Skotland

APPLICATION FOR A RESEARCH CRUISE WITHIN A COASTAL STATE's FISHERY LIMITS

A. GENERAL

1.	**NAME OF RESEARCH SHIP**	DANA	**CRUISE NO.** 07/16
2.	**DATES OF CRUISE**	**FROM** 12/7 2016	**TO** 31/7 2016
3.	**OPERATING AUTHORITY**	DTU Aqua (Danish Institute for Fisheries Research) Jægersborg Alle 1, 2920 DK-Charlottenlund E-mail: aqua@aqua.dtu.dk	
4.	**OWNER (if different for para.3)**	DTU Aqua Charlottenlund Castle, DK-2920 Charlottenlund	
5.	**PARTICULARS OF SHIP**	**NAME**	DANA
		NATIONALITY	Danish
		OVERALL LENGTH (metres)	80 metres
		MAXIMUM DRAUGHT (metres)	6.3 metres
		NET TONNAGE	669.53 t
		METHOD OF PROPULSION	Steam Turbine/Diesel/Diesel Electric
		CALL SIGN	OXBH
		REGISTERED PORT & NUMBER (if reg. fishing vessel)	Hirtshals
6.	**CREW**	**NAME OF MASTER**	Jesper J. B. Rasmussen
		NUMBER OF CREW	20
7.	**SCIENTIFIC PERSONNEL**	**NAME AND ADDRESS OF SCIENTIST IN CHARGE**	Katherine Richardson KU
		TEL NO / FAX NO	**+45 35 88 33 00 / +45 35 88 33 33**
		NUMBER OF SCIENTISTS	20

8. **GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE** (with reference in Latitude and Longitude):
56.05 °N – 56.7 °N, 2 °W – 1 °E, see map. Operations will be made within the area surrounded by the white line on the map. The western limit of this box is given by the following coordinates: (56.05 °N, 2 °W), (56.7 °N, 2 °W)

9. **BRIEF DESCRIPTION OF PURPOSE OF CRUISE:**
Research cruise. Measurements of chlorophyll a, phytoplankton and hydrography.

10. **DATES AND NAMES OF INTENDED PORTS OF CALL:**
None

11. **ANY SPECIAL REQUIREMENTS AT PORTS OF CALL:**
None

B. DETAIL

1. **NAME OF RESEARCH SHIP** DANA **CRUISE NO.** 07/16

2. **DATES OF CRUISE** **FROM** 12/7 2016 **TO** 31/7 2016

3. **PURPOSE OF RESEARCH AND GENERAL OPERATIONAL METHODE**

Investigations of primary production and distribution of chlorophyll a, phytoplankton diversity, nutrients and their relation to mixing in the ocean.

4. **PLEASE ATTACH CHART showing, at the appropriate scale the geographical area of the intended work, the areas to be fished, positions of intended stations, tracks of survey lines, positions of moored/seabed equipment etc.:**

See map. Operations will be made within the white line on the map. Four main transects will be investigated and additional measurements will be made near these transect in the area within the white line. The location of the four transects depends on the actual state of the sea during the cruise and may therefore be located at slightly different locations, but they will be within the area surrounded by the white line.

5a. **TYPES OF SAMPLES REQUIRED e.g. Geological/water/plankton/fish. If fishing gear is to be used please indicate what fish stocks will be worked, the maximum quantity required of each species/stock and the quantity of fish to be retained on board:**

Water bottle sampling, plankton sampling and CTD-measurements.

5b. **METHODS BY WHICH SAMPLES WILL BE OBTAINED (e.g. dredging/coring/drilling/fishing etc.)**

Water samples for nutrients, chlorophyll a and CTD-calibration will be obtained from water bottlesx from about 100 stations distributed over the cruise area. Underway CTD-measurements will be operating from the ship between stations.

6a. **DETAILS OF MOORED EQUIPMENT:**

Dates:	Laying	Recovery	Description	Latitude	Longitude
None					

6b. **FULL DESCRIPTION FOR ALL FISHING GEAR TO BE USED (e.g. bottom trawl, mesh size, attachments etc.):**

Underway-CTD will be used between the stations. Underway-CTD is a small probe (~5 kg) connected by a thin line (~2 mm) and it is undulating behind the ship in the depth interval between 0 – 500 m. The instrument functions as a CTD.

Trawls with plankton net will be used at the stations.

7. **ANY HAZARDOUS MATERIALS e.g. chemicals/explosives/gases/radioactives etc)**

(use seperate sheet if necessary)

Small amount of radioactive Carbon-14 are used for pelagic primary production incubations.

(a) TYPE OF TRADE NAME

(b) CHEMICAL CONTENT (& FORMULA)

(c) IMO IMDG CODE Reference & UN Number

(d) QUANTITY & METHODS OF STOWAGE ON BOARD

(e) IF EXPLOSIVES give date(s) of detonation

- **Method of detonation**
- **Position of detonation**
- **Frequency of detonation**
- **Depth of detonation**
- **Size of explosive charge in Kgs**

8. PLEASE SET OUT DETAILS OF:

(a) ANY RELEVANT PREVIOUS/FUTURE CRUISES:

Previous research cruises have been carried out in the Sargasso Sea with R/V Vædderen (2007, Galathea3) and Dana (2014).

(b) ANY PREVIOUSLY PUBLISHED RESEARCH DATA RELATING TO THE PROPOSED CRUISE: (Attach separate sheet if necessary)

Data from the cruises above have been reported to ICES.

9. NAMES AND ADDRESSES OF SCIENTISTS IN COASTAL STATE(S) IN WHOSE WATERS THE PROPOSED CRUISE TAKES PLACE WITH WHOM PREVIOUS CONTACT HAS BEEN MADE:

None

10. STATE:

(a) WHETHER VISITS TO THE SHIP IN PORT BY COASTAL STATE SCIENTISTS WILL BE ACCEPTABLE:

YES

(b) WHETHER IT WILL BE ACCEPTABLE TO CARRY ON BOARD AN OBSERVER FOR ANY PART OF THE CRUISE

YES

(If 'yes' please indicate possible dates and ports of embarkation/disembarkation)

By Special arrangement

(c) WHEN RESEARCH DATA FROM THE INTENDED CRUISE IS LIKELY TO BE MADE AVAILABLE TO THE COASTAL STATE AUTHORITIES AND BY WHAT MEANS:

Data will be reported to ICES by 2017.

If the report will not be available within 12 months of the cruise, please set out, an explanation for the delay indicating when the report will be available.

12. **SCIENTIFIC EQUIPMENT**

COASTAL STATE: Skotland
PORT CALL: None

Complete the following table – separate copy for each coastal state

DATES:

Indicate 'yes' or 'no' other than for fishing gear when the total hours of fishing in each zone should be indicated

LIST SCIENTIFIC WORK BY FUNCTION **e.g. :** **Magnetometry** **Gravity diving** **Seismics** **Bathymetry** **Seabed sampling** **Trawling** **Echo sounding** **Water sampling** **U/W TV** **Moored instruments** **Towed instruments**	**Water Column**	**Fisheries Research within fishing limits**	**Research concerning Continental shelf out of Coastal State's margin**	**DISTANCE FROM COAST**		
				Within 3 NM	**Between 3-12 NM**	**Between 12 and 200 NM**
Echo sounding	Entire	Yes	Yes	No	Yes	Yes
Towed Instruments	Entire	Yes	Yes	No	Yes	Yes
Trawling (plankton)	Entire	Yes	Yes	No	Yes	Yes
CTD	Entire	Yes	Yes	No	Yes	Yes

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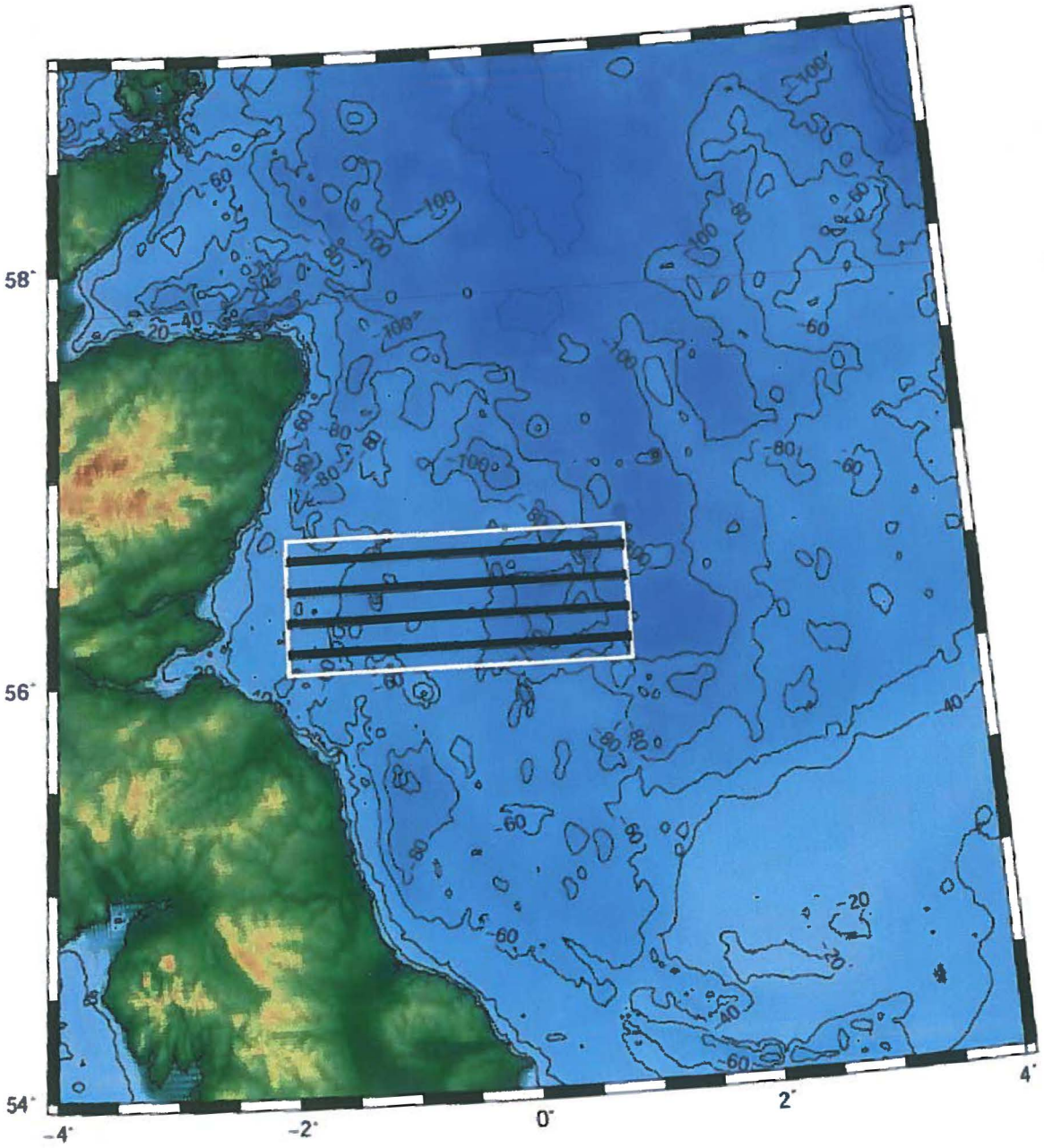
Dated: 3/5-16

(On behalf of the Principal Scientist)

NB IF ANY DETAILS ARE MATERIALLY CHANGED REGARDING DATES/AREA OF OPERATION AFTER THIS FORM HAS BEEN SUBMITTED THE COASTAL STATE AUTHORITIES MUST BE NOTIFIED IMMEDIATELY.

Cruise plan for DANA in the North Sea in the period 12 – 13 July, 2016.



Vermix Survey – DANA - 12 -31 juli 2016

Chemical list

- Carbon-14 (120 ampuller x100 uCi/ml)
- 2-Phenylethylamin (100 ml)
- Hydrochloric acid (HCL 0.1M) (5 L)
- Hydrochloric acid (HCl 0.5M) (1 L)
- Ethanol 96 % (15 L)
- Winkler 1 (manganese(II)sulfate 48 %) (1 L)
- Winkler 2 (potasium iodide/hydroxide 15/70 %) (1 L)
- Concentrated sulfuric acid (H_2SO_4 50 %) (1 L)
- Sodium thiosulfate ($NA_2S_2O_3$) (5 L)
- Acidified Lugol's solution (Potasium iodide 1-2 %) (2 L)
- Instagel (15 L)
- Ultima Gold (15 L)

Glutaraldehyde	(0,5 L)
Osmium tetraoxid	(0.250 g)
DAPI	1 ml
Calcoflour white	1 ml
Potasium iodide	100 g
Acetic acid, glacial	500 ml
I_2 (crystalline)	100 g