51,349 --> 03:04:48,779

that question is that I'm not totally

3901

03:04:53,769 --> 03:04:51,359

certain that we've dedicated our time

3902

03:04:56,690 --> 03:04:53,779

and effort to looking for

3903

03:04:58,490 --> 03:04:56,700

anomalies I think by default there are

3904

03:05:02,269 --> 03:04:58,500

some science communities

3905

03:05:04,130 --> 03:05:02,279

that look for things like um uh the

3906

03:05:06,170 --> 03:05:04,140

Genesis of a hurricane or a harmful

3907

03:05:08,929 --> 03:05:06,180

algal bloom in the ocean or you know

3908

03:05:10,730 --> 03:05:08,939

something in interstellar space but I'm

3909

03:05:13,250 --> 03:05:10,740

not sure we ever focused our

3910

03:05:14,870 --> 03:05:13,260

interdisciplinary effort on that and I

3911

03:05:17,030 --> 03:05:14,880

think the question you ask is a really

3912

03:05:19,429 --> 03:05:17,040

interesting one part of our statement of

3913

03:05:21,650 --> 03:05:19,439

task right but I'm not sure I can answer

3914

03:05:25,969 --> 03:05:21,660

that quite yet that's how I feel about

3915

03:05:30,050 --> 03:05:27,410

Shelly Wright

3916

03:05:31,130 --> 03:05:30,060

um yeah going along with Dr buns Happy's

3917

03:05:32,990 --> 03:05:31,140

point there

3918

03:05:35,570 --> 03:05:33,000

we heard a lot from Arrow about

3919

03:05:38,090 --> 03:05:35,580

specifics about the needle one to four

3920

03:05:41,030 --> 03:05:38,100

meters in size zero to Mach two you can

3921

03:05:44,630 --> 03:05:41,040

then look at NASA's assets right

3922

03:05:47,030 --> 03:05:44,640

and look at its spatial resolution its

3923

03:05:48,590 --> 03:05:47,040

spectral resolution in particular the

3924

03:05:50,330 --> 03:05:48,600

frame rate to get I'm going to get your

3925

03:05:52,070 --> 03:05:50,340

question here

3926

03:05:54,590 --> 03:05:52,080

um Dr spurgle

3927

03:05:56,750 --> 03:05:54,600

you can look at the current NASA assets

3928

03:05:59,690 --> 03:05:56,760

and try to say which ones could find

3929

03:06:01,370 --> 03:05:59,700

that needle the ones that uh Dr

3930

03:06:03,950 --> 03:06:01,380

Kirkpatrick put forward

3931

03:06:06,710 --> 03:06:03,960

that analysis has not been done so one

3932

03:06:09,469 --> 03:06:06,720

of my recommendations would be for NASA

3933

03:06:11,929 --> 03:06:09,479

to convene a group and a task force to

3934

03:06:15,710 --> 03:06:11,939

look at its current assets to calculate

3935

03:06:18,290 --> 03:06:15,720

what current available data current data

3936

03:06:21,290 --> 03:06:18,300

and current facilities could answer

3937

03:06:23,690 --> 03:06:21,300

insight into that now to get to your

3938

03:06:27,650 --> 03:06:23,700

future question looking at this I see

3939

03:06:30,410 --> 03:06:27,660

Walter is um frame rate I see a really

3940

03:06:32,030 --> 03:06:30,420

big issue with frame rate so if you want

3941

03:06:34,309 --> 03:06:32,040

to catch spass moving in objects you

3942

03:06:36,530 --> 03:06:34,319

need to take quick images if you want to

3943

03:06:38,990 --> 03:06:36,540

get to these very small sizes and

3944

03:06:40,670 --> 03:06:39,000

resolution depending on altitude where

3945

03:06:42,370 --> 03:06:40,680

your actual you're taking your image

3946

03:06:45,110 --> 03:06:42,380

from ground or space

3947

03:06:47,870 --> 03:06:45,120

NASA will likely have to increase its

3948

03:06:50,809 --> 03:06:47,880

frame rate into its detectors

3949

03:06:52,849 --> 03:06:50,819

I think short answer to what NASA's

3950

03:06:54,950 --> 03:06:52,859

current assets would be able to see

3951
03:06:57,410 --> 03:06:54,960
would be really big Haystacks that are

3952
03:06:58,809 --> 03:06:57,420
moving very slowly which I think is the

3953
03:07:01,370 --> 03:06:58,819
point that you're making

3954
03:07:03,110 --> 03:07:01,380
but that doesn't mean that that data is

3955
03:07:05,269 --> 03:07:03,120
not useful because if it's able to

3956
03:07:06,410 --> 03:07:05,279
characterize the background extremely

3957
03:07:07,849 --> 03:07:06,420
well

3958
03:07:11,030 --> 03:07:07,859
that

3959
03:07:13,010 --> 03:07:11,040
gives you a better idea of what unusual

3960
03:07:14,690 --> 03:07:13,020
looks like basically anything that you

3961
03:07:17,870 --> 03:07:14,700
do that characterizes the background

3962
03:07:19,490 --> 03:07:17,880
will contribute to an understanding

3963
03:07:21,710 --> 03:07:19,500

so we're going to have to cut this off

3964

03:07:24,230 --> 03:07:21,720

now because we're now going to our our

3965

03:07:32,210 --> 03:07:24,240

public session public comment session so

3966

03:07:36,650 --> 03:07:33,769

hello everybody

3967

03:07:39,170 --> 03:07:36,660

uh I am Karen Fox with NASA's office of

3968

03:07:42,230 --> 03:07:39,180

communications and we are cycling into

3969

03:07:45,830 --> 03:07:42,240

the public q a portion of this meeting

3970

03:07:48,110 --> 03:07:45,840

uh as a reminder this is a facca meeting

3971

03:07:50,870 --> 03:07:48,120

that is a federal advisory committee act

3972

03:07:52,550 --> 03:07:50,880

and so we are under guidance which says

3973

03:07:56,690 --> 03:07:52,560

that these meetings are public and that

3974

03:07:59,030 --> 03:07:56,700

we take public uh questions uh we got

3975

03:08:00,410 --> 03:07:59,040

hundreds and hundreds of questions and I

3976

03:08:02,570 --> 03:08:00,420

just want to take a moment to say thank

3977

03:08:04,370 --> 03:08:02,580

you to everybody who who submitted them

3978

03:08:05,929 --> 03:08:04,380

uh we're obviously not going to get to

3979

03:08:07,429 --> 03:08:05,939

all of them today but we are going to

3980

03:08:10,389 --> 03:08:07,439

make attempts to answer some of them

3981

03:08:13,849 --> 03:08:10,399

online you can always check back to

3982

03:08:15,170 --> 03:08:13,859

science.nasa.gov UAP where over time we

3983

03:08:17,570 --> 03:08:15,180

will make it clear where we're putting

3984

03:08:18,830 --> 03:08:17,580

out some more of those answers in the

3985

03:08:23,750 --> 03:08:18,840

meantime we did have to make some

3986

03:08:26,030 --> 03:08:23,760

decisions uh we stuck two questions that

3987

03:08:27,910 --> 03:08:26,040

applied to this independent study and

3988

03:08:29,929 --> 03:08:27,920

uaps there were a lot of questions about

3989

03:08:32,030 --> 03:08:29,939

astrobiology and other subjects that

3990

03:08:33,769 --> 03:08:32,040

we're not going to get to today and also

3991

03:08:35,990 --> 03:08:33,779

in an attempt to get to as many of the

3992

03:08:38,090 --> 03:08:36,000

questions as possible since so many of

3993

03:08:40,250 --> 03:08:38,100

them were similar we've we've sort of

3994

03:08:41,990 --> 03:08:40,260

bucketed them and that is how we're

3995

03:08:43,190 --> 03:08:42,000

going to try to address as many as

3996

03:08:44,929 --> 03:08:43,200

possible so I'm going to toss the

3997

03:08:46,610 --> 03:08:44,939

questions to you and we'll and we'll

3998

03:08:48,290 --> 03:08:46,620

look to getting some answers for our for

3999

03:08:53,269 --> 03:08:48,300

our public questions

4000

03:08:56,150 --> 03:08:53,279

all right so first set of questions

4001
03:08:58,250 --> 03:08:56,160
um are specifically about the the data

4002
03:09:00,710 --> 03:08:58,260
being used so

4003
03:09:03,349 --> 03:09:00,720
examples what exactly are you

4004
03:09:05,630 --> 03:09:03,359
incorporating into your report what data

4005
03:09:08,090 --> 03:09:05,640
are we using what are some examples of

4006
03:09:10,250 --> 03:09:08,100
data being used do we have multi-sensor

4007
03:09:12,349 --> 03:09:10,260
data or of objects performing Maneuvers

4008
03:09:14,750 --> 03:09:12,359
that seem truly anomalous do we have

4009
03:09:16,190 --> 03:09:14,760
photos videos what about having the NASA

4010
03:09:18,110 --> 03:09:16,200
historian go through the NASA's

4011
03:09:20,690 --> 03:09:18,120
historical records did you interview

4012
03:09:22,309 --> 03:09:20,700
military or Pilots for this study so

4013
03:09:26,090 --> 03:09:22,319

looking for some information about the

4014

03:09:30,469 --> 03:09:28,010

I can toss to anyone David looks like

4015

03:09:32,030 --> 03:09:30,479

he's jumping in well I think first and

4016

03:09:33,410 --> 03:09:32,040

foremost our goal here is a way to

4017

03:09:35,150 --> 03:09:33,420

create a roadmap

4018

03:09:37,790 --> 03:09:35,160

right so really

4019

03:09:39,830 --> 03:09:37,800

um you know we have been informed by

4020

03:09:42,349 --> 03:09:39,840

some of the events that are reported and

4021

03:09:44,809 --> 03:09:42,359

we've had uh but we've certainly not

4022

03:09:46,969 --> 03:09:44,819

done a complete historical study on our

4023

03:09:49,849 --> 03:09:46,979

in an archive and I think one of the

4024

03:09:51,590 --> 03:09:49,859

things we've wanted to do was learn what

4025

03:09:54,170 --> 03:09:51,600

kinds of events have been reported learn

4026

03:09:56,330 --> 03:09:54,180

about some of the ones have been resolve

4027

03:09:58,849 --> 03:09:56,340

some of the ones that are unresolved so

4028

03:10:00,710 --> 03:09:58,859

we can best think about

4029

03:10:03,050 --> 03:10:00,720

how in the future

4030

03:10:04,790 --> 03:10:03,060

we can collect data so that we can get

4031

03:10:06,230 --> 03:10:04,800

more robust answers

4032

03:10:09,230 --> 03:10:06,240

so that

4033

03:10:11,269 --> 03:10:09,240

I hope that that addressed that question

4034

03:10:13,010 --> 03:10:11,279

it does although

4035

03:10:16,070 --> 03:10:13,020

others have anything else they'd like to

4036

03:10:20,450 --> 03:10:17,690

all right

4037

03:10:23,269 --> 03:10:20,460

then I will keep going

4038

03:10:25,670 --> 03:10:23,279

uh another big question category was

4039

03:10:28,190 --> 03:10:25,680

about transparency and about sharing

4040

03:10:31,309 --> 03:10:28,200

information and so examples in this

4041

03:10:33,110 --> 03:10:31,319

category are what is NASA hiding and

4042

03:10:35,510 --> 03:10:33,120

where are you hiding it

4043

03:10:38,690 --> 03:10:35,520

how much has been shared publicly has

4044

03:10:41,510 --> 03:10:38,700

NASA ever cut the live NASA TV feed away

4045

03:10:43,910 --> 03:10:41,520

from something has NASA released all UAP

4046

03:10:46,550 --> 03:10:43,920

evidence it has ever received what about

4047

03:10:48,170 --> 03:10:46,560

NASA astronauts do they have an NDA or

4048

03:10:50,950 --> 03:10:48,180

clearance that does not allow them to

4049

03:10:58,309 --> 03:10:50,960

speak about UAP sightings

4050

03:11:02,830 --> 03:11:00,710

Dan Evans all right I'll take a stab at

4051
03:11:05,330 --> 03:11:02,840
that spot that one I really want to

4052
03:11:07,309 --> 03:11:05,340
assure the public

4053
03:11:10,070 --> 03:11:07,319
and to double down on some remarks I

4054
03:11:12,889 --> 03:11:10,080
made this morning so this agency is

4055
03:11:17,210 --> 03:11:12,899
absolutely cast iron committed to

4056
03:11:19,910 --> 03:11:17,220
openness and transparency and honesty

4057
03:11:22,309 --> 03:11:19,920
and that commitment also extends to our

4058
03:11:24,469 --> 03:11:22,319
live NASA TV feeds they provide

4059
03:11:25,490 --> 03:11:24,479
real-time footage from our various

4060
03:11:28,370 --> 03:11:25,500
missions

4061
03:11:31,730 --> 03:11:28,380
now to my knowledge NASA has never

4062
03:11:34,429 --> 03:11:31,740
intentionally cut a live feed to hide

4063
03:11:35,349 --> 03:11:34,439

anything and that includes uaps of

4064

03:11:38,090 --> 03:11:35,359

course

4065

03:11:40,370 --> 03:11:38,100

sometimes there are interruptions to our

4066

03:11:42,349 --> 03:11:40,380

feeds but that is simply because space

4067

03:11:43,969 --> 03:11:42,359

is a complex place

4068

03:11:45,889 --> 03:11:43,979

there's a vast array of natural

4069

03:11:48,830 --> 03:11:45,899

phenomena human-made objects and so

4070

03:11:51,530 --> 03:11:48,840

forth but again I wanted to reassure the

4071

03:11:53,990 --> 03:11:51,540

public that we're absolutely committed

4072

03:11:56,450 --> 03:11:54,000

to providing the public transparency and

4073

03:11:59,090 --> 03:11:56,460

openness those are the Hallmarks of NASA

4074

03:12:02,150 --> 03:11:59,100

that's why we're here today in public on

4075

03:12:04,849 --> 03:12:02,160

TV because we want the public to have

4076

03:12:07,730 --> 03:12:04,859

the opportunity to see the process of

4077

03:12:10,010 --> 03:12:07,740

this committee doing its work in public

4078

03:12:12,349 --> 03:12:10,020

it's only right

4079

03:12:14,750 --> 03:12:12,359

and just to follow up on what I what I

4080

03:12:18,650 --> 03:12:14,760

said I I didn't mean to be to joke about

4081

03:12:22,010 --> 03:12:18,660

it but in my 20 years at Nasa no one

4082

03:12:25,250 --> 03:12:22,020

either officially or unofficially

4083

03:12:27,349 --> 03:12:25,260

in my recollection have ever discussed

4084

03:12:29,929 --> 03:12:27,359

or briefed us or had any kind of

4085

03:12:33,590 --> 03:12:29,939

discussions about anything that would be

4086

03:12:35,510 --> 03:12:33,600

considered a UAP or UFO or anything like

4087

03:12:37,070 --> 03:12:35,520

that and I'll ask you to stand for one

4088

03:12:38,450 --> 03:12:37,080

second and state your name I'll ask you

4089

03:12:40,250 --> 03:12:38,460

to stand for one second and state your

4090

03:12:41,570 --> 03:12:40,260

name just so everybody know who was

4091

03:12:44,330 --> 03:12:41,580

speaking it's hard to see in the back

4092

03:12:47,210 --> 03:12:44,340

I'm just following up on uh on the

4093

03:12:51,610 --> 03:12:47,220

question about if NASA astronauts ever

4094

03:12:56,269 --> 03:12:51,620

signed an NDA or anything of that

4095

03:12:58,370 --> 03:12:56,279

anything like that in my experience of

4096

03:13:01,370 --> 03:12:58,380

being in the astronaut office for 20

4097

03:13:04,610 --> 03:13:01,380

years there was never any formal or

4098

03:13:09,110 --> 03:13:04,620

informal discussions at all about uaps

4099

03:13:12,710 --> 03:13:09,120

or UFOs or anyone reporting anything

4100

03:13:15,710 --> 03:13:12,720

that would suggest something from you

4101

03:13:18,590 --> 03:13:15,720

know beyond our planet

4102

03:13:20,210 --> 03:13:18,600

thank you very much yes please just want

4103

03:13:22,969 --> 03:13:20,220

to make a quick comment about the the

4104

03:13:26,389 --> 03:13:22,979

culture of science uh in relation to

4105

03:13:28,730 --> 03:13:26,399

this question uh scientists by Nature

4106

03:13:30,830 --> 03:13:28,740

are are at least intellectually sort of

4107

03:13:33,230 --> 03:13:30,840

rebellious it's it's it's in our nature

4108

03:13:34,429 --> 03:13:33,240

to question authority you know uh uh

4109

03:13:35,750 --> 03:13:34,439

that's how you're a good scientist you

4110

03:13:40,429 --> 03:13:35,760

don't just take someone's word for it

4111

03:13:42,110 --> 03:13:40,439

you try to uh discover the truth and for

4112

03:13:43,490 --> 03:13:42,120

that reason uh you know this question

4113

03:13:44,929 --> 03:13:43,500

about what are the science overlords

4114

03:13:47,389 --> 03:13:44,939

hiding that's sort of written in a

4115

03:13:50,570 --> 03:13:47,399

facetious way but I I just want to

4116

03:13:52,429 --> 03:13:50,580

emphasize that uh there's no way that

4117

03:13:54,650 --> 03:13:52,439

all that all scientists could be in on

4118

03:13:56,570 --> 03:13:54,660

on on on on trying to hide something

4119

03:13:58,370 --> 03:13:56,580

because it's just not in our nature if

4120

03:14:00,050 --> 03:13:58,380

somebody told me to try to hide

4121

03:14:03,830 --> 03:14:00,060

something as a scientist that would just

4122

03:14:06,590 --> 03:14:03,840

increase my desire to uh to re to belay

4123

03:14:08,510 --> 03:14:06,600

that order and and to release it and I

4124

03:14:10,010 --> 03:14:08,520

think that's true of of our our

4125

03:14:12,170 --> 03:14:10,020

community in general

4126
03:14:15,769 --> 03:14:12,180
all right thank you so much I am going

4127
03:14:17,990 --> 03:14:15,779
to go on to our third set of questions

4128
03:14:20,450 --> 03:14:18,000
um which is has NASA been tracking

4129
03:14:23,750 --> 03:14:20,460
Earth's atmosphere or are we also

4130
03:14:28,570 --> 03:14:23,760
studying bodies of water for for UAP I

4131
03:14:34,730 --> 03:14:31,670
here's the oceanographer

4132
03:14:37,370 --> 03:14:34,740
um uh so you know my understanding is

4133
03:14:39,050 --> 03:14:37,380
this is a completely independent study

4134
03:14:42,170 --> 03:14:39,060
to assess

4135
03:14:45,130 --> 03:14:42,180
you know what assets what data

4136
03:14:49,190 --> 03:14:45,140
um what science What observations

4137
03:14:51,910 --> 03:14:49,200
platforms NASA has to

4138
03:14:57,590 --> 03:14:51,920

potentially help evaluate and understand

4139

03:14:59,389 --> 03:14:57,600

uh UAP right we have um well NASA has an

4140

03:15:01,969 --> 03:14:59,399

earth science Division and many

4141

03:15:04,210 --> 03:15:01,979

scientists at many centers and many

4142

03:15:07,610 --> 03:15:04,220

academics and other partners out there

4143

03:15:09,469 --> 03:15:07,620

that study the Earth as a system we do

4144

03:15:13,790 --> 03:15:09,479

this from the unique vantage point of

4145

03:15:17,870 --> 03:15:13,800

space and the atmosphere is part of that

4146

03:15:20,150 --> 03:15:17,880

um so uh I think Dr Kirkpatrick stated

4147

03:15:22,389 --> 03:15:20,160

this morning that to his knowledge and I

4148

03:15:25,730 --> 03:15:22,399

think to ours there there isn't anything

4149

03:15:27,410 --> 03:15:25,740

that's been reported below the ocean

4150

03:15:29,990 --> 03:15:27,420

surface

4151

03:15:31,550 --> 03:15:30,000

um you know and so I think

4152

03:15:34,429 --> 03:15:31,560

part of what we've been talking about

4153

03:15:35,809 --> 03:15:34,439

all day is you know what assets are out

4154

03:15:37,550 --> 03:15:35,819

there to actually

4155

03:15:38,269 --> 03:15:37,560

begin to

4156

03:15:40,490 --> 03:15:38,279

um

4157

03:15:42,290 --> 03:15:40,500

identify data that could be useful in

4158

03:15:44,690 --> 03:15:42,300

explaining any of these reports if and

4159

03:15:46,790 --> 03:15:44,700

should they come in so I think that's

4160

03:15:50,269 --> 03:15:46,800

that's probably it unless there's

4161

03:15:54,590 --> 03:15:52,309

all right then thank you

4162

03:15:57,769 --> 03:15:54,600

moving on to our fourth

4163

03:16:00,010 --> 03:15:57,779

General bucket of questions uh what are

4164

03:16:05,990 --> 03:16:00,020

you doing to solve the stigmatization

4165

03:16:11,389 --> 03:16:07,429

and say your name if you wouldn't mind

4166

03:16:13,790 --> 03:16:11,399

first Carlton or FAA

4167

03:16:16,370 --> 03:16:13,800

um I think the fact that NASA has called

4168

03:16:18,530 --> 03:16:16,380

us together here as a panel to look into

4169

03:16:21,469 --> 03:16:18,540

this that NASA is hosting a public

4170

03:16:23,570 --> 03:16:21,479

meeting that we've heard right it

4171

03:16:26,269 --> 03:16:23,580

clearly stated we're here to be

4172

03:16:29,809 --> 03:16:26,279

transparent I think that's the first

4173

03:16:33,290 --> 03:16:29,819

step in trying to really normalize the

4174

03:16:36,349 --> 03:16:33,300

study of uaps and I you know we talked a

4175

03:16:39,170 --> 03:16:36,359

little bit earlier about the reporting

4176
03:16:43,010 --> 03:16:39,180
about how to make it credible and we

4177
03:16:46,550 --> 03:16:43,020
talked also about UAP in one of the

4178
03:16:49,370 --> 03:16:46,560
earlier talks this morning of of the

4179
03:16:51,830 --> 03:16:49,380
definition of the a whether it was Ariel

4180
03:16:54,170 --> 03:16:51,840
or anomalous as the legislation now is

4181
03:16:56,269 --> 03:16:54,180
and really the distinction Beyond UFOs

4182
03:16:58,730 --> 03:16:56,279
right when we're looking at uaps here

4183
03:17:00,769 --> 03:16:58,740
we're Beyond just airplanes we're

4184
03:17:02,170 --> 03:17:00,779
looking at all types of anomalous

4185
03:17:05,389 --> 03:17:02,180
phenomena

4186
03:17:08,030 --> 03:17:05,399
and so that's just a more inclusive term

4187
03:17:12,769 --> 03:17:10,490
yeah still my goal

4188
03:17:14,330 --> 03:17:12,779

um just wanted to emphasize what uh

4189

03:17:15,769 --> 03:17:14,340

Carlin said which is so accurate I

4190

03:17:17,809 --> 03:17:15,779

really consider it quite amazing that

4191

03:17:20,330 --> 03:17:17,819

we're here having this discussion as the

4192

03:17:22,610 --> 03:17:20,340

leadership serves great kudos for this

4193

03:17:24,530 --> 03:17:22,620

and Beyond I think a recommendation that

4194

03:17:27,429 --> 03:17:24,540

I'd like to make is that NASA

4195

03:17:30,469 --> 03:17:27,439

participate in symposia in panels

4196

03:17:33,170 --> 03:17:30,479

sponsor research when you have the NASA

4197

03:17:36,290 --> 03:17:33,180

logo on that sponsored research on the

4198

03:17:38,150 --> 03:17:36,300

discussion it really helps normalize and

4199

03:17:40,370 --> 03:17:38,160

push back against the stigma I think

4200

03:17:42,830 --> 03:17:40,380

NASA can leverage his excellent

4201
03:17:45,110 --> 03:17:42,840
reputation both domestically and abroad

4202
03:17:46,309 --> 03:17:45,120
to help push back on that stigma I think

4203
03:17:47,690 --> 03:17:46,319
it's important to do so not just for

4204
03:17:50,210 --> 03:17:47,700
Science and Discovery but for National

4205
03:17:51,950 --> 03:17:50,220
Security that we've all seen what's

4206
03:17:54,349 --> 03:17:51,960
occurred with balloons from rival

4207
03:17:56,210 --> 03:17:54,359
Nations we don't want this stigma to be

4208
03:17:58,910 --> 03:17:56,220
a vulnerability that rival Nations can

4209
03:18:04,190 --> 03:18:01,610
yes Dan yeah thanks Karen just a few

4210
03:18:07,309 --> 03:18:04,200
additional points um from the agency

4211
03:18:09,889 --> 03:18:07,319
perspective we are of course taking a

4212
03:18:12,349 --> 03:18:09,899
set of actions to effectively normalize

4213
03:18:14,050 --> 03:18:12,359

the study of UAP so that involves

4214

03:18:16,490 --> 03:18:14,060

collaborating across the government

4215

03:18:19,610 --> 03:18:16,500

encouraging an open dialogue and

4216

03:18:21,830 --> 03:18:19,620

promoting rigorous scientific inquiry

4217

03:18:23,650 --> 03:18:21,840

um let me turn to each of those interns

4218

03:18:26,990 --> 03:18:23,660

so in terms of promoting a rigorous

4219

03:18:30,050 --> 03:18:27,000

scientific inquiry the primary way we're

4220

03:18:32,570 --> 03:18:30,060

doing this is by being truly rigorous

4221

03:18:35,469 --> 03:18:32,580

and employing an evidence-based

4222

03:18:39,170 --> 03:18:35,479

methodology in everything that we do

4223

03:18:42,170 --> 03:18:39,180

that is characteristic of scientific

4224

03:18:44,570 --> 03:18:42,180

research it's no accident that the

4225

03:18:47,150 --> 03:18:44,580

people up on this stage are true experts

4226

03:18:50,090 --> 03:18:47,160

in their reflex respective Fields okay

4227

03:18:53,570 --> 03:18:50,100

so that is in turn going to help us to

4228

03:18:55,790 --> 03:18:53,580

legitimize UAP studies encouraging open

4229

03:18:59,150 --> 03:18:55,800

dialogue so by holding public meetings

4230

03:19:02,090 --> 03:18:59,160

such as this one and having open

4231

03:19:04,010 --> 03:19:02,100

conversations about findings then we're

4232

03:19:06,349 --> 03:19:04,020

helping to normalize discussions again

4233

03:19:09,530 --> 03:19:06,359

and that that really goes arm and arm

4234

03:19:11,150 --> 03:19:09,540

with our commitment to openness and

4235

03:19:13,250 --> 03:19:11,160

transparency with the public and then

4236

03:19:14,750 --> 03:19:13,260

finally in terms of collaborating across

4237

03:19:16,730 --> 03:19:14,760

the government we're working very

4238

03:19:19,969 --> 03:19:16,740

closely with other government agencies

4239

03:19:22,849 --> 03:19:19,979

not least Sean's office Aero to broaden

4240

03:19:25,070 --> 03:19:22,859

the scope and the depth of our study and

4241

03:19:27,170 --> 03:19:25,080

I honestly believe that this Collective

4242

03:19:30,230 --> 03:19:27,180

interagency approach will lend

4243

03:19:31,849 --> 03:19:30,240

credibility to the study of uaps and

4244

03:19:33,590 --> 03:19:31,859

it's going to demonstrate the

4245

03:19:35,510 --> 03:19:33,600

seriousness with which we're approaching

4246

03:19:38,450 --> 03:19:35,520

this issue thanks

4247

03:19:40,910 --> 03:19:38,460

well that segues very nicely into what

4248

03:19:43,070 --> 03:19:40,920

our next set of questions are which is

4249

03:19:45,290 --> 03:19:43,080

uh who we are working with so the

4250

03:19:47,570 --> 03:19:45,300

question is who else is NASA currently

4251
03:19:50,150 --> 03:19:47,580
working with or do we want to work with

4252
03:20:01,309 --> 03:19:50,160
to study UAP and is NASA working with

4253
03:20:06,349 --> 03:20:02,630
as

4254
03:20:09,769 --> 03:20:06,359
the questions test to this panel so

4255
03:20:13,190 --> 03:20:09,779
kindly asked us both in what other

4256
03:20:15,050 --> 03:20:13,200
government agencies are collecting data

4257
03:20:16,610 --> 03:20:15,060
what data is available and NASA is

4258
03:20:19,370 --> 03:20:16,620
partnering with them

4259
03:20:23,410 --> 03:20:19,380
um in in many ways as well as National

4260
03:20:26,090 --> 03:20:23,420
NASA has a wide commercial Outreach

4261
03:20:27,429 --> 03:20:26,100
and Partnerships with understanding what

4262
03:20:30,950 --> 03:20:27,439
data is available

4263
03:20:33,410 --> 03:20:30,960

as well as National NASA's founded on on

4264

03:20:35,929 --> 03:20:33,420

well not founded but it the

4265

03:20:37,910 --> 03:20:35,939

core principles of NASA are with

4266

03:20:40,070 --> 03:20:37,920

International Partners so the

4267

03:20:42,170 --> 03:20:40,080

information that our partners are

4268

03:20:44,150 --> 03:20:42,180

gathering is is typically available to

4269

03:20:46,910 --> 03:20:44,160

NASA as well so

4270

03:20:50,570 --> 03:20:46,920

yes on all accounts and I may just

4271

03:20:52,010 --> 03:20:50,580

emphasize an ad that NASA is singular I

4272

03:20:54,170 --> 03:20:52,020

believe among government agencies and

4273

03:20:55,550 --> 03:20:54,180

it's International Outreach again not to

4274

03:20:57,530 --> 03:20:55,560

keep talking about the Artemis Accords

4275

03:20:58,550 --> 03:20:57,540

but you see countries like Saudi Arabia

4276

03:21:00,170 --> 03:20:58,560

that we may not have a great

4277

03:21:02,570 --> 03:21:00,180

relationship with as Government right

4278

03:21:04,550 --> 03:21:02,580

now we have Saudi Arabia and Israel in

4279

03:21:06,710 --> 03:21:04,560

the Accords family so that NASA is

4280

03:21:09,290 --> 03:21:06,720

unique in its scope and ability to reach

4281

03:21:11,389 --> 03:21:09,300

out I also think that we're entering a

4282

03:21:14,090 --> 03:21:11,399

new era of commercial space

4283

03:21:17,090 --> 03:21:14,100

transportation that is going from low

4284

03:21:18,530 --> 03:21:17,100

earth orbit out to Sis lunar's space and

4285

03:21:20,150 --> 03:21:18,540

that is going to be the purview of the

4286

03:21:22,790 --> 03:21:20,160

Department of Commerce which is taking

4287

03:21:25,550 --> 03:21:22,800

over Space Traffic management so I think

4288

03:21:27,349 --> 03:21:25,560

it's very important that NASA work with

4289

03:21:29,090 --> 03:21:27,359

and support Commerce as we go through

4290

03:21:31,429 --> 03:21:29,100

that transition Department of Defense is

4291

03:21:32,809 --> 03:21:31,439

currently responsible for that and I

4292

03:21:35,750 --> 03:21:32,819

think that will help us not only to

4293

03:21:38,030 --> 03:21:35,760

identify potential uaps but to assist in

4294

03:21:40,490 --> 03:21:38,040

preventing contention congestion and

4295

03:21:43,730 --> 03:21:40,500

eventually conflict and I also want to

4296

03:21:45,590 --> 03:21:43,740

note in terms of space debris debris and

4297

03:21:48,230 --> 03:21:45,600

orbit right now I believe represents an

4298

03:21:49,670 --> 03:21:48,240

existential threat to our very society

4299

03:21:52,010 --> 03:21:49,680

that we are getting very close to an

4300

03:21:53,870 --> 03:21:52,020

event that could cause real problems for

4301
03:21:54,650 --> 03:21:53,880
our ability to access satellites and

4302
03:21:56,210 --> 03:21:54,660
that's why I think there's great

4303
03:21:57,590 --> 03:21:56,220
ancillary benefits to the conversation

4304
03:22:00,769 --> 03:21:57,600
we're having today that as we increase

4305
03:22:02,809 --> 03:22:00,779
our capability to monitor orbit for uaps

4306
03:22:04,969 --> 03:22:02,819
that data could also be very relevant as

4307
03:22:07,010 --> 03:22:04,979
we look at nearest objects and other

4308
03:22:09,110 --> 03:22:07,020
threats and again it's just end on near

4309
03:22:11,750 --> 03:22:09,120
Earth objects apothos for example an

4310
03:22:14,210 --> 03:22:11,760
asteroid is going to come so close to

4311
03:22:16,429 --> 03:22:14,220
Earth it will be below geosynchronous

4312
03:22:18,170 --> 03:22:16,439
satellites so any effort to begin to

4313
03:22:19,370 --> 03:22:18,180

catalog and do better in terms of

4314

03:22:20,750 --> 03:22:19,380

understanding that environment is going

4315

03:22:22,670 --> 03:22:20,760

to be terrific and I hope NASA works

4316

03:22:25,730 --> 03:22:22,680

with Commerce and international agencies

4317

03:22:27,710 --> 03:22:25,740

on Apophis and other missions

4318

03:22:30,170 --> 03:22:27,720

I think Federica had something to say

4319

03:22:31,370 --> 03:22:30,180

yeah I just wanted to add that um you

4320

03:22:33,590 --> 03:22:31,380

know a lot of the things that we think

4321

03:22:36,110 --> 03:22:33,600

we might recommend in terms of platforms

4322

03:22:38,330 --> 03:22:36,120

to collect data that would be useful to

4323

03:22:40,309 --> 03:22:38,340

study uavs you know we recommend the

4324

03:22:42,889 --> 03:22:40,319

multi-platform and multi-site that would

4325

03:22:45,230 --> 03:22:42,899

also mean likely ground-based as well as

4326

03:22:47,269 --> 03:22:45,240

space-based facilities

4327

03:22:50,450 --> 03:22:47,279

um and this is being done already in

4328

03:22:52,010 --> 03:22:50,460

astrophysics codes Irving the sky from

4329

03:22:54,490 --> 03:22:52,020

the ground and from space with different

4330

03:22:57,110 --> 03:22:54,500

methodologies and different different

4331

03:22:59,510 --> 03:22:57,120

instruments to get a more comprehensive

4332

03:23:02,750 --> 03:22:59,520

picture of what's normal and then the

4333

03:23:04,910 --> 03:23:02,760

type of phenomenals and um about every

4334

03:23:06,230 --> 03:23:04,920

10 years the scientific the astrophysics

4335

03:23:08,929 --> 03:23:06,240

Community anyways but many other

4336

03:23:12,170 --> 03:23:08,939

branches convener panel of experts to

4337

03:23:14,809 --> 03:23:12,180

see what things can be done to advance

4338

03:23:17,030 --> 03:23:14,819

um the the field in the next decade it's

4339

03:23:18,889 --> 03:23:17,040

called the decada survey for us and one

4340

03:23:21,050 --> 03:23:18,899

of the recommendations this year was

4341

03:23:23,570 --> 03:23:21,060

explicitly for agencies that do us

4342

03:23:27,469 --> 03:23:23,580

through physics to work together so NSF

4343

03:23:29,150 --> 03:23:27,479

doe and NASA to work together share data

4344

03:23:30,410 --> 03:23:29,160

share facilities and instruments so I

4345

03:23:34,309 --> 03:23:30,420

think this is

4346

03:23:36,349 --> 03:23:34,319

um you know there's a lot of fields will

4347

03:23:37,969 --> 03:23:36,359

benefit from this including the UAP

4348

03:23:39,710 --> 03:23:37,979

studies

4349

03:23:43,429 --> 03:23:39,720

oh

4350

03:23:46,190 --> 03:23:43,439

absolutely car window I I'd like to put

4351
03:23:48,650 --> 03:23:46,200
an exclamation point on how well NASA is

4352
03:23:50,269 --> 03:23:48,660
collaborating across the government I

4353
03:23:52,550 --> 03:23:50,279
can I'm from the FAA and I can

4354
03:23:55,790 --> 03:23:52,560
personally attest that you know FAA and

4355
03:23:59,150 --> 03:23:55,800
NASA have a robust uh engagement in

4356
03:24:01,729 --> 03:23:59,160
transferring Research into practice in

4357
03:24:04,729 --> 03:24:01,739
the ATM system I think on the commercial

4358
03:24:07,309 --> 03:24:04,739
space side we work well with NASA and

4359
03:24:09,889 --> 03:24:07,319
and all of our agencies are in the whole

4360
03:24:13,309 --> 03:24:09,899
of government approach supporting Arrow

4361
03:24:15,410 --> 03:24:13,319
specifically on the uip topic and and

4362
03:24:17,630 --> 03:24:15,420
you know it really comes down to good

4363
03:24:20,450 --> 03:24:17,640

government and how we deliver because we

4364

03:24:22,010 --> 03:24:20,460

can each work our own mission space but

4365

03:24:24,050 --> 03:24:22,020

to cover the whole Space we need to

4366

03:24:26,570 --> 03:24:24,060

collaborate together

4367

03:24:29,990 --> 03:24:26,580

and Dan do you put an exclamation point

4368

03:24:31,969 --> 03:24:30,000

on Carlin's exclamation point uh

4369

03:24:33,590 --> 03:24:31,979

so I think it's important to say that

4370

03:24:35,630 --> 03:24:33,600

you know we really do have a good

4371

03:24:38,929 --> 03:24:35,640

relationship with the auto main anomaly

4372

03:24:41,330 --> 03:24:38,939

resolution office era Sean's office

4373

03:24:44,630 --> 03:24:41,340

um and it's previous or predecessor

4374

03:24:46,969 --> 03:24:44,640

organization doap task force and we have

4375

03:24:49,550 --> 03:24:46,979

really benefited from very fruitful

4376
03:24:52,429 --> 03:24:49,560
collaborations among those various

4377
03:24:54,349 --> 03:24:52,439
entities and quite frankly as as a

4378
03:24:56,690 --> 03:24:54,359
taxpayer wanted expect nothing less than

4379
03:24:58,849 --> 03:24:56,700
the government to be working effectively

4380
03:25:00,349 --> 03:24:58,859
across different units together it's

4381
03:25:01,370 --> 03:25:00,359
only right

4382
03:25:04,370 --> 03:25:01,380
um

4383
03:25:07,130 --> 03:25:04,380
that being said it's also important to

4384
03:25:10,309 --> 03:25:07,140
acknowledge what NASA's perspective is

4385
03:25:11,809 --> 03:25:10,319
in this study and to acknowledge that

4386
03:25:13,550 --> 03:25:11,819
you know the the Department of Defense

4387
03:25:16,309 --> 03:25:13,560
the intelligence Community have have

4388
03:25:18,889 --> 03:25:16,319

massively different equities about the

4389

03:25:20,809 --> 03:25:18,899

study of UAP and they have different

4390

03:25:22,550 --> 03:25:20,819

interests ours is a purely scientific

4391

03:25:24,830 --> 03:25:22,560

one so you know we collaborate we

4392

03:25:27,650 --> 03:25:24,840

consult it's a very good relationship

4393

03:25:29,809 --> 03:25:27,660

and I agree wholeheartedly with Carolyn

4394

03:25:32,389 --> 03:25:29,819

that a whole of government approach is

4395

03:25:35,450 --> 03:25:32,399

absolutely the right one to take

4396

03:25:38,570 --> 03:25:35,460

great thank you I will move on to our

4397

03:25:41,389 --> 03:25:38,580

sixth bucket of questions uh which we

4398

03:25:44,210 --> 03:25:41,399

had many on this topic is there evidence

4399

03:25:48,229 --> 03:25:44,220

that UAP were created from non-human

4400

03:25:51,950 --> 03:25:49,670

yes please

4401

03:25:54,290 --> 03:25:51,960

I will take this one

4402

03:25:58,190 --> 03:25:54,300

um first and foremost We Are Scientists

4403

03:26:01,250 --> 03:25:58,200

and we follow the scientific process and

4404

03:26:04,190 --> 03:26:01,260

um I hope that the Gathering here today

4405

03:26:07,429 --> 03:26:04,200

uh showed a little bit of a glimpse on

4406

03:26:09,410 --> 03:26:07,439

how the scientific process works

4407

03:26:13,070 --> 03:26:09,420

um it's not a question that you can

4408

03:26:16,670 --> 03:26:13,080

answer very quickly with yes or no

4409

03:26:19,130 --> 03:26:16,680

um and uh we follow the data right so

4410

03:26:22,130 --> 03:26:19,140

um as scientists we follow the data we

4411

03:26:24,710 --> 03:26:22,140

formulate hypotheses we test theories we

4412

03:26:27,229 --> 03:26:24,720

follow the scientific process the role

4413

03:26:31,070 --> 03:26:27,239

of this panel has been to create a road

4414

03:26:33,290 --> 03:26:31,080

map and a framework for how all

4415

03:26:36,830 --> 03:26:33,300

scientists that are interested in this

4416

03:26:39,769 --> 03:26:36,840

phenomenon can further study can further

4417

03:26:43,250 --> 03:26:39,779

collect data can further formulate

4418

03:26:46,010 --> 03:26:43,260

experiments or again hypotheses can test

4419

03:26:48,889 --> 03:26:46,020

different methods maybe even innovate on

4420

03:26:51,650 --> 03:26:48,899

the methodology side of things come up

4421

03:26:53,809 --> 03:26:51,660

with new methods for how we can do

4422

03:26:55,670 --> 03:26:53,819

basically science but not just any kind

4423

03:26:59,090 --> 03:26:55,680

of science but the science of Discovery

4424

03:27:02,990 --> 03:26:59,100

and exploration which is basically in

4425

03:27:05,990 --> 03:27:03,000

the spirit of NASA so just like Carl

4426
03:27:08,469 --> 03:27:06,000
Sagan I was saying extraordinary claims

4427
03:27:11,150 --> 03:27:08,479
required extraordinary evidence

4428
03:27:15,110 --> 03:27:11,160
we cannot make that kind of

4429
03:27:17,269 --> 03:27:15,120
extraordinary claims at all for any kind

4430
03:27:20,210 --> 03:27:17,279
of big subjects in science whether it's

4431
03:27:23,210 --> 03:27:20,220
uaps whether it's biosignatures whether

4432
03:27:25,250 --> 03:27:23,220
it's techno signatures this question of

4433
03:27:26,990 --> 03:27:25,260
whether we are alone in the universe is

4434
03:27:30,110 --> 03:27:27,000
probably one of the largest questions

4435
03:27:32,870 --> 03:27:30,120
that we've had in our history of Science

4436
03:27:35,510 --> 03:27:32,880
in our history of humanity and it's not

4437
03:27:38,290 --> 03:27:35,520
one that we can take lightly and that's

4438
03:27:40,550 --> 03:27:38,300

why we need so many scientists and

4439

03:27:43,130 --> 03:27:40,560

multi-disciplinary and interdisciplinary

4440

03:27:44,530 --> 03:27:43,140

teams to work together and many

4441

03:27:48,769 --> 03:27:44,540

organizations

4442

03:27:52,070 --> 03:27:48,779

so it's a process it's a roadmap and we

4443

03:27:54,590 --> 03:27:52,080

work collectively on this and we hope

4444

03:27:56,630 --> 03:27:54,600

that within our lifetime we will be able

4445

03:27:59,269 --> 03:27:56,640

to answer this big question of whether

4446

03:28:01,550 --> 03:27:59,279

we are alone or not and also to better

4447

03:28:03,889 --> 03:28:01,560

characterize this phenomenon which is

4448

03:28:06,650 --> 03:28:03,899

uaps

4449

03:28:08,990 --> 03:28:06,660

I want to supplement that excellent

4450

03:28:10,910 --> 03:28:09,000

answer by noting that we have not seen

4451

03:28:13,490 --> 03:28:10,920

the extraordinary evidence

4452

03:28:16,610 --> 03:28:13,500

that I mean in a sense to give you know

4453

03:28:19,670 --> 03:28:16,620

to make the claim that we see something

4454

03:28:22,790 --> 03:28:19,680

that is evidence of

4455

03:28:24,650 --> 03:28:22,800

you know uh non-human intelligence it

4456

03:28:25,790 --> 03:28:24,660

would be it would require extraordinary

4457

03:28:28,309 --> 03:28:25,800

evidence

4458

03:28:31,729 --> 03:28:28,319

and we have not seen that I think that's

4459

03:28:37,309 --> 03:28:35,030

all right then I will move on to our

4460

03:28:39,710 --> 03:28:37,319

seventh set of questions we received

4461

03:28:43,670 --> 03:28:39,720

many questions about the budget that is

4462

03:28:46,130 --> 03:28:43,680

being uh dedicated to this uh how large

4463

03:28:48,050 --> 03:28:46,140

of a budget will NASA allocate how large

4464

03:28:50,210 --> 03:28:48,060

of a budget is NASA allocating and how

4465

03:28:52,910 --> 03:28:50,220

large of a budget will NASA allocate

4466

03:28:55,670 --> 03:28:52,920

towards this the study of UAP is Dan

4467

03:28:57,410 --> 03:28:55,680

yeah that's a darn question so there are

4468

03:28:59,870 --> 03:28:57,420

two separate questions in there which is

4469

03:29:00,590 --> 03:28:59,880

what is the budget for this group this

4470

03:29:03,650 --> 03:29:00,600

team

4471

03:29:05,630 --> 03:29:03,660

and what is the budget going forward I

4472

03:29:07,550 --> 03:29:05,640

think now the

4473

03:29:10,250 --> 03:29:07,560

independent study team is is very

4474

03:29:11,990 --> 03:29:10,260

consistent with any other of our

4475

03:29:13,670 --> 03:29:12,000

external review groups that we bring

4476
03:29:14,990 --> 03:29:13,680
into the science mission directorate on

4477
03:29:18,110 --> 03:29:15,000
an annual basis so you know we have

4478
03:29:19,849 --> 03:29:18,120
maybe 100 200 such groups entirely

4479
03:29:21,830 --> 03:29:19,859
consistent with that

4480
03:29:24,349 --> 03:29:21,840
also important to say going forward now

4481
03:29:26,750 --> 03:29:24,359
that NASA has not established a program

4482
03:29:28,610 --> 03:29:26,760
relative to UAP

4483
03:29:30,950 --> 03:29:28,620
and as a result there's no Associated

4484
03:29:33,290 --> 03:29:30,960
programmatic funding but this is how

4485
03:29:37,490 --> 03:29:33,300
NASA Works Federal budgeting is is a

4486
03:29:39,950 --> 03:29:37,500
complex uh journey of course and the way

4487
03:29:41,929 --> 03:29:39,960
NASA particularly NASA science likes to

4488
03:29:44,870 --> 03:29:41,939

work is we anticipate and weight

4489

03:29:47,389 --> 03:29:44,880

recommendations from independent groups

4490

03:29:49,370 --> 03:29:47,399

such as this one and we need to wait on

4491

03:29:51,530 --> 03:29:49,380

Final recommendations and and then we'll

4492

03:29:53,750 --> 03:29:51,540

make an assessment so too early to say

4493

03:29:55,910 --> 03:29:53,760

but of course that's all couch in the

4494

03:29:57,229 --> 03:29:55,920

fact that Federal budgeting is a very

4495

03:30:00,050 --> 03:29:57,239

complex process and we will always

4496

03:30:05,809 --> 03:30:03,650

all right we're making good time we have

4497

03:30:08,710 --> 03:30:05,819

uh one more question that that

4498

03:30:12,650 --> 03:30:08,720

accomplished many of the ones we got

4499

03:30:15,290 --> 03:30:12,660

which is has NASA encountered any aliens

4500

03:30:17,269 --> 03:30:15,300

or extraterrestrial life what happens if

4501
03:30:19,790 --> 03:30:17,279
the public comes across extraterrestrial

4502
03:30:21,710 --> 03:30:19,800
life what would NASA do if

4503
03:30:23,389 --> 03:30:21,720
extraterrestrial life was discovered

4504
03:30:25,010 --> 03:30:23,399
what would NASA study or do if

4505
03:30:26,150 --> 03:30:25,020
extraterrestrial life was

4506
03:30:27,469 --> 03:30:26,160
now

4507
03:30:29,750 --> 03:30:27,479
I I think it's worth making a

4508
03:30:31,729 --> 03:30:29,760
distinction that they're when we talk

4509
03:30:33,710 --> 03:30:31,739
about extraterrestrial life we do have a

4510
03:30:35,929 --> 03:30:33,720
study within NASA of astrobiology which

4511
03:30:37,370 --> 03:30:35,939
is not intelligent life necessarily and

4512
03:30:39,410 --> 03:30:37,380
so I invite you as you answer this

4513
03:30:41,450 --> 03:30:39,420

question to make clear the distinctions

4514

03:30:43,929 --> 03:30:41,460

as you are talking

4515

03:30:48,170 --> 03:30:43,939

um uh in terms of

4516

03:30:49,309 --> 03:30:48,180

uaps as well as any astrobiology work

4517

03:30:51,830 --> 03:30:49,319

that we do

4518

03:30:55,910 --> 03:30:51,840

I would start by saying one of NASA's

4519

03:31:00,469 --> 03:30:55,920

big questions is is there life out there

4520

03:31:02,750 --> 03:31:00,479

right and a lot of what NASA is doing

4521

03:31:06,349 --> 03:31:02,760

in its exploration of the solar system

4522

03:31:08,030 --> 03:31:06,359

and beyond is focused on

4523

03:31:09,950 --> 03:31:08,040

searching for life in any form

4524

03:31:12,410 --> 03:31:09,960

extraterrestrial life

4525

03:31:13,370 --> 03:31:12,420

I think one of the things we have

4526
03:31:15,950 --> 03:31:13,380
learned

4527
03:31:17,389 --> 03:31:15,960
in the past 20 years is planets are

4528
03:31:19,790 --> 03:31:17,399
common we knew of course about the

4529
03:31:22,070 --> 03:31:19,800
planets in our solar system but we now

4530
03:31:24,710 --> 03:31:22,080
know there are lots of planets out there

4531
03:31:26,450 --> 03:31:24,720
so there are lots of potential

4532
03:31:29,690 --> 03:31:26,460
environments for life

4533
03:31:32,990 --> 03:31:29,700
and I think one of the most fascinating

4534
03:31:34,190 --> 03:31:33,000
questions is do any of those planets

4535
03:31:37,190 --> 03:31:34,200
host life

4536
03:31:39,710 --> 03:31:37,200
and that's uh something that NASA is

4537
03:31:40,790 --> 03:31:39,720
trying to address in a host of different

4538
03:31:45,170 --> 03:31:40,800

ways

4539

03:31:47,990 --> 03:31:45,180

whether it's probes that are landing on

4540

03:31:50,090 --> 03:31:48,000

planets or designing missions that will

4541

03:31:51,469 --> 03:31:50,100

look for signatures of life around other

4542

03:31:53,870 --> 03:31:51,479

planets so

4543

03:31:55,490 --> 03:31:53,880

the search for life is a really

4544

03:31:57,769 --> 03:31:55,500

important theme

4545

03:32:00,170 --> 03:31:57,779

we haven't found life beyond Earth yet

4546

03:32:01,849 --> 03:32:00,180

right I mean let's be clear about this

4547

03:32:04,729 --> 03:32:01,859

we haven't found it yet

4548

03:32:07,010 --> 03:32:04,739

but we're looking and we're looking for

4549

03:32:07,790 --> 03:32:07,020

it in lots of different ways and you

4550

03:32:10,670 --> 03:32:07,800

know

4551
03:32:13,729 --> 03:32:10,680
David was discussing techno signatures

4552
03:32:15,950 --> 03:32:13,739
as one way that we can work both within

4553
03:32:17,929 --> 03:32:15,960
our solar system and beyond and there's

4554
03:32:20,450 --> 03:32:17,939
so there's a lot a lot of different

4555
03:32:21,490 --> 03:32:20,460
elements I think of this potential

4556
03:32:23,330 --> 03:32:21,500
search

4557
03:32:26,510 --> 03:32:23,340
and

4558
03:32:28,729 --> 03:32:26,520
um you know just to go back to

4559
03:32:31,309 --> 03:32:28,739
something sort of those phrase in an

4560
03:32:34,429 --> 03:32:31,319
earlier question you know is NASA hiding

4561
03:32:36,950 --> 03:32:34,439
anything about this no this is actually

4562
03:32:38,510 --> 03:32:36,960
what you know answering this question is

4563
03:32:41,570 --> 03:32:38,520

one of the things that NASA's and

4564

03:32:43,190 --> 03:32:41,580

agencies is excited about it's what's

4565

03:32:46,849 --> 03:32:43,200

something that lots of scientists

4566

03:32:50,210 --> 03:32:46,859

working with NASA are excited about is

4567

03:32:53,090 --> 03:32:50,220

is this question of uh is there life out

4568

03:32:54,650 --> 03:32:53,100

there you know and I think one of the

4569

03:32:57,590 --> 03:32:54,660

things that

4570

03:32:59,389 --> 03:32:57,600

makes this question of are we alone such

4571

03:33:01,309 --> 03:32:59,399

a central question

4572

03:33:03,170 --> 03:33:01,319

not just to the scientific Community

4573

03:33:04,450 --> 03:33:03,180

it's a central question I think for the

4574

03:33:07,309 --> 03:33:04,460

public

4575

03:33:10,610 --> 03:33:07,319

I suspect there are more people watching

4576

03:33:13,729 --> 03:33:10,620

this than the typical episode of NASA TV

4577

03:33:16,550 --> 03:33:13,739

right and this is something where we

4578

03:33:18,349 --> 03:33:16,560

will have me you know media coming to

4579

03:33:20,570 --> 03:33:18,359

the press conference

4580

03:33:23,510 --> 03:33:20,580

because these questions touch on

4581

03:33:26,090 --> 03:33:23,520

something that I think is really a deep

4582

03:33:33,830 --> 03:33:26,100

question for Humanity

4583

03:33:39,229 --> 03:33:36,950

yeah it's just a kind of echo what David

4584

03:33:41,510 --> 03:33:39,239

said a bit I mean obviously this is

4585

03:33:43,309 --> 03:33:41,520

something uh we think a lot about in

4586

03:33:44,570 --> 03:33:43,319

astrobiology what you know what if we

4587

03:33:48,410 --> 03:33:44,580

succeed

4588

03:33:50,750 --> 03:33:48,420

um and uh you know we are very driven to

4589

03:33:53,570 --> 03:33:50,760

try to find uh real evidence of

4590

03:33:56,090 --> 03:33:53,580

extraterrestrial life and

4591

03:33:59,330 --> 03:33:56,100

um we would be highly driven to share

4592

03:34:00,889 --> 03:33:59,340

that if we found it because everyone

4593

03:34:03,170 --> 03:34:00,899

wants to show that they've been able to

4594

03:34:05,809 --> 03:34:03,180

succeed in what they're trying to do and

4595

03:34:08,210 --> 03:34:05,819

and you know one perhaps illustrative

4596

03:34:10,309 --> 03:34:08,220

example is to think about what happened

4597

03:34:11,750 --> 03:34:10,319

when we came close when NASA thought

4598

03:34:14,330 --> 03:34:11,760

maybe they had discovered

4599

03:34:16,130 --> 03:34:14,340

extraterrestrial life and and

4600

03:34:19,490 --> 03:34:16,140

um a big event actually in the history

4601
03:34:21,530 --> 03:34:19,500
of astrobiology was in in the 1990s when

4602
03:34:23,269 --> 03:34:21,540
some scientists had thought that they

4603
03:34:25,790 --> 03:34:23,279
had discovered fossils in a meteorite

4604
03:34:27,410 --> 03:34:25,800
that came from Mars

4605
03:34:29,870 --> 03:34:27,420
um and

4606
03:34:31,429 --> 03:34:29,880
what happens is you don't announce it

4607
03:34:32,570 --> 03:34:31,439
immediately you make sure that you try

4608
03:34:33,710 --> 03:34:32,580
to make sure you're right because you

4609
03:34:35,150 --> 03:34:33,720
don't also don't want to have false

4610
03:34:36,590 --> 03:34:35,160
alarms and announce something where and

4611
03:34:38,690 --> 03:34:36,600
then you go oops sorry we were wrong

4612
03:34:41,330 --> 03:34:38,700
that was a mistaken analysis but what

4613
03:34:43,610 --> 03:34:41,340

happened was when the when

4614

03:34:44,929 --> 03:34:43,620

the scientists were sure they were right

4615

03:34:46,849 --> 03:34:44,939

then

4616

03:34:48,530 --> 03:34:46,859

um there was a big

4617

03:34:50,630 --> 03:34:48,540

um in fact presidential press conference

4618

03:34:53,510 --> 03:34:50,640

with President Clinton and NASA and it

4619

03:34:55,429 --> 03:34:53,520

was a big Public Announcement and

4620

03:34:57,290 --> 03:34:55,439

um that's what would happen if we

4621

03:34:59,330 --> 03:34:57,300

discovered something we would try to

4622

03:35:01,910 --> 03:34:59,340

make sure we were right and then we

4623

03:35:03,769 --> 03:35:01,920

would very proudly and loudly let the

4624

03:35:05,269 --> 03:35:03,779

public know about it

4625

03:35:07,490 --> 03:35:05,279

just one minute left so I'll let you

4626
03:35:09,590 --> 03:35:07,500
finish up yeah thank you um the only

4627
03:35:11,330 --> 03:35:09,600
thing I wanted to add I wouldn't at all

4628
03:35:14,389 --> 03:35:11,340
liken it to

4629
03:35:16,910 --> 03:35:14,399
um alien or extraterrestrial life but in

4630
03:35:19,490 --> 03:35:16,920
astrobiology and exobiology you know

4631
03:35:22,610 --> 03:35:19,500
there is the exploration of our planet

4632
03:35:24,469 --> 03:35:22,620
as an analog for what might be found

4633
03:35:26,450 --> 03:35:24,479
on other worlds

4634
03:35:28,729 --> 03:35:26,460
um you know and what what is extreme

4635
03:35:30,950 --> 03:35:28,739
cold what is extreme heat

4636
03:35:32,809 --> 03:35:30,960
um a volcano A black smoker at the

4637
03:35:34,790 --> 03:35:32,819
bottom of the ocean what lives there and

4638
03:35:36,889 --> 03:35:34,800

how is that even possible and things we

4639

03:35:39,110 --> 03:35:36,899

still discover throughout our ocean

4640

03:35:40,490 --> 03:35:39,120

might look alien to a lot of people

4641

03:35:43,010 --> 03:35:40,500

right

4642

03:35:45,050 --> 03:35:43,020

um and we keep discovering new species

4643

03:35:47,929 --> 03:35:45,060

of different things whether they be

4644

03:35:51,469 --> 03:35:47,939

microbes or algae or you know

4645

03:35:54,110 --> 03:35:51,479

charismatic megafauna whatever they are

4646

03:35:56,330 --> 03:35:54,120

um but there are synergies I know there

4647

03:35:58,070 --> 03:35:56,340

was an initiative years ago at Nasa

4648

03:36:01,309 --> 03:35:58,080

called oceans across the solar system

4649

03:36:03,290 --> 03:36:01,319

and the idea was could our own Earth's

4650

03:36:04,969 --> 03:36:03,300

ocean be used in the life within it as

4651
03:36:07,130 --> 03:36:04,979
an analog for what might be discovered

4652
03:36:09,229 --> 03:36:07,140
elsewhere so I think that's an example

4653
03:36:11,150 --> 03:36:09,239
of a potential Synergy of

4654
03:36:14,210 --> 03:36:11,160
interdisciplinary science research

4655
03:36:15,650 --> 03:36:14,220
observations Etc collection of data and

4656
03:36:17,450 --> 03:36:15,660
information gathering that could be

4657
03:36:19,309 --> 03:36:17,460
useful in the future

4658
03:36:30,170 --> 03:36:19,319
thank you all so much I will hand it

4659
03:36:35,330 --> 03:36:32,929
so let me also just answer the one other

4660
03:36:37,729 --> 03:36:35,340
piece of that question was what do you

4661
03:36:39,110 --> 03:36:37,739
do if you see something surprising wait

4662
03:36:41,750 --> 03:36:39,120
where do you report

4663
03:36:43,910 --> 03:36:41,760

and this is something where just to come

4664

03:36:48,229 --> 03:36:43,920

back to something I mentioned my opening

4665

03:36:49,969 --> 03:36:48,239

remarks the aaro is the our lead Agency

4666

03:36:52,130 --> 03:36:49,979

for uaps

4667

03:36:55,190 --> 03:36:52,140

and while we've talked about origin you

4668

03:36:57,769 --> 03:36:55,200

know life in this context

4669

03:37:00,170 --> 03:36:57,779

most uaps

4670

03:37:02,150 --> 03:37:00,180

I think when a woman looks at the data

4671

03:37:04,250 --> 03:37:02,160

in more detail are going to turn out to

4672

03:37:06,530 --> 03:37:04,260

be phenomenally understand we saw this

4673

03:37:10,550 --> 03:37:06,540

with some of the balloons or or

4674

03:37:13,790 --> 03:37:10,560

commercial Jets we saw those examples

4675

03:37:17,150 --> 03:37:13,800

some uaps and we saw this with the

4676

03:37:19,370 --> 03:37:17,160

Chinese balloon that flew over is

4677

03:37:20,929 --> 03:37:19,380

something an issue sometimes of National

4678

03:37:22,969 --> 03:37:20,939

Security

4679

03:37:24,110 --> 03:37:22,979

so we actually do want to encourage

4680

03:37:25,910 --> 03:37:24,120

people

4681

03:37:27,950 --> 03:37:25,920

just from that angle

4682

03:37:30,290 --> 03:37:27,960

to report it

4683

03:37:33,050 --> 03:37:30,300

so you know uh

4684

03:37:35,269 --> 03:37:33,060

since uh just before it will transition

4685

03:37:37,490 --> 03:37:35,279

to summary but that's what it is on that

4686

03:37:38,870 --> 03:37:37,500

question that you know to keep in mind

4687

03:37:42,889 --> 03:37:38,880

that

4688

03:37:45,590 --> 03:37:42,899

um you know the aaros role is to be the

4689

03:37:46,610 --> 03:37:45,600

prime source for understanding those

4690

03:37:49,910 --> 03:37:46,620

things

4691

03:37:51,950 --> 03:37:49,920

and what our charge is is to think about

4692

03:37:55,370 --> 03:37:51,960

what's NASA's role

4693

03:37:58,250 --> 03:37:55,380

and I think NASA you know and this is

4694

03:38:00,170 --> 03:37:58,260

something you know we'll con I want to

4695

03:38:02,870 --> 03:38:00,180

now go back to discussion we didn't have

4696

03:38:05,450 --> 03:38:02,880

that much time for it just to come back

4697

03:38:07,670 --> 03:38:05,460

to you know what we each you know what

4698

03:38:09,050 --> 03:38:07,680

we see as NASA's role

4699

03:38:10,849 --> 03:38:09,060

in this

4700

03:38:13,130 --> 03:38:10,859

um I think one world piece we've talked

4701
03:38:16,849 --> 03:38:13,140
about is

4702
03:38:19,070 --> 03:38:16,859
be uh NASA can help remove the stigma

4703
03:38:20,990 --> 03:38:19,080
NASA can draw them more of the

4704
03:38:24,229 --> 03:38:21,000
scientific community in

4705
03:38:27,050 --> 03:38:24,239
and I think what NASA could help do is

4706
03:38:30,349 --> 03:38:27,060
provide standards of high data quality

4707
03:38:32,570 --> 03:38:30,359
I think one of the things that many of

4708
03:38:34,370 --> 03:38:32,580
us who've come you know not looked at

4709
03:38:35,570 --> 03:38:34,380
this before I certainly put myself in

4710
03:38:40,370 --> 03:38:35,580
this group

4711
03:38:43,010 --> 03:38:40,380
was struck by the limited nature of the

4712
03:38:44,750 --> 03:38:43,020
data that many events had uh

4713
03:38:46,670 --> 03:38:44,760

insufficient data

4714

03:38:49,429 --> 03:38:46,680
and that in order to get a better

4715

03:38:51,710 --> 03:38:49,439
understanding we will need to have you

4716

03:38:53,750 --> 03:38:51,720
know high quality data data where we

4717

03:38:56,450 --> 03:38:53,760
understand it's provenance

4718

03:38:59,090 --> 03:38:56,460
data from multiple sensors

4719

03:39:02,510 --> 03:38:59,100
I think one of the things that uh you

4720

03:39:04,849 --> 03:39:02,520
know even from the same sensor as we saw

4721

03:39:07,130 --> 03:39:04,859
you know in Josh's analysis you know

4722

03:39:09,469 --> 03:39:07,140
also the event Sean showed us when you

4723

03:39:12,590 --> 03:39:09,479
can observe event over time

4724

03:39:14,510 --> 03:39:12,600
and get velocity information that gives

4725

03:39:16,070 --> 03:39:14,520
you a lot of additional information so

4726
03:39:17,150 --> 03:39:16,080
we're going to want things with high

4727
03:39:19,010 --> 03:39:17,160
frame rate

4728
03:39:21,229 --> 03:39:19,020
we're going to want things from multiple

4729
03:39:23,990 --> 03:39:21,239
perspectives

4730
03:39:25,550 --> 03:39:24,000
um and uh you know so I I think those

4731
03:39:28,070 --> 03:39:25,560
are all going to be pieces of things

4732
03:39:29,870 --> 03:39:28,080
that we want to think about

4733
03:39:33,469 --> 03:39:29,880
um

4734
03:39:34,849 --> 03:39:33,479
I think this is an opportunity for

4735
03:39:36,490 --> 03:39:34,859
citizen science

4736
03:39:39,590 --> 03:39:36,500
I think if

4737
03:39:41,750 --> 03:39:39,600
we can come up with recommendations in

4738
03:39:43,550 --> 03:39:41,760

our roadmap that point to ways in which

4739

03:39:46,550 --> 03:39:43,560

we could collect it people can collect

4740

03:39:48,950 --> 03:39:46,560

data I remain a big fan of these things

4741

03:39:50,410 --> 03:39:48,960

they do take over our lives too much but

4742

03:39:53,750 --> 03:39:50,420

they are

4743

03:39:55,429 --> 03:39:53,760

fabulous data collectors of and I don't

4744

03:39:58,070 --> 03:39:55,439

know there's something like three four

4745

03:40:02,650 --> 03:39:58,080

billion of them that are on the planet

4746

03:40:06,769 --> 03:40:02,660

and NASA I think has the

4747

03:40:09,410 --> 03:40:06,779

Prestige and visibility to develop an

4748

03:40:13,309 --> 03:40:09,420

app or work with companies to develop

4749

03:40:16,729 --> 03:40:13,319

apps that could collect data in a

4750

03:40:20,269 --> 03:40:16,739

uniform and centralized way

4751
03:40:22,790 --> 03:40:20,279
um that I think will you know most the

4752
03:40:27,710 --> 03:40:22,800
stuff that's collected is going to turn

4753
03:40:29,210 --> 03:40:27,720
out to be commercial planes balloons uh

4754
03:40:30,469 --> 03:40:29,220
when you have multiple cameras you can

4755
03:40:32,389 --> 03:40:30,479
eliminate some of the optical

4756
03:40:34,190 --> 03:40:32,399
limitations of the ghosting and those

4757
03:40:37,570 --> 03:40:34,200
effects

4758
03:40:40,309 --> 03:40:37,580
um some of them will almost certainly be

4759
03:40:44,330 --> 03:40:40,319
novel physical phenomena

4760
03:40:46,130 --> 03:40:44,340
all right I think it is we have learned

4761
03:40:48,769 --> 03:40:46,140
a lot about our planet and how the

4762
03:40:49,550 --> 03:40:48,779
universe works there's a lot we don't

4763
03:40:55,190 --> 03:40:49,560

know

4764

03:40:56,630 --> 03:40:55,200

as scientists what is the most exciting

4765

03:40:58,969 --> 03:40:56,640

thing

4766

03:41:02,630 --> 03:40:58,979

is the surprises

4767

03:41:04,670 --> 03:41:02,640

and I think that there are things that

4768

03:41:06,950 --> 03:41:04,680

continue to surprise us about our own

4769

03:41:09,769 --> 03:41:06,960

Planet there's phenomenon or atmosphere

4770

03:41:12,590 --> 03:41:09,779

in the atmosphere that we probably

4771

03:41:13,790 --> 03:41:12,600

haven't seen yet or perhaps we've seen

4772

03:41:18,170 --> 03:41:13,800

and not

4773

03:41:20,150 --> 03:41:18,180

noticed yet right in this I I think a a

4774

03:41:22,010 --> 03:41:20,160

long history in science when you look

4775

03:41:25,610 --> 03:41:22,020

back and you realize

4776

03:41:28,190 --> 03:41:25,620

that this in Discovery had a

4777

03:41:29,450 --> 03:41:28,200

pre-discovery so people had seen

4778

03:41:32,690 --> 03:41:29,460

something before

4779

03:41:35,330 --> 03:41:32,700

and we're missing it and

4780

03:41:37,849 --> 03:41:35,340

those pre-discoveries were not of note

4781

03:41:40,010 --> 03:41:37,859

because often because

4782

03:41:41,510 --> 03:41:40,020

we had biases against seeing it but it

4783

03:41:42,889 --> 03:41:41,520

wasn't because there was limitations in

4784

03:41:45,349 --> 03:41:42,899

data quality

4785

03:41:48,469 --> 03:41:45,359

and uh

4786

03:41:49,510 --> 03:41:48,479

you know one of the things I was taught

4787

03:41:52,550 --> 03:41:49,520

is

4788

03:41:54,710 --> 03:41:52,560

when you have a question you don't know

4789

03:41:56,450 --> 03:41:54,720

how to answer you start by getting

4790

03:41:59,150 --> 03:41:56,460

better data

4791

03:42:01,969 --> 03:41:59,160

and you know I

4792

03:42:04,790 --> 03:42:01,979

uh were coming you know they get to do

4793

03:42:08,389 --> 03:42:04,800

the summary and as the chair I get to

4794

03:42:09,469 --> 03:42:08,399

you know summarize a conclusion and

4795

03:42:12,590 --> 03:42:09,479

um

4796

03:42:13,790 --> 03:42:12,600

we need better data would be my my

4797

03:42:16,729 --> 03:42:13,800

takeaway

4798

03:42:20,990 --> 03:42:16,739

and we need more uniform data

4799

03:42:26,330 --> 03:42:24,229

we need to be able to understand what's

4800

03:42:29,090 --> 03:42:26,340

in the haystack and it's

4801
03:42:31,570 --> 03:42:29,100
a lot more complicated than a haystack

4802
03:42:34,969 --> 03:42:31,580
in a sense right as you know it's got

4803
03:42:38,690 --> 03:42:34,979
commercial planes it's got you know

4804
03:42:41,090 --> 03:42:38,700
drones and you know I think uh the

4805
03:42:42,410 --> 03:42:41,100
number of drones out there is large and

4806
03:42:44,389 --> 03:42:42,420
growing

4807
03:42:46,429 --> 03:42:44,399
and will be a continual source of

4808
03:42:47,090 --> 03:42:46,439
confusion

4809
03:42:49,550 --> 03:42:47,100
um

4810
03:42:52,010 --> 03:42:49,560
we were charged to think about air

4811
03:42:53,690 --> 03:42:52,020
safety you know understanding and

4812
03:42:55,729 --> 03:42:53,700
characterizing seeing what's going on

4813
03:42:59,450 --> 03:42:55,739

with drones is also I think going to be

4814

03:43:02,450 --> 03:42:59,460

an important air safety issue

4815

03:43:05,750 --> 03:43:02,460

um so we'll need to uh

4816

03:43:07,790 --> 03:43:05,760

you know to understand the unknown or

4817

03:43:10,010 --> 03:43:07,800

start to study the unknown

4818

03:43:13,010 --> 03:43:10,020

another important piece is always going

4819

03:43:15,050 --> 03:43:13,020

to be characterizing the known

4820

03:43:19,070 --> 03:43:15,060

really well

4821

03:43:22,130 --> 03:43:19,080

and um you know this is the part I think

4822

03:43:23,090 --> 03:43:22,140

of a lot of science that seems dry and

4823

03:43:26,929 --> 03:43:23,100

boring

4824

03:43:30,349 --> 03:43:26,939

but it's calibration and understanding

4825

03:43:34,030 --> 03:43:30,359

the events you expect to see

4826
03:43:37,550 --> 03:43:34,040
um you know in thinking about this area

4827
03:43:40,070 --> 03:43:37,560
one of the groups of people that people

4828
03:43:42,110 --> 03:43:40,080
talk to are particle physicists doing

4829
03:43:44,210 --> 03:43:42,120
experiments at CERN

4830
03:43:47,570 --> 03:43:44,220
where they go through the effort of

4831
03:43:48,889 --> 03:43:47,580
finding extremely rare events to find

4832
03:43:51,889 --> 03:43:48,899
new particles

4833
03:43:54,410 --> 03:43:51,899
and in order to do that you need to

4834
03:43:56,450 --> 03:43:54,420
understand the standard predictions well

4835
03:43:57,410 --> 03:43:56,460
so I think another part of the whole

4836
03:44:00,050 --> 03:43:57,420
story

4837
03:44:01,790 --> 03:44:00,060
and I know this is something Aro is

4838
03:44:03,650 --> 03:44:01,800

working hard on in the context of

4839

03:44:06,710 --> 03:44:03,660

military it's like you've got to

4840

03:44:09,910 --> 03:44:06,720

characterize what you the known Things

4841

03:44:13,910 --> 03:44:09,920

Are you know when you've got that

4842

03:44:17,389 --> 03:44:13,920

F-35 flying past a balloon what does it

4843

03:44:21,130 --> 03:44:17,399

see what does it see at Sunset what does

4844

03:44:23,450 --> 03:44:21,140

it see in odd observing angles and that

4845

03:44:26,510 --> 03:44:23,460

characterizing the normal

4846

03:44:29,090 --> 03:44:26,520

is an essential thing to do to

4847

03:44:30,769 --> 03:44:29,100

understand what's out there

4848

03:44:34,370 --> 03:44:30,779

so let me

4849

03:44:36,950 --> 03:44:34,380

conclude the session by thanking the

4850

03:44:38,150 --> 03:44:36,960

panelists it's been a pleasure learning

4851
03:44:41,990 --> 03:44:38,160
from you

4852
03:44:44,630 --> 03:44:42,000
thanking our uh Sean and and our other

4853
03:44:47,030 --> 03:44:44,640
invited speakers and our our that we've

4854
03:44:50,030 --> 03:44:47,040
had we've had for our uh some of our

4855
03:44:51,910 --> 03:44:50,040
data collection sessions we've learned a

4856
03:44:55,309 --> 03:44:51,920
tremendous amount from you

4857
03:44:57,250 --> 03:44:55,319
and also thank the public for their

4858
03:45:00,110 --> 03:44:57,260
engagements I think we were all

4859
03:45:02,030 --> 03:45:00,120
impressed by the the number and level

4860
03:45:03,650 --> 03:45:02,040
and sophistication of the questions

4861
03:45:06,710 --> 03:45:03,660
people sent in

4862
03:45:08,090 --> 03:45:06,720
we try to address as many as the that we

4863
03:45:12,010 --> 03:45:08,100

could in the session

4864

03:45:14,630 --> 03:45:12,020

as you've heard NASA through

4865

03:45:16,269 --> 03:45:14,640

science.nasa.gov will provide there'll

4866

03:45:20,030 --> 03:45:16,279

be some additional answers provided

4867

03:45:26,750 --> 03:45:22,670

actually is a non-nasa employee I'll put

4868

03:45:29,389 --> 03:45:26,760

in a little ad for science.nasa.gov

4869

03:45:31,490 --> 03:45:29,399

NASA does amazing things

4870

03:45:32,929 --> 03:45:31,500

and we're learning amazing things about

4871

03:45:36,050 --> 03:45:32,939

the universe

4872

03:45:37,330 --> 03:45:36,060

and our planet and just encourage you to

4873

03:45:39,590 --> 03:45:37,340

go there

4874

03:45:42,530 --> 03:45:39,600

and uh

4875

03:45:43,490 --> 03:45:42,540

continue to learn and continue to

4876

03:46:01,010 --> 03:45:43,500

explore

4877

03:46:08,269 --> 03:46:04,630

we are going

4878

03:46:11,090 --> 03:46:08,279

the history of this agency is marked

4879

03:46:12,490 --> 03:46:11,100

with broken barriers once viewed as

4880

03:46:16,130 --> 03:46:12,500

impossible