	INFORME DE NO CONFORMIDAD	SF 02	Rev. Jul / 08
			1 of 1

EMPRESA: NOORDZEE VISSERS CONSORTIUM III *Company*			**Nota Nº** / *Note No.* 1/4
Ref. NOO-0912-SR E01	**DEPARTAMENTO** (según Informe de Auditoría): *DEPARTMENT (refer to Audit Report)* Producers		**AUDITOR JEFE**: Séverine ROLLAND (BV France)
Fecha / *Date* 05/12/2009	**NORMA:** Friend of The Sea Approval Criteria f *STANDARD*		**AUDITOR :**
Crítica		**REQUISITO** *CLAUSE* 2.1 The targeted species CANNOT be fished by gears which impact the seabed unless evidence is provided that the impact on the seabed is negligible. Bottom Trawling fisheries must have implemented, as a minimum, the following: 1) Protected Areas for corals and seamounts, where bottom trawling is prohibited; 2) TEDs or similar compulsory, with discard reduction to fulfill criteria 3.	**REPRESENTANTE DE LA EMPRESA:** *COMPANY REPRESENTATIVE*
Mayor	X		
Menor			

NO CONFORMIDAD / *NON CONFORMITY*

Concerning the impact of the fishing gear (beam trawl) on the seabed, information has been gathered to evaluate its recovery: about a year due to the quality sediments and the tide effect. This evaluation has been made considering no other fishing disturbance which is not the case in this area.
By consequence, there is a lack of information about the frequency with which the seabed is disturbed by this fishery on the fishing area concerned.

COMENTARIOS DE LA AUDITORÍA / *AUDIT COMMENTS*
The gathered information demonstrate the use of beam trawls in this particular area has less impact than in another but we cannot say that it has no impact on the seabed. The critical point is to evaluate the fishing effort done on the concerned fishing area.

INFORME DE ACCIÓN CORRECTORA (debe ser cumplimentado por la Empresa)
CORRECTIVE ACTION REPORT (to be completed by the Company)

Fecha de cierre propuesta: *Proposed Completion Date*	**Fecha de cierre real:** *Actual Completion Date*	**Representante de la Empresa**: *Company Representative*

ACCIÓN CORRECTORA / *CORRECTIVE ACTION*

From 'The FAO Fisheries Technical Paper on Impacts of trawling and scallop dredging on benthic habitats and communities.' (http://www.fao.org/docrep/008/y7135e/y7135e00.htm)
page 19: *"In another North Sea study conducted on the Flemish Banks (Belgium coast) and off the Netherlands coast, the impacts of a 4-m beam trawl were investigated at sites consisting mainly of fine and medium sand (Fonteyne, 2000). Side-scan sonar observations showed clear marks immediately after trawling. The traces were too weak to determine the depth of penetration, indicating that this was not great. Side-scan observations were made several times during the 52 hours after trawling. Over this period the visibility of the trawl marks decreased gradually, and eventually they could be seen only as vague marks along parts of the original tracks. RoxAnn surveys showed that the sea bed roughness decreased and the hardness increased immediately after trawling owing to resuspension of the lighter sediment fraction.* ***These sea bed characteristics returned to their original levels in less than 15 hours****."*
The used gear is much lighter in comparison to formerly used gear, decreasing from 8000 kg beam weight to UK 19's beam weight of 3600 kgs.
The North Sea Beamtrawl fleet decreased in the recent years with consequences to the fishery impact and that the studied situation is not comparable anymore. (see table below. Source LNV Directie Visserij)

Tabel B4.1	Aantal actieve vaartuigen in de kottervisserij naar leeftijd en motorvermogen (per 31 december)						
	2002	2003	2004	2005	2006	2007	2008 a)
Totaal kottervloot	393	374	367	342	346	345	308
Motorvermogen (pk)							
1-150	8	4	3	8	8	8	3
151-200	17	16	18	17	17	19	12
201-260	37	34	32	32	30	37	34
261-300	173	173	168	163	166	159	155
301-600	9	8	7	8	7	8	7
601-800	2	2	2	3	4	2	4
801-1.100	6	6	5	5	5	6	8
1.101-1.500	8	5	6	4	5	5	5
1.501-2.000	82	87	92	81	83	90	78
2.001 en meer	51	39	34	21	21	11	2
Totaal	393	374	367	342	346	345	308
Gemiddeld motorvermogen (pk)	1.000	981	986	881	891	848	779

a) Voorlopige cijfers.
Bron: LNV Directie Visserij; Informatienet.

In a study of the micro-distribution of beam-trawl vessels, Rijnsdorp et al. (1998) showed that beam trawling was highly patchy. For instance, in eight of the most heavily fished ICES rectangles (30 latitude1 longitude), 10% of the seabed was trawled less than once every five years, 33% less than once per year, and 3% more than 10 times per year. PLEASE NOTE THE ABOVE MENTIONED DECREASE IN FLEET/WITH SUBSEQUENT DECREASE FOR IMPACT.
When estimating population fishing mortality by ICES rectangle or per sediment-depth stratum, the distribution of species within these strata was assumed to be homogeneous.
Within each stratum, beam-trawl intensity was not distributed homogeneously; the level of heterogeneity differed markedly between strata. For example, the cumulative frequency distributions show that the deeper waters (>30 m) with sediments of medium sands are more intensively fished with about 38% of the surface trawled less than once a year. In contrast, 65% (depth <40 m) and 69% (depth 40 m) of the surface of the whole depth range of sediments with very fine sand were trawled less than once a year.
The abundance and distribution of benthic fauna is highly dependent on sediment characteristics (e.g. grain size and silt content) and other environmental variables such as water depth and temperature (Duineveld et al., 1991).
Some studies even claim that the beam trawling activity on the sea bed could have beneficial effects on the benthic populations. This is the case of "Can bottom trawling disturbance increase food production for a commercial fish species?" by Jan Geert Hiddink, Adriaan D. Rijnsdorp, and Gerjan Piet.
"Abstract: Fishery closures and marine protected areas are increasingly being used as tools to achieve sustainable fisheries. The ''plaice box'', a gear restriction area in the North Sea that was established to reduce the bycatch of undersized plaice (Pleuronectes platessa), is considered ineffective because there has been a shift in the distribution of juvenile plaice to the waters that remained open to bottom trawlers. Here we examine the hypothesis that bottom trawling benefits the small benthic invertebrates that form the food source for plaice and that the plaice box had a negative impact on food production for plaice. A size-based model of benthic communities indicates that the production of prey was low without trawling and maximal in areas that are trawled once to twice a year. Therefore, bottom disturbance may improve the feeding conditions for species that feed on small invertebrates. As plaice aggregate at the locations with the highest benthic biomass, this may explain the observed redistribution to areas outside the plaice box. We conclude that the plaice box may not have been the most appropriate measure to protect plaice from discarding and that the species' ecology should be considered when choosing the most appropriate management measure to achieve an objective."
Rijnsdorp e.a. 2000 also studied the microscale distribution of the Dutch fleet,
Seen in this light the conclusion about the biological impact (mortality in megafaunal populations was estimated to range rom 5 to 39 percent on the Dutch continental shelf..... 1994 page 32 below FAO study).
Of course I'm not an expert in this but when I read further on page 33 and page 34 it appears to me that although beamtrawling has his effect on the benthic community it is very local, other species have advantage, but given the mobile sediment, natural disturbance and seasonal fluctuations have also some impact.

Of special interest page 21, the highlighted comment and page 33: In the area with mobile sediments, there were no significant differences in species numbers, abundance or diversity between the fished and unfished sites. Thus, this study demonstrated the shortterm effects of beam trawling on infauna taxa that live in stable sediments, but similar effects were not detected on animals inhabiting mobile sediments that are subjected to frequent natural disturbances.
And http://icesjms.oxfordjournals.org/cgi/reprint/57/5/1332.pdf learns the following
In a study of the micro-distribution of beam-trawl vessels, Rijnsdorp et al. (1998) showed that beam trawling was highly patchy. For instance, in eight of the most heavily fished ICES rectangles (30 latitude1 longitude), 10% of the seabed was trawled less than once every five years, 33% less than once per year, and 3% more than 10 times per year.
When estimating population fishing mortality by ICES rectangle or per sediment-depth stratum, the distribution of species within these strata was assumed to be homogeneous.

Within each stratum, beam-trawl intensity was not distributed homogeneously; the level of heterogeneity differed markedly between strata. For example, the cumulative frequency distributions show that the deeper waters (>30 m) with sediments of medium sands are more intensively fished with about 38% of the surface trawled less than once a year. In contrast, 65% (depth <40 m) and 69% (depth 40 m) of the surface of the whole depth range of sediments with very fine sand were trawled less than once a year.
The abundance and distribution of benthic fauna is highly dependent on sediment characteristics (e.g. grain size and silt content) and other environmental variables such as water depth and temperature (Duineveld et al., 1991). This is confirmed by the observation that variation in species abundance was markedly smaller when based on environmental strata than when based on ICES rectangles. However, the environmental variables available to distinguish different strata were restricted to depth and grain size. Moreover, because not all strata present were sampled, the estimates of species density and spatial distribution employed should be considered as a first approximation. The estimates may be improved by an increased sampling effort of the benthic fauna and by collecting additional environmental variables at a sufficiently high resolution.
The discussion and figure 2 may be of interest.
It should be taken into account that the nowadays fleet and the fishing effort, see figures LEI institute in busiplan, is not comparable with the fleet and effort as it was in the period 1993 - 1998, which means that the today fishing intensity is much lower as mentioned in the report.

http://library.wur.nl/way/bestanden/clc/1883134.pdf (2006 from Helmond) and links you with a latest available report on discards. It should be taken into account that discards are sampled in just 10 fishing trips. This year and previous year an self sampling program is implemented (100 trips) . The MEFEPO atlas mentioned 10 % for sole and 25 % for plaice based on Helmond 2006.
Additioned to the report you will find an inspection form of the nets used by UK 19. Measurement was done on the same net, with the old method and with the OMEGA. It shows a difference of approx. 0.8 cm. This means that the now used nets and measured only with the OMEGA are bigger than the nets used earlier. For example: UK 19 now orders nets for the cod end of 10 cm full mesh size. These were recently measured at 8.4 cm. If these were measured before the summer with the old method, it would have been 9.2 cm. The wide mesh panels, which are in the top of the net to minimize unwanted species have also increased. By consequence the researches done before on discards are no longer representative for the nowadays situation.
Beamtrawl fishing is a constant play between fishing knowledge and economics. As it is a very flexible fishery, fishermen can change quickly, after an haul of 1,5 to max. 2 hours, to change area and spare the population if required. The reasons for change are mentioned in the additional logbook. Estimation of the catch can be devided in juveniles (which have to be < 8 %) and young fish (fish with a marketable size but nevertheless young fish, which is als a reason to look for an area with more grown up (more expensive) fish. Perhaps this is meant the treshold of 10 and 20 percent. Estimation is mostly done by the skipper who oversees the catch and makes a decision if a change is needed.
Skippers fill in the additional logbook (added to the report) to give insight and are registering the decisions they make at sea with regard to the catch compostion. Maximum engine power is set on 2000 hp, towing speed of a ship influences the unwanted bycatch. Wide mesh panels are implemented which ensures non-commercial benthic life and bycatch of young cod and fish an escape and return to the seabed. A reduction of heaviness of the trawl in iron is implemented by most fishermen and some are changing to sumwing technique wich means that the sole plates which slide over the seabed are reduced from about 120 cm to just 30 cm. furthermore optimalisation, lightening of the netwerk is researched by the fishermen. Wheight of gear and netwerk are also reduced to save fuel and reduce foodprint. have modernised and improved.

Data on fishing area and catch are collected in the EU logbook a skipper is obliged to keep while fishing. VMS data are transmitted and IMARES institute is involved in a project to map and estimation of impact caused by the several fisheries.

http://www.imares.wur.nl/NL/onderzoek/visserij/projecten/vms/

http://documents.plant.wur.nl/imares/vms.pdf

http://www.imares.wur.nl/NR/rdonlyres/A983DE37-61FB-4C12-BAD7-091A23BB5ECD/25617/VMSdemonstratie_voordesite1.pdf

Generally, habitats subjected to
higher levels of natural disturbance (typically sandy sediments) should be more resilient to fisheries disturbance compared with muddy or hard substrates. Overall it has proven quite difficult to attribute large-scale changes in North Sea benthos to fisheries alone since towed gears have been used in the North Sea for at least a century and significant changes in oceanography and nutrient inputs have also occurred

(Calloway et al., 2007).

Standard hydrographic charts provide already a lot of information on the North Sea seabed sediments and distribution of basic sediment types is well known by the fishermen.

An Intereg IIIb funded project where IMARES participates with partners from Belgium, France, Ireland and the United Kingdom in order to further our knowledge on benthic habitats and improve the quality of the process of mapping seabed habitats and the maps that result such surveys.

MESH aims to produce seabed habitat maps for north-west Europe (see MESH study area) and develop international standards and protocols for seabed mapping studies. The end products are a meta database of mapping studies, a web-delivered geographic information system (GIS) showing the habitat maps, guidance for marine habitat mapping including protocols and standards, a report describing case histories of habitat mapping, a stakeholder database and an international conference with published proceedings.

- www.searchmesh.net

Maps of the distribution of the initial OSPAR List of Threatened and/or Declining Species and Habitats are available at http://www.ospar.org/ .

INFORME DE CIERRE (debe ser cumplimentado por BV Certification)
CLEARANCE REPORT (to be completed by BV Certification)

ACEPTADO *ACCEPTED*	**SÍ** *YES*	**NO** *NO*

COMENTARIOS PARA EL SEGUIMIENTO / *FOLLOW-UP COMMENTS*

It has been agreed with FOS, that the results of a general study applied to the same fishing method assessed within the same macro area can be taken into account to validate this requirement.

AUDITOR: *AUDITOR: S. ROLLAND*	**FIRMA:** *SIGNED:*	**FECHA:** *DATE: 02/02/2011*