Maritime navigation

- International Maritime Organisation (IMO)
  - Fragmented Performance Standards for GNSS receivers
  - Present situation, various standards:
    - MSC.112(73) for GPS
    - MSC.113(73) for GLONASS
    - MSC.114(73) for dGPS and dGLONASS
    - MSC.115(73) for combined GPS and GLONASS
    - MSC.233(82) for GALILEO
  - Should evolve into a single “Performance Standard for Maritime Radionavigation Receivers”?
    - Could even include performance standards for back-up systems?
    - Initiatives to put this on the work programme for upcoming NAV-committee
Northern Sea Route

• Developments 2011

• Overview by Prof. Norvald Kjerstad,
• Ålesund Maritime University College

Graphic: Hugo Ahlenius, UNEP/GRID-Arendal


www.kystverket.no
Vladimir Tikhonov largest ship ever on the NSR (120,000t Suezmax).
Assisted by NI 50 let Probedy

Start Murmansk 21/8-2011
Loaded with 120,000t condensate (162,000 DWT)
2011 – International breakthrough?

15/7 Perseverance (E), 70,000t condensate to China 1) (return voyage 8/9)
15/7 Kigoriak (W) – unassisted. 2)
15/7 Dmitriy Pozharskiy (E) 3)
21/7 STI Heritage (E) 61,000t condensate to China 4)
4/8 Marilee (E) 5)
6/8 Pioner Moldavii (E)
9/8 Kommunary Nikolayeva (W)
14/8 Kapitan Pryakha (W)
22/8 Vladimir Tikhonov (E) 6)
28/8 Rainfrost (W) – unassisted. 7)
31/8 Sanko Odyssey (E) 8)
31/8 Stena Poseidon (E) 9)
14/9 Palva (E) 10)
19/9 Polarcs Alima (E) (unassisted)11)
24/9 Mariann (E) 12)
12/10 Affinity (E) 13)
1/11 Mar Adriana (E) 14)
Relevance to PNT?

Excellent discussed in an article in InsideGNSS sept/oct 2011:

- "Breaking the Ice – Navigation in the Arctic"
  - By Grace Xingxin Gao, Liang Heng, Todd Walter and Per Enge

- Arctic extension SBAS systems
- Use of LEO satellites to broadcast integrity info
- Multi-constellation GNSS to improve vertical performance
Kystverket tar ansvar for sjøveien

Kystverket er til stede langs hele Norges kyst og yter et mangfold av tjenester for alle typer brukere av norske farvann.