
UNINETT

Intro: on our way to Svalbard

Fibreoptic subsea cables offshore Longyearbyen and Ny-Ålesund on Svalbard

or …

Howto lay fibreoptic subsea cables in arctic environments in general

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

Why ?

In 2010, the **Norwegian Ministry of Education** and Research asked UNINETT to take the leading role in a project, to establish optic subsea cables between Longyearbyen and Ny-Ålesund.

Budget: NOK 90 mill. / SEK 95 mill. (close to EUR 9 mill)

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Project manager, Ny-Ålesund Optic Subsea Cable

Norwegian Mapping Authority

VLBI station in Ny-Ålesund
VLBI = **V**ery **L**ong **B**aseline **I**nterferometry

Right now data transfer reach maximum **1 Gbit/s** when transferring data to Bonn in Germany and other correlator sites in the VLBI network.

Future bandwith need is expected to be **20 Gbit/s** per antenna

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Project manager, Ny-Ålesund Optic Subsea Cable

UNINETT project team

Helge Stranden

Project manager
Involved in everything!

Grete Duna

Attended the installation of the 3 kilometer redundant subsea cable in Ny-Ålesund.

UNINETT representative on cable ship during cable lay on the seabed, with focus on documentation.

Frode Storvik

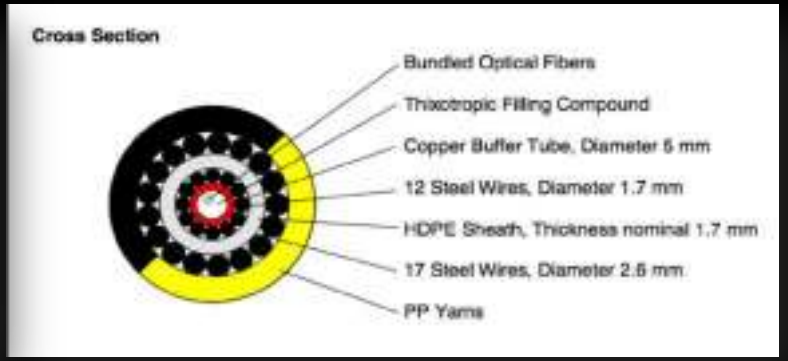
Attended the installation of the 3 kilometer redundant subsea cable in Ny-Ålesund.

Network design onshore in Ny-Ålesund and Longyearbyen.

Kurosh Bozorgebrahimi

DWDM implementations in Ny-Ålesund and Longyearbyen.

Nexans 24 fibre single-mode (ITU-T G.652.D)



Global Marine
Cable Innovator

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

Cable Innovator – 3 fully loaded cable tanks:
Norway to **Venezuela** in one single operation

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

2 x 270 kilometer
980 ton

Waiting for
Cable Innovator to
arrive Nexans in
Rognan, Norway
to load the cables

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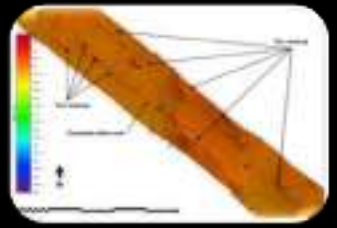
Project manager, Ny-Ålesund Optic Subsea Cable

Several subprojects

Tenders and contracts



Survey of the seabed

Horisontal Directional Drilling

Landings

Subsea cable lay

ROV control after cable lay

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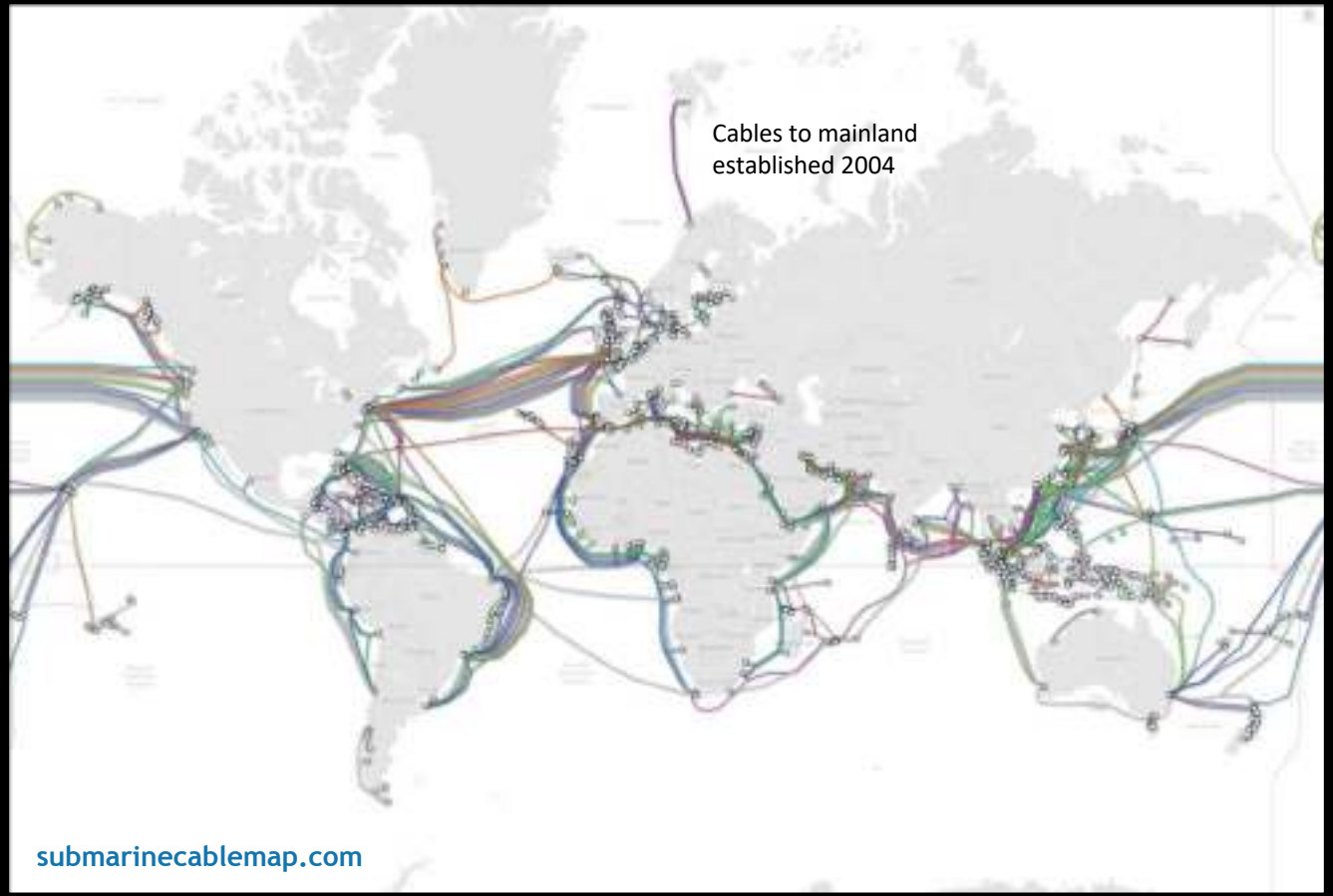
Project manager, Ny-Ålesund Optic Subsea Cable



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Svalbard

Kings Bay AS owns and manages Ny-Ålesund research village. Eleven institutions from ten countries around the world have established research stations here, three of which are permanently manned. In addition, several more institutions and nations come regularly to Ny-Ålesund to carry out research field activities.

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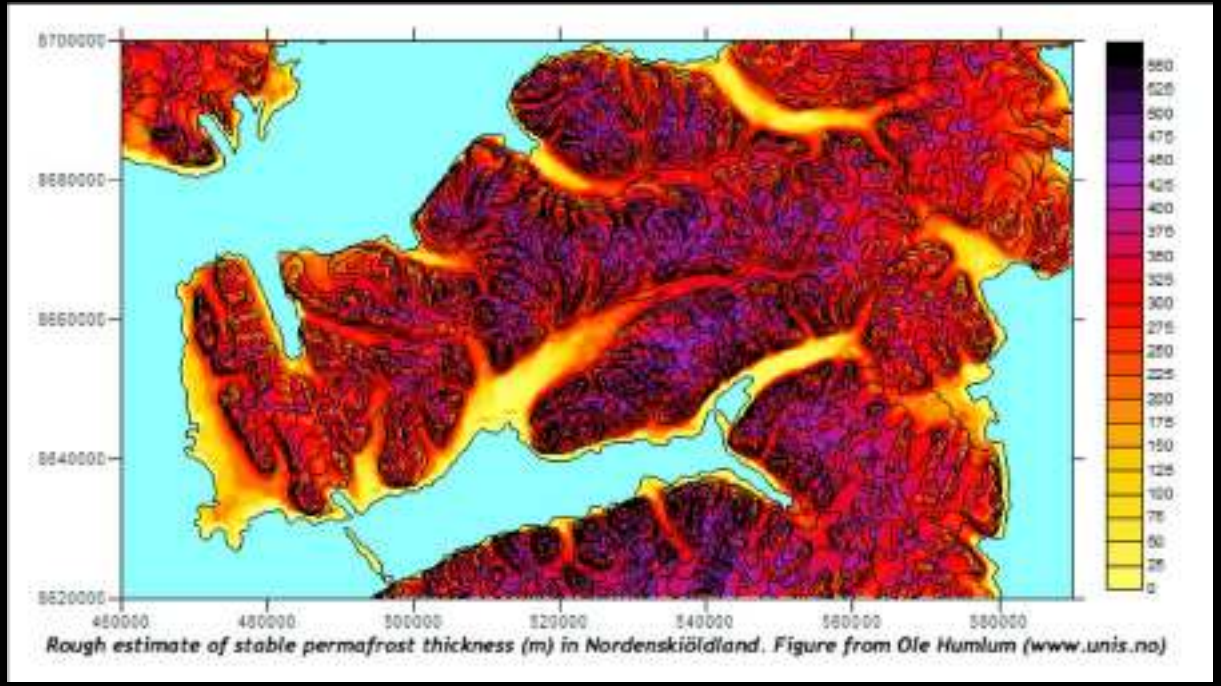
icebergs

permafrost



Rough estimate of stable permafrost thickness (m) in Nordenskiöldland. Figure from Ole Humlum (www.unis.no)

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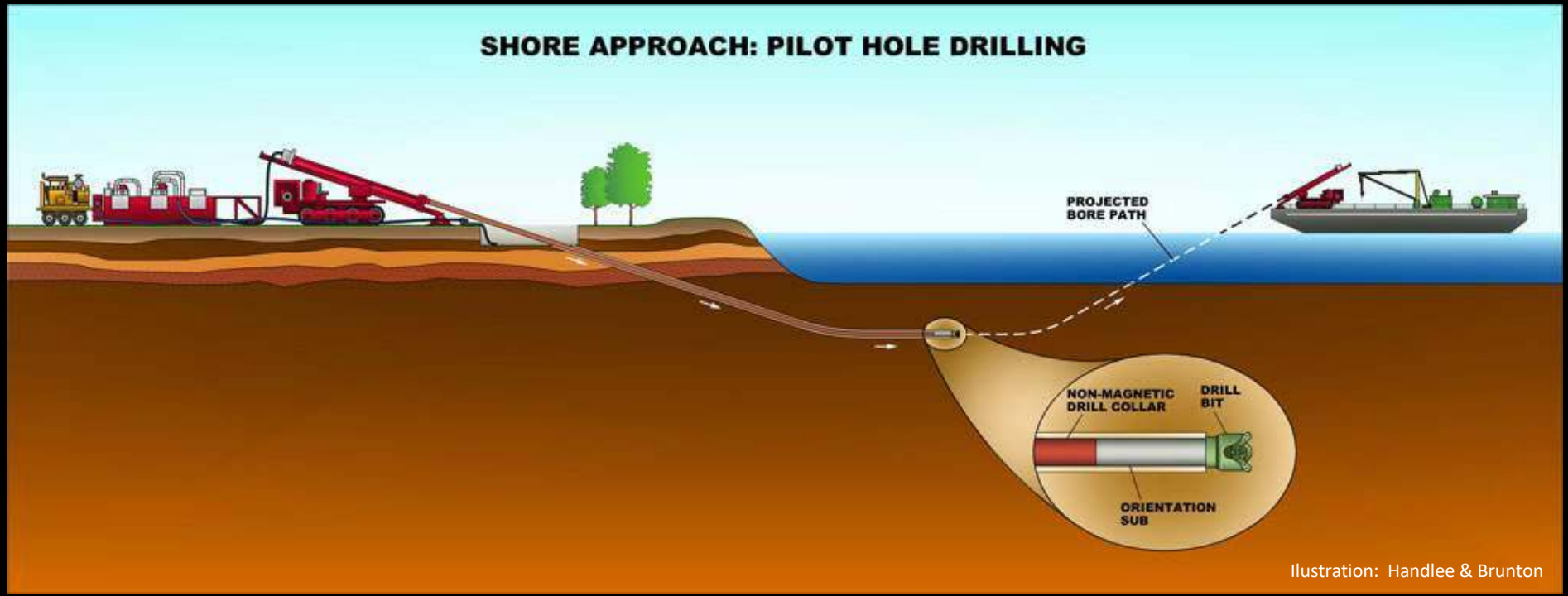
Project manager, Ny-Ålesund Optic Subsea Cable

Horisontal Directional Drilling for dummies



Ilustration: Handlee & Brunton

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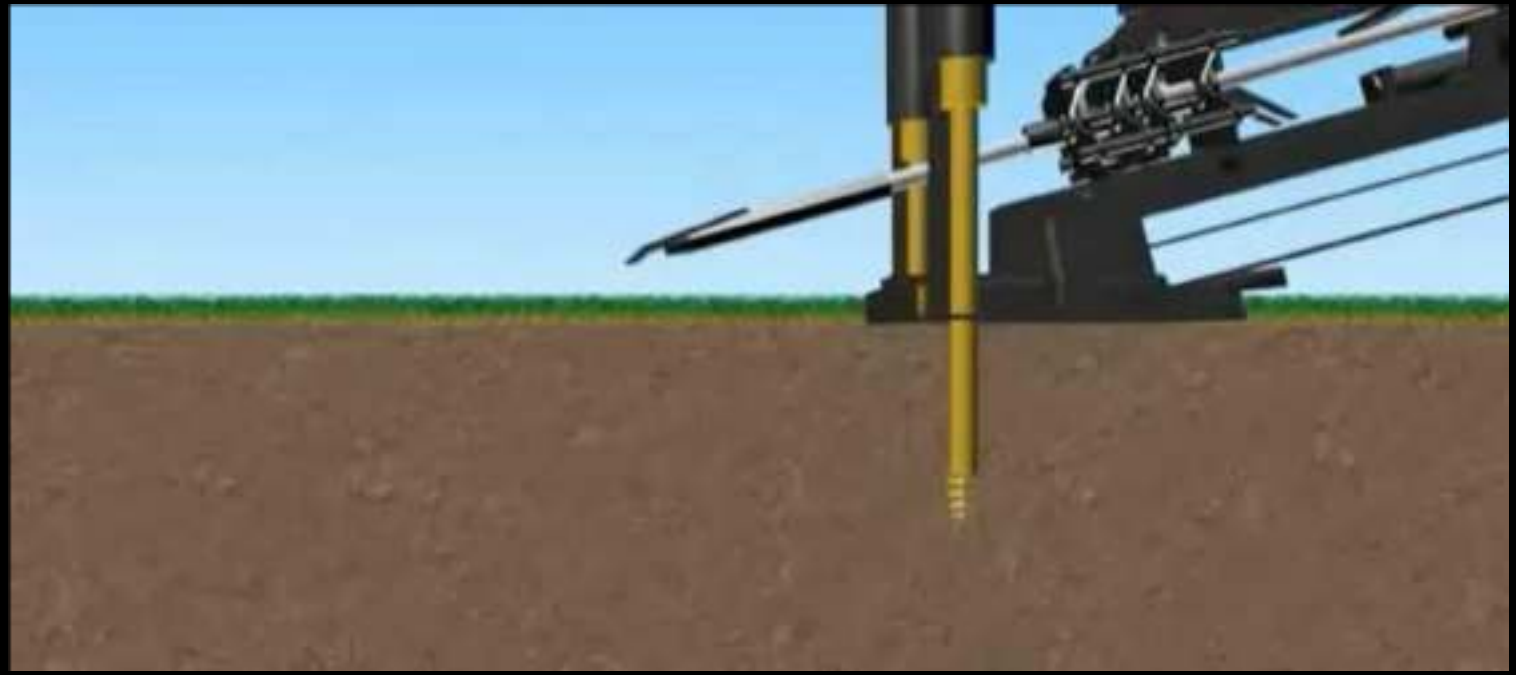
Project manager, Ny-Ålesund Optic Subsea Cable

Horisontal Directional Drilling for dummies



From: R.K. Infratel Ltd.

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Project manager, Ny-Ålesund Optic Subsea Cable

Longyearbyen

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VLBI station
Norwegian mapping authority
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Airport
(flights to Longyearbyen only)

Ny-Ålesund settlement
Scientists from up to
20 countries worldwide

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Project manager, Ny-Ålesund Optic Subsea Cable

Fibre cable from VLBI station
to settlement. Installed by Kings Bay

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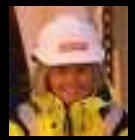
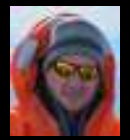
Project manager, Ny-Ålesund Optic Subsea Cable

3 km fibreoptic subsea cable installed
by 3 UNINETT employees only

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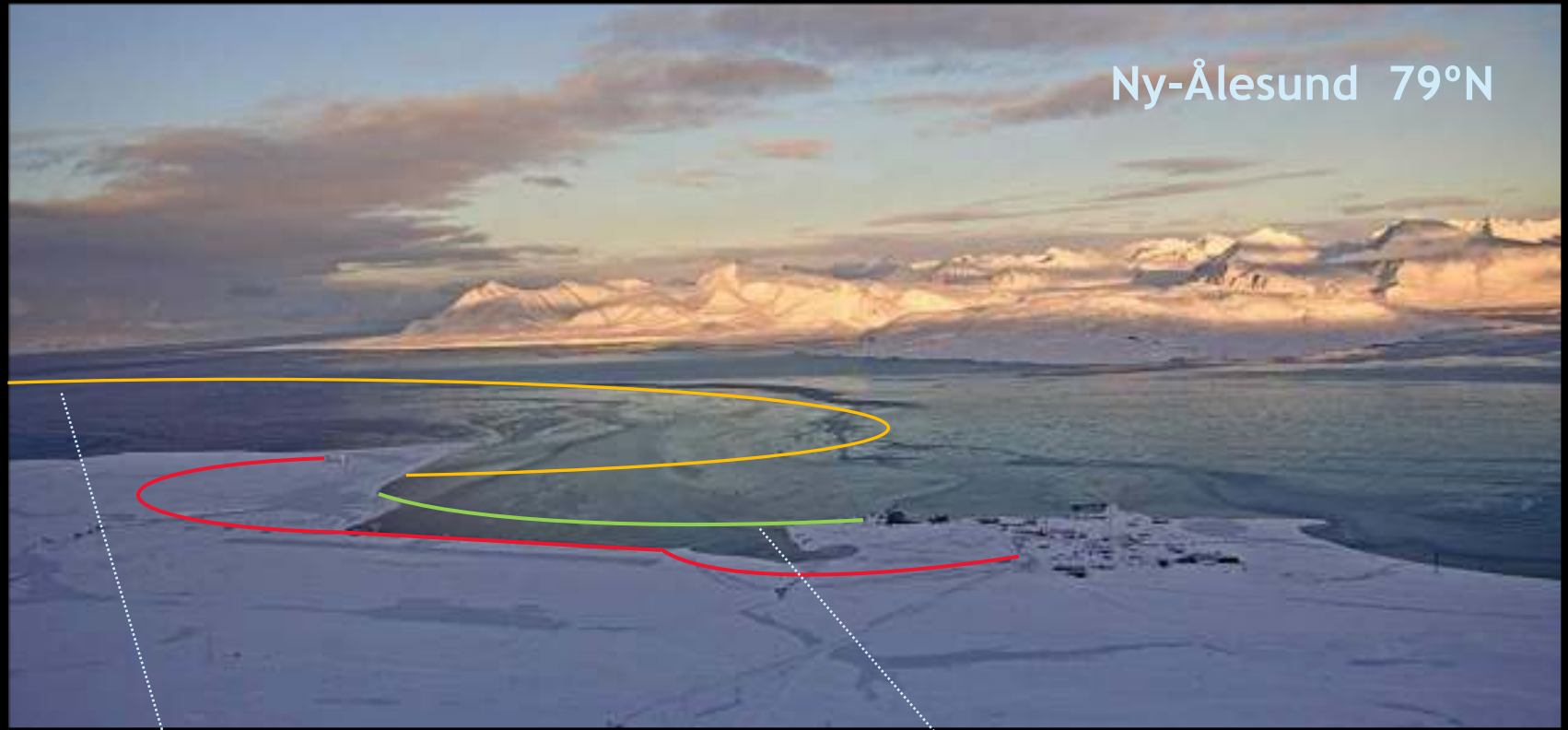
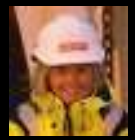


First fibreoptic subsea cable from Longyearbyen

3 km fibreoptic subsea cable installed by 3 UNINETT employees only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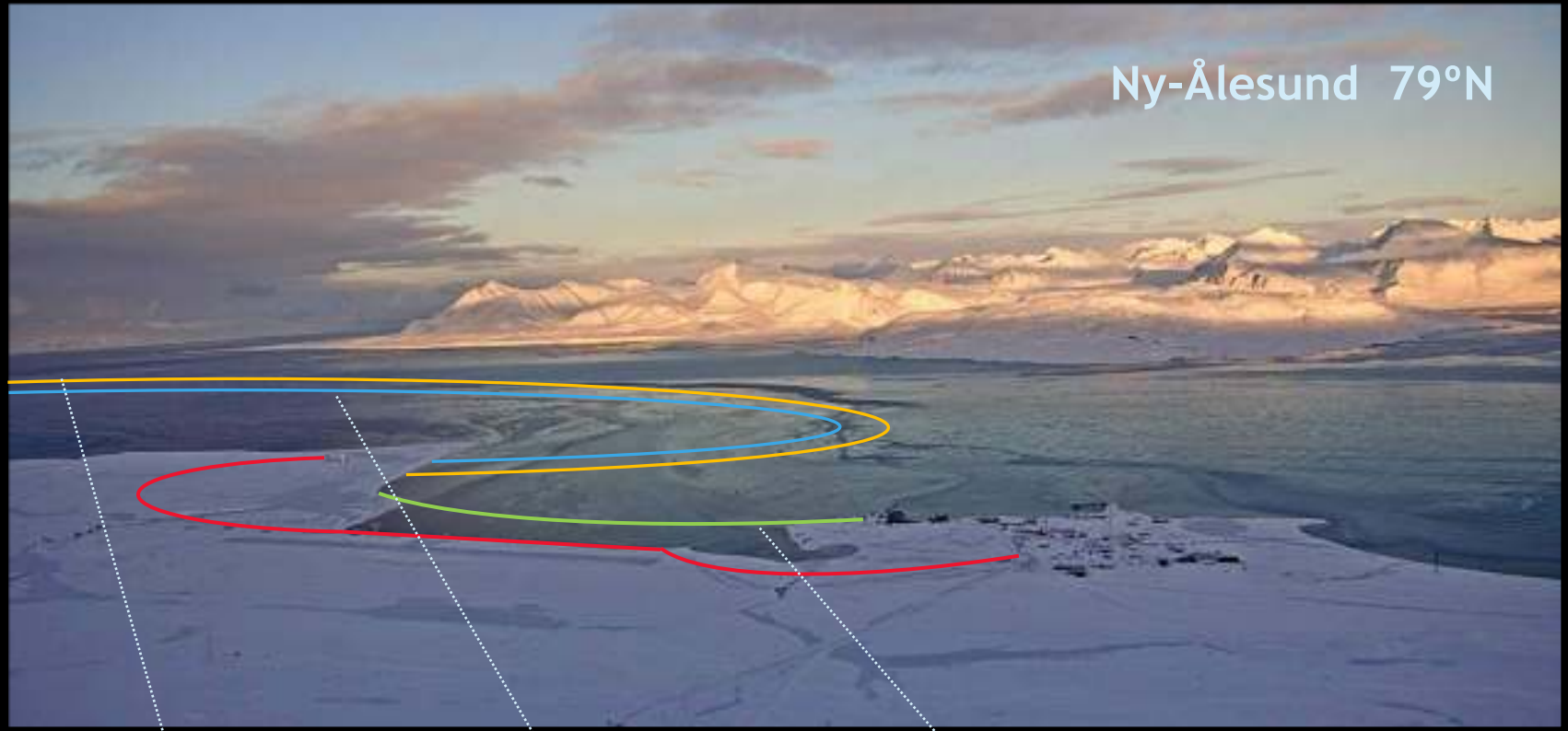
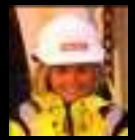


First fibreoptic subsea cable from Longyearbyen

Second fibreoptic subsea cable from Longyearbyen

3 km fibreoptic subsea cable installed by 3 UNINETT employees only



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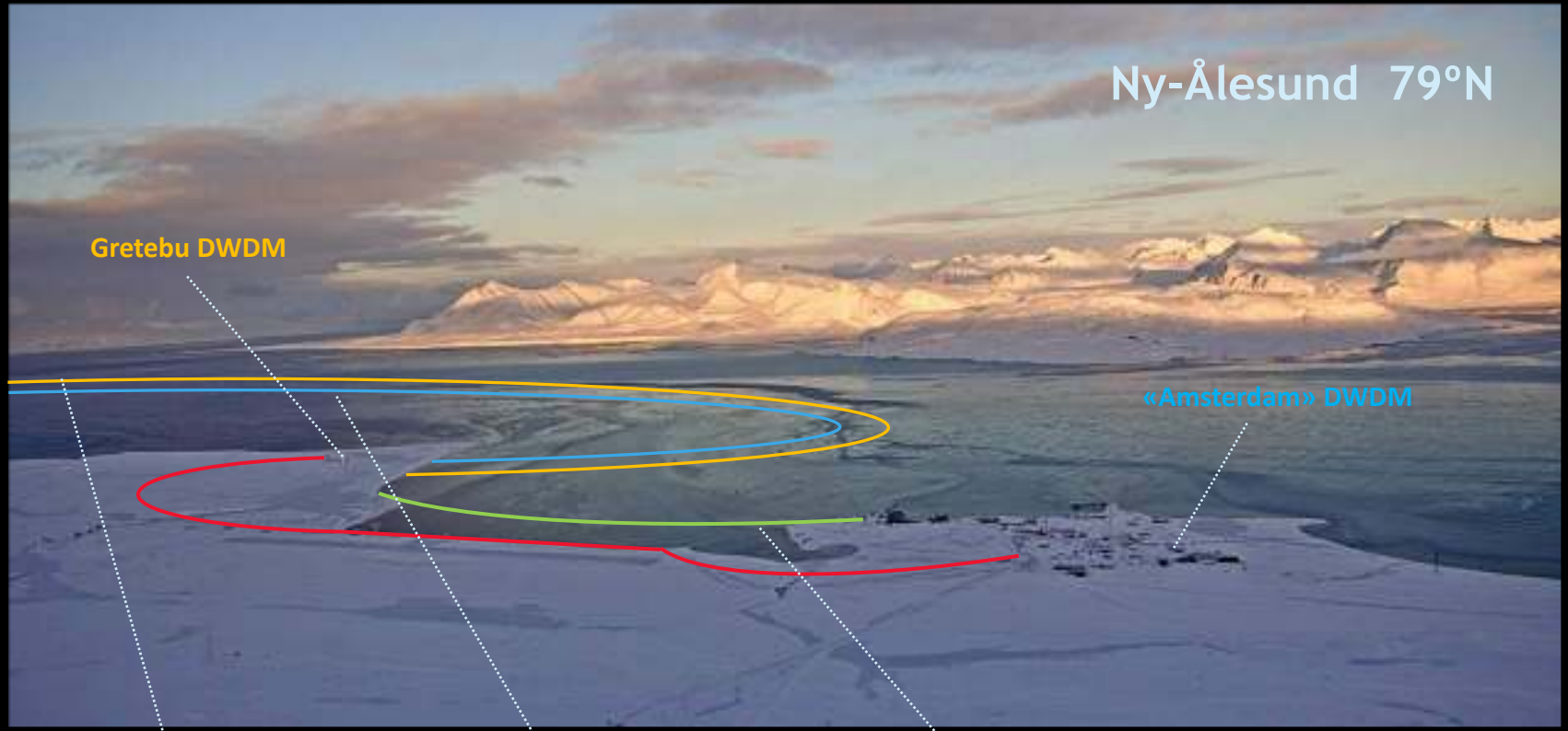

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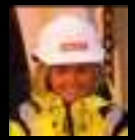
3 km fibreoptic subsea cable installed by 3 UNINETT employees only



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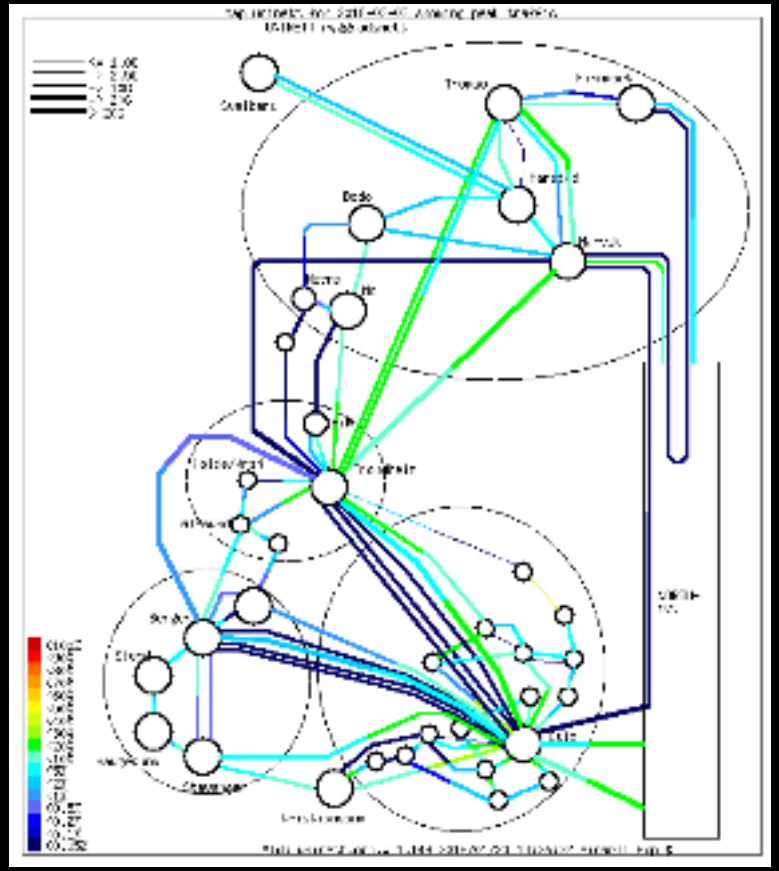

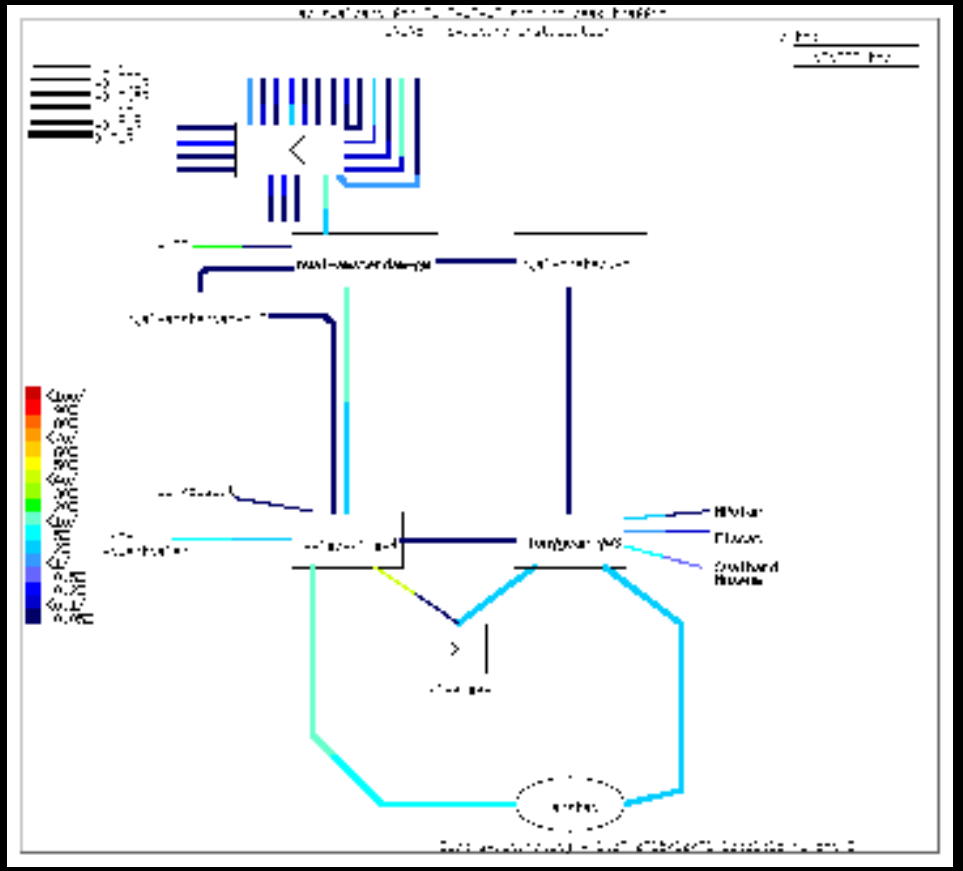

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HDD ship from Seaworks

Horisontal Directional Drilling (HDD)

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Different size matters!

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protector shields

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Logstistics planning extremely important!

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Vessels involved in the project

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Other equipment …

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Our «office» at the bridge onboard the cable vessel.

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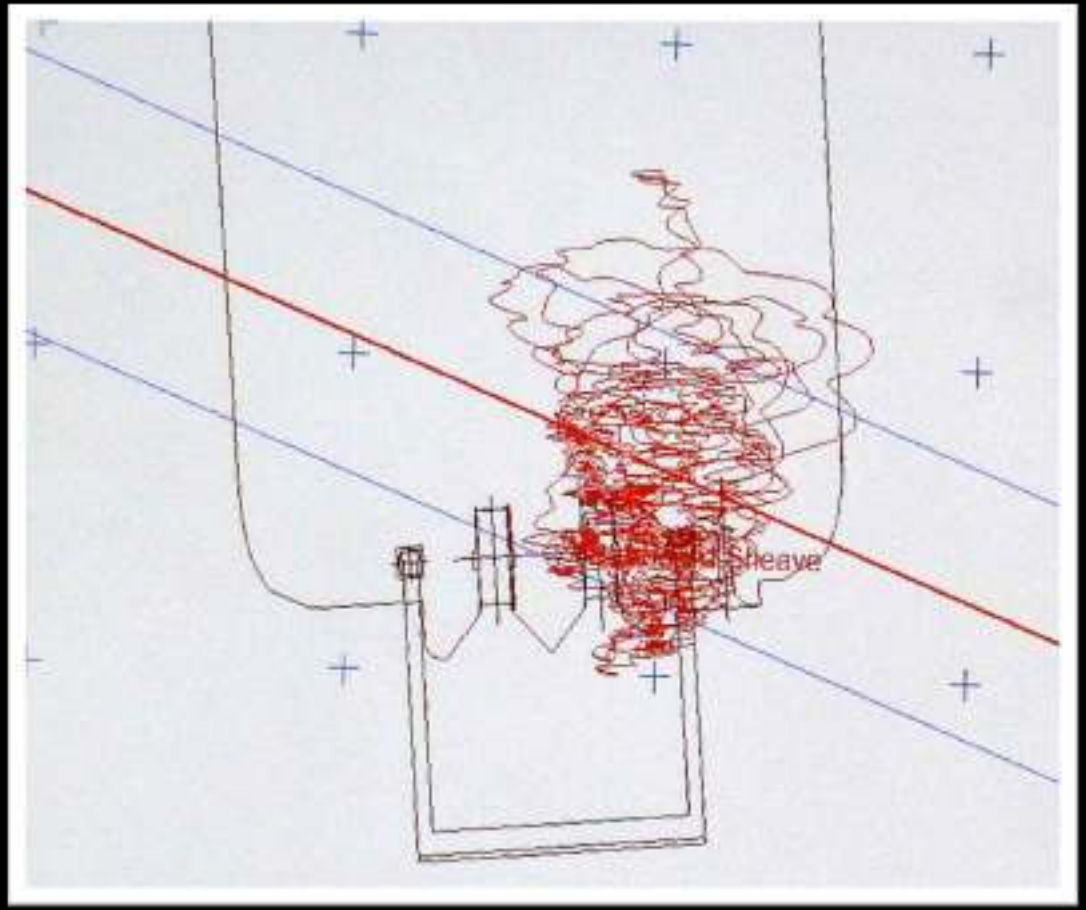

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HDD duct on 20 meters depth

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Preparing 2x5 kilometer spare cables

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Project manager, Ny-Ålesund Optic Subsea Cable

«Gretebu» - the world´s northernmost highspeed network node

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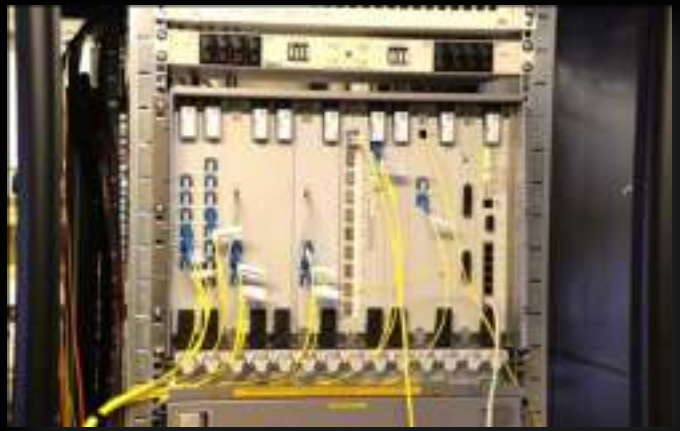
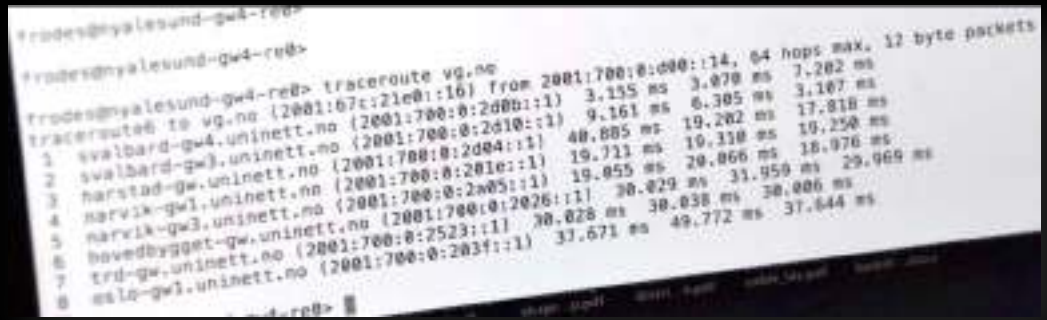
Project manager, Ny-Ålesund Optic Subsea Cable

Fibreoptic connection and verification



DWDM installation

Testing



Verification – traffic online

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

A 20 meters long fin whale very close to us

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

A 30 meter long blue whale close to the cable ship

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Project manager, Ny-Ålesund Optic Subsea Cable

Curious friends inspecting our work

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

«The less we see or hear about the physical infrastructure from this project in the future, the better»

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable

Subsea cables ready to
go 23 september 2014

on budget!

youtube: «uninett subsea cable»