



Kongens Lyngby 19. April 2019.

## **CURRICULUM VITAE**

**NAME:** Bo Krogh  
**BORN:** 8<sup>th</sup> November 1948  
**NATIONALITY:** Danish  
**PROFESSION:** Senior Surveyor  
**COURSES:** 2018. Hypack Training Course.  
2014. Basic Offshore Safety Course incl. HUET, Falck Nutec, Esbjerg.  
2011. Remus 100 Operators Course.  
2008. GeoSwath Plus Training Course.

**EDUCATION:** 1976. Navigational College, Copenhagen  
1972 - 74. Technical College, Copenhagen  
1967 - 71. Brüel & Kjør A/S, Copenhagen, Electronic Engineer

**LANGUAGES:** Danish (mother tongue), English (excellent)

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## **KEY QUALIFICATIONS**

Mr. Krogh has more than 35 years experience in hydrographic, engineering, environmental and archaeological survey projects including:

- ✓ Offshore Construction Surveys
- ✓ Seabed Mapping Surveys
- ✓ Marine Archaeology Surveys with AUV
- ✓ AUV surveys under Arctic Ice
- ✓ Pipeline Route Surveys
- ✓ Laying of Pipelines and Cables
- ✓ Rockdumping, Trenching and Dredging
- ✓ Installation of Subsea Templates
- ✓ 3D Seismic surveys

He has held positions such as AUV Supervisor, Company Site Representative, Senior Survey Engineer, Project Engineer - Survey & Rock Dumping and Offshore Vessel Manager, and has therefore gained a vast experience as project manager.

## **EMPLOYMENT RECORD**

<b>YEAR</b>	<b>COMPANY</b>	<b>POSITION AND RESPONSIBILITIES</b>
2003 - Date	Bo Krogh ApS, Kgs. Lyngby, Denmark	Senior Surveyor specialising in management, supervision and execution of survey projects, survey data processing, AUV's and Geographic Information Systems.
1999- 2002	Maridan A/S, Hørsholm, Denmark	Senior Surveyor. AUV Supervisor for the M150 AUV during environmental, under ice and archaeological surveys.
1984 - 99	Bo Krogh ApS, Kgs. Lyngby, Denmark	Offshore Survey Engineer, Project Engineer – Survey & Rock Dumping and Company Site Representative. Quality Control and management of offshore survey and -construction projects. Review and preparation of procedures, specifications and reports. Survey Consultant during development and production of Autonomous Underwater Vehicle for offshore surveys.
1982 - 83	Danish Hydraulic Institute, Copenhagen	Offshore Survey Engineer, Clients Representative (survey) during pipelaying operations and Offshore Manager during Pipeline Route Surveys. Preparation of quotations, procedures and reports.
1980 - 82	Eiva A/S, Århus, Denmark	Offshore Survey Engineer engaged in hire-out and sale of survey equipment, Surveyor during Rockdumping operations and Offshore Manager during ROV Surveys.
1979 - 80	Salvesen Marine (Offshore) Ltd., Aberdeen, UK.	Technical Advisor in charge of operation, installation, maintenance and hire-out of electronic equipment for hydrographic surveying.
1977 - 79	Lindinger Marine Services A/S, Copenhagen	Electronic Engineer/Surveyor during Pipelaying and Rockdumping operations.

## **EXPERIENCE RECORD (selected projects)**

<b>YEAR</b>	<b>PROJECT AREA</b>	<b>POSITION AND ACTIVITIES</b>
Mar17- Aug17	Barents Sea	AUV Supervisor during the UNIS (University Centre in Svalbard) cruise to the Barents Sea onboard M/V Polarsyssel. The purpose for the team was to map the underside of ice pressure ridges with an AUV, simultaenously as the same ice floes were measured by laser from above. The AUV was positioned under the ice by means of an "AUV Positioning Buoy" developed by Bo Krogh ApS.
Sep09 - Dec14	The North Sea, Danish Sector	Offshore and Onshore Company Representative and ROV Team Manager for DONG E&P in connection with various IRM duties around the Siri Field in connection with some cracks in a steel tank at the seabed.
April14 - Aug14	Beaufort Sea, North of Alaska	AUV Supervisor during the "Arctic Shield FY14" cruise with USCGC Healy to the Arctic Ocean north of Alaska. The purpose for the team was to map the underside of ice pressure ridges with an AUV, simultaenously as a UAV measured the same ice floes from above. The AUV was positioned under the ice by means of an "AUV Positioning Buoy" developed by Bo Krogh ApS.
Sep10 - Apr11	Chukchi Sea	Project Manager for Kongsberg Maritime A/S, Horten Norway during a study for a major oil company entitled "AUV Ice management Feasibility Study"
Nov09 - Feb10	North Coast of Alaska	Project Manager for Kongsberg Maritime A/S, Horten Norway during a study for a major oil company entitled "Alaska Ice Class AUV - Collision Avoidance Technology Development"
May09 - Jul09	North Sea, Norwegian Sector.	Offshore Company Representative for StatoilHydro's Vega Project onboard survey/construction vessels. The activities included pre- and post lay routes for pipelines and umbilicals and LBL array installation and calibration.
Oct07 - Oct10	Onshore	Participating in the development of a new 3D GIS and QC software for survey and pipeline data named GeoLine3D for GeoLine ApS, Copenhagen.
Feb05 - Jul07	Norwegian Sea	Offshore Company Representative for StatoilHydro's Ormen Lange Project onboard survey/construction -, rockdumping – and crane/pipelay vessels. The activities included geophysical- and mapping surveys, pre- and post lay routes for pipelines and umbilicals, debris/boulder clearance operations, LBL array installation and calibration and leak detection surveys.

<b>YEAR</b>	<b>PROJECT AREA</b>	<b>POSITION AND ACTIVITIES</b>
Feb04 - Mar04	North Sea, Norwegian Sector.	Ekofisk Tank Decommissioning, bottom Survey of inner and outer Annulli for Subsea7 and ConocoPhillips. Project Manager and Surveyor during a survey between the concrete walls of the Ekofisk Tank using a GeoSwath 250 kHz interferometric sonar.
Mar03 - Nov03	The North Sea, Danish Sector	Mærsk Oil Surveyor for Mærsk Oil and Gas, onboard survey- and construction vessels during survey- and pipelay support operations.
Jan02 - Mar02	Greenland Sea, 75° N, 17° W	AUV Supervisor for Maridan A/S, Hørsholm Denmark, during the first under ice surveys in the Arctic for EU Project 'Convection' using the Maridan M150 AUV.
July 2001	The Sound, Denmark	AUV Supervisor for Maridan A/S, during a marine archaeology survey over a wreck from 1658 in the strait between Elsinore and Helsingborg using the Maridan M150 AUV.
May 2001	Kiel, Germany	AUV Supervisor for Maridan A/S during seatrials and demonstration of the 'EuroDock' Project where the M150 AUV was made to enter a docking cage and make electrical connection.
October 2000	Arresø, a lake in Denmark	AUV Supervisor for Maridan A/S during a Search and Recovery operation for the Danish Police for a missing helicopter using the Maridan M150 AUV.
Dec97 - Jul98	North Sea, Norwegian Sector. Troll, Oseberg, Ormen Lange and Brage Fields	Party Chief o/b S/V Geofjord for DOF Subsea ASA working under contract to StatoilHydro. The work consisted of a wide variety of tasks from pipeline route surveys, also in waterdepth down to 1200 m, through annual pipeline inspection to lifting of heavy items from the seafloor.
Apr95 - Feb98	North Sea, Norwegian Sector. Vigdis, Snorre and Tordis Fields	Project Survey Engineer for Saga Petroleum ASA during the Vigdis Field Development Project.
May94 - Aug94	Germany, East Frisian Islands Natural Park.	Survey Coordinator for StatoilHydro Europipe Project, Landfall and Nearshore Area. Responsible for coordination and interface of survey activities between the dredging and pipelaying parts of the works inside the German 3-mile limit. Europipe is a 40" gas pipeline from the Norwegian Sector to Germany.
Jul92 - Apr94 & Aug94 - Mar95	North Sea, Norwegian Sector. Statfjord Field and Sleipner Field.	Project Survey Engineer for StatoilHydro, Statfjord Satellite Project. Responsible for all survey and rockdumping activities during the development of the Statfjord North, Statfjord East, Sleipner East and Loke oil- and gas fields. Also responsible for Out Of Straightness measurements in connection with determination of rockdump heights to prevent Upheaval Buckling of both steel- and flexible pipelines.
Mar91 - Jul92	North Sea, Dutch and Norwegian Sector.	Company Site Representative for StatoilHydro, Zeepipe Development Project during the construction of the 817 Km Sleipner to Zeebrugge 40" gas pipeline.
Feb90 - Jun90	Venice Lagoon, Italy.	Resident Engineer for a comprehensive morphological field investigation, carried out by Danish hydraulic Institute for Consorzio Venezia Nuova. The study is part of the basis for the planned flood protection of Venice.
Aug89 - Sep89	Great Belt, Danish Sector.	Client's Representative for A/S Storebæltsforbindelsen and Danish Hydraulic Institute during surveys in connection with the Compensation Dredging Works around Sprogø for the Great Belt Link Project.
Aug88 - Oct88	The Channel, Dutch Sector.	Offshore Manager during pre-surveys of proposed pipeline route for StatoilHydro, Zeepipe Development Project. The surveys were performed using Simrad EM100 multi-beam Echo Sounder.
Apr87 - Oct87	North Sea, Norwegian Sector, Gullfaks Field.	Senior Survey Engineer for StatoilHydro, Gullfaks B Project. Was as Company Site Representative involved in laying of infield pipelines, laying, trenching and rockdumping of umbilicals and diving works. Also review of specifications, procedures and reports.
Feb86 - Mar87	North Sea, Norwegian Sector, Gullfaks Field.	Project Survey Engineer for StatoilHydro, Gullfaks A Project. The assignment included review of survey specifications and -porcedures, planning and implementation of micro-wave positioning chain for the Gullfaks and Statfjord Fields. Company Site Representative during various offshore construction operations.
May84 - Aug84	North Sea, Danish Sector, DONG pipelines.	Consultant for DONG during the baseline ROV survey of the DONG pipelines. Evaluation of specifications, procedures and reports.
Jan83 - Feb83	Southern Chile, Punta Arenas, Paso Summer.	Surveyor during shallow seismic survey (sub-bottom profiling) for Instituto Hidrografico de la Armada, Chile.

<b>YEAR</b>	<b>PROJECT AREA</b>	<b>POSITION AND ACTIVITIES</b>
1981 and '82	North Sea, Norwegian Sector, Statpipe system.	Offshore Manager during pre-surveys of proposed pipeline routes for Statpipe Development Project. Was, as Offshore Manager, responsible for onboard planning of survey activities as well as quality control. The survey included: Bathymetry, sidescan and video inspection of pre-planned pipeline routes over the Norwegian Trench with Scorpio ROV. Also dropcoreing and reporting onshore.