Russia Undermining Confidence in GPS
US National PNT Advisory Board
17 May 18
From Self Defense Precaution to...

“25,000 Russian Cell Towers to Include GPS Jammers to Thwart US Cruise Missiles”

Multiple Russian Press Outlets - 2015
Active Disruption

Finnmark, Norway
- Sept 2017
- March 2018
Aviation & Telecommunications

Baltic Sea
(Norway, Sweden, Finland, Latvia)
- Sept 2017
Cell Phones, other?
Active Disruption

GPS but not GLONASS or other GNSS

Images: Norwegian Communications Authority
Active Disruption

Eastern Mediterranean – Four US Maritime Administration Advisories Since March 2018

‘Most aggressive jamming environment the world has seen.’
US General Raymond Thomas
Active Disruption

Flight Standards Bureau

Long Term GPS Warnings

• Ukraine, espec. Crimea
• Turkey
Active Disruption

Spoofing

Baltic –
• Since at least 2015

Moscow –
• Since at least 2016

Black Sea
• Since at least 2015
Russian Deputy Prime Minister
Dmitry Rogozin to President Putin:

“This year we will fully equip all seaports in Crimea with these systems (differential GLONASS)...

Do you remember how you criticized us for lagging behind in GPS? We have caught up with this backlog and will not have it anymore.

...8,791 vessels in our basin are now GLONASS equipped.”

PortNews.RU – April 2018
Possible Russian Goals

• Frustrate western military and peacekeeping operations

• Protect high value assets from drones

• Encourage adoption and use of GLONASS in lieu of GPS

• Intimidate its neighbors, cause them to question relationship with/reliance upon US and US technology
It is the policy of the United States to:

“... continue to provide civil services that exceed or are competitive with foreign civil space-based positioning, navigation, and timing services and augmentation systems...”

and

“Encourage foreign development of positioning, navigation, and timing services and systems based on the Global Positioning System.”

NSPD-39, 2004
Possible Remedy

National Space Council Panel – February 2018
• ‘Need holistic approach to space security w/ ground systems like eLoran’

PNT Advisory Board Presentations – June 2017
• iPosi – ‘GPS + encrypted high power eLoran time signal is bullet proof.’
• Dr. Gene McCall – ‘GPS + eLoran ideal combo’

Multiple US Govt Studies 2007 – 2018
• ‘eLoran is only practical augment’
The Resilient Navigation and Timing Foundation is a 501(c)3 scientific and educational charity registered in Virginia.