NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

ORGANISATION POUR LA CONSERVATION DU SAUMON DE L'ATLANTIQUE NORD

Agenda item 6.7(c)
For information

Council

CNL(00)25

Returns Made Under the Oslo Resolution

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Returns Made Under the Oslo Resolution

1. The Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks (the "Oslo Resolution") was adopted by the Council in 1994. Under Article 5 of the Resolution each Party is required to provide to the Organization, on an annual basis, information of a scope to be determined by the Council concerning measures adopted under Article 2 (measures to minimise genetic and other biological interactions), Article 3 (measures to minimise the risk of transmission of diseases and parasites to the wild stocks of salmon) and on research and development (Article 4).

2. In 1998 the Council adopted a revised, more detailed format for the returns by the Parties under the Oslo Resolution so as to ensure that the Organization has available to it comprehensive information concerning the measures in force when deciding if additional measures to those contained in the Oslo Resolution may be necessary. The request for the return of information was circulated on 13 January 2000. The returns as provided by the Parties are attached.

3. Last year the Council asked that the format for returns under the Oslo Resolution be reviewed so as to identify any ambiguity and to make any necessary improvements. This we attempted to do by incorporating some guidance notes on completion of the form. For example, where previously reported measures still apply we had proposed that there was no need to repeat the information but that the return should indicate that this was the case. However, there are still some inconsistencies in the returns since some Parties have provided details only of new measures which have been introduced since the last return while others have included previously reported measures together with new measures.

4. The Council might, therefore, wish to consider whether in subsequent returns it wishes only to be advised of new measures. If so, the return form could be amended to make this clear and a considerably shorter report presented to the Council. Information returned to the Organization in all earlier returns has been incorporated in a database and the information is now available to the Parties if requested.

Secretary
Edinburgh
12 May 2000

Returns made in accordance with the Oslo Resolution for year 2000.

Part: 1 General Measures

Section: 1.1 Sites

Item: 1.1.1 Sites only to be assigned for aquaculture where hydrographical, epidemiological, biological and ecological standards can be met

Canada: Federal siting guidelines exist and are used; existing guidelines have been upgraded in New Brunswick and should be adopted in mid-1999 and fully implemented by 2002 (Bay of Fundy Site Allocation and Administrative Policy).

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: The Ministry of Trade and Industry is working jointly with other ministries of the Faroe Islands on updating the whole administration concerning aquaculture including:
- environmental impact;
- a general contingency plan for possible outbreak of new diseases;
- a general fish health programme;
- general measurements of the sustainability of each locality. This work should probably be completed during 2001.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No marine salmon aquaculture sites. (One small estuary site currently in use.)

Finland

Ireland Stringent impact assessment is carried out prior to licencing.

Northern Ireland: No change to previously reported measures.

Scotland: New "Environmental Impact Assessment (Fish Farming in Marine Waters) Regulations 1999" introduced. Assessment required under these for most new or modified fish farms.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Norwegian legislation regulates all relevant elements under this article, and - as a general rule - the assigned sites meet the regulations. Before taking into use, all sites must have specific permits under the Aquaculture Act, the Fish Disease Act, and the Pollution Act.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 1 General Measures

Section: 1.1 Sites

Item: 1.1.2 Siting of units to avoid risk of damage by collision

Canada: By federal regulation, sites are marked on nautical charts and sites are not located in navigation channels etc.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Sites are subject to approval of the Engineering Division of the Department of the Marine and Natural Resources

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No actions.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Norwegian legislation covers this by requiring a permit under the Harbour Act.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 1 General Measures

Section: 1.1 Sites

Item: 1.1.3 Adequate marking of aquaculture units

Canada: By federal regulation, sites are marked by lights and other visible markers.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Sites must be clearly marked

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: All aquaculture units are required by regulations to use lights and to put up signs showing permit number. The signs must be made according to specific regulations.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 1 General Measures

Section: 1.2 Operations

Item: 1.2.1 Management of aquaculture units to prevent and control diseases and parasites

Canada: Provinces have official veterinarians with varying levels of regulatory authority (according to wording of provincial Aquaculture Acts).

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Control of diseases and parasites is subject to mandatory Single Bay Management of sites. Treatment of sea-lice compulsory if minimum infestations are exceeded. All disease outbreaks are notifiable to the Dept. of the Marine and Natural Resources.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Existing regulations for operation of aquaculture units contains a number of provisions to prevent and control diseases and parasites.

1997: A national action-plan regarding sea-lice established in 1997 is being revised every year.

1998: New regulations in order to control the sea-lice infestations were established in 1998 and were revised during 1999.

1999: New regulations connected to the Fish Disease Act and the Aquaculture Act came into force on the 1st January 1999. Regular health control is now mandatory for all aquaculture units in Norway. Health and origin certificate is required.

2000: This year, a new regulation regarding sea-lice came into force.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 1 General Measures

Section: 1.2 Operations

Item: 1.2.2 Management of aquaculture units to prevent escape of fish

Canada: Containment Codes of Practice under development; Newfoundland has upgraded its Containment Guidelines with enhanced monitoring and enforcement principles and procedures; Industry in Nova Scotia developing a Code of Practice.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Immediate and compulsory reporting of fish escapes to Department of the Marine and Natural Resources with follow up assessment required.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: New regulations connected to the Fish Disease Act and the Aquaculture Act came into force on the 1st January 1999. These regulations contain new provisions to prevent escapes of fish.

Russian Federation: No measures reported.

U.S.A.: The commercial aquaculture industry in Maine adopted a voluntary code of practice for the responsible containment of farmed Atlantic salmon. There was more discussion of this issue in the past year but there is no change to report at this time.

Part: 1 General Measures

Section: 1.3 Transfers

Item: 1.3.1 Transfers conducted so as to minimise potential for disease/parasite transmission and for genetic and other biological interactions

Canada: By federal regulation (in Atlantic Canada) under the Fisheries Act, live fish may not move within a province, across provincial boundaries or into Canada without a license to transfer and release under S. 56 of the Fishery (General) Regulations. A fish health certificate is also required for interprovincial or into Canada movement. Some provinces also control within-province movement by provincial licenses.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previous reported measures.

Finland All salmon transfers to the rivers Teno and Naatamo watersheds are prohibited.

Ireland All stocks must be certified as disease free by the Fish Health Unit of the Marine Institute prior to any transfer. Use of vaccines and treatments has reduced the incidence of disease in transfer.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No transfers have been reported.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Regulations for transfers of fish meet the general need to avoid spreading of diseases and parasites as well as other biological interactions within the country. Health and origin certificate is required.

Russian Federation: No measures reported.

U.S.A.: New fish health regulations were adopted by the State of Maine in 1999.

Part: 1 General Measures

Section: 1.3 Transfers

Item: 1.3.2 Introduction of mechanisms to control transfers where necessary

Canada: By federal regulation fish may not be introduced to waters without a license. The National Code for Introductions and Transfers is to be signed by Fisheries and Aquaculture Ministers in August 2000. It will ensure uniform application of Risk Analysis evaluation criteria prior to movements.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Certification of disease free status required before transfers can take place.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: In order to control specific serious diseases, geographical zones or disease combat zones may be established. Special measures, as for example a ban on movement of animals, can be enforced within the zones. Further limitations may follow from possible introduction of aquaculture regions which still are under consideration.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.1 Design Standards for Aquaculture Units

Item: 2.1.1 Establishment of standards and technical specifications for the design and deployment of aquaculture units (marine and freshwater)

Canada: Containment Codes of Practice (including standards) under development; Codes will lead to area specific standards required by provincial licensing authorities as basis for regulation.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales:

Finland

Ireland

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: A system for classification of technical equipment for use in the aquaculture industry has been proposed as an element in the efforts to prevent escapes. The proposal is limited to new aquaculture plants and new equipment, but will cover equipment for use in freshwater as well as the sea. Existing plants will be covered by this system when major components are changed. The new system will involve the preparation of new regulations and new provisions in the Aquaculture Act.

2000: Norwegian authorities will take a decision on this proposition this year, and the implementation of the revised regulations will come in the near future.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.1 Design Standards for Aquaculture Units

Canada: Containment Code of Practice under development; others Codes relating to habitat protection in preparation; this is good management practice; under provincial jurisdiction; Newfoundland Containment Guidelines specify net type and configuration and specify minimum smolt size.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland

Northern Ireland: No change to previously reported measures.

Scotland: ISA suspect farms required to monitor security of cages and reassess anti-predator arrangements.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: In general the industry uses appropriate technology for prevailing conditions. There are no specific requirements for use of specific technology in today's regulations, but these factors are considered by the authorities before giving localisation permits. The new classification system mentioned above (2.1.1), will include provisions for the containment of fish at the assigned sites.

2000: The system for classification of technical equipment for use in the aquaculture industry will come in the near future.

The scheme of approval (TYGUT) can be considered as a barrier to trade and as such not in accordance with the European Economic Agreement (EEA). With reference to the regulations of exception due to environmental reasons, it is assumed that the scheme will be accepted by EEC, but a notification to the EEA countries will be necessary.

Additional information is attached separately.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.1 Design Standards for Aquaculture Units

Item: 2.1.3 Regular routine inspection and maintenance of aquaculture systems and upgrading of equipment as new technological improvements become available

Canada: Good management practice; under provincial jurisdiction and done regularly by industry. Not legislated; individuals do as circumstances dictate and permit; Containment Code of Practice would require upgrading to new standards (as cages replaced).

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales:

Finland

Ireland Being carried out

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: In addition to the government spot control scheme, implementation of internal control in the aquaculture industry and aquaculture related enterprises is under consideration and this will cover inter alia inspections and maintenance. (Upgrading of equipment is covered under 2.1.1). Internal control is already in effect on areas such as environment, workers health and safety. A co-ordinated system for internal control with a basis in the Aquaculture Act, the Fish Disease Act and the Animal Welfare Act has been proposed.

2000: A full implementation of internal control will come in near future.

Additional information is given in separate enclosure

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.1 Design Standards for Aquaculture Units

Item: 2.1.4 Regular monitoring and use of efficient security systems

Canada: Good management practice; regulated in the case of fish health quarantine units.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Being carried out

Northern Ireland:

Scotland: ISA suspect farms required to monitor security of cages and reassess anti-predator arrangements.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: All aquaculture units are required by regulations to perform daily inspections and regular control and maintenance. The regulations also require the keeping of a logbook and contingency plans in the event of large escapes. Units must be controlled immediately after storms, and new regulations require regular gear fishing around the sea cages within 500 m of the unit. Any number of escapees, or suspicion of such, must be reported immediately. Monitoring with the purpose of checking the relative number of escaped-farmed fish in rivers, fjords and coastal areas has been on going since 1989.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.2 Salmon Enhancement

Item: 2.2.1 Use of local stocks wherever possible

Canada: By regulation and/or guidelines.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland This concept is accepted by the Department of the Marine and Natural Resources. New policy on enhancement stocks and stocking under review.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Releases are in general prohibited, and special permission is required to release salmon for enhancement purposes. Such permission includes conditions regarding the brood-stock, and the use of local brood-stocks will be required whenever this is possible. (See 2.2.2).

Russian Federation: Only local stock is used for the release of smolt in the streams.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.2 Salmon Enhancement

Item: 2.2.2 Implementation of criteria for broodstock selection and management

Canada: Random sampling for broodstock purposes to maintain genetic diversity.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland New policy under review.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Modern enhancement activities aim primarily to stimulate good conditions for natural spawning, with release of reared juvenile salmon from local broodstocks as a subsidiary measure. The use of reared juveniles follows guidelines based on good salmon management practices, the situation in the river in question and a precautionary approach.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.3 Salmon ranching

Item: 2.3.1 Use of local stocks or alternatively local ranching stocks

Canada: Not practiced in Canada.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No ranching in England and Wales.

Finland

Ireland This concept is accepted by the Department of the Marine and Natural Resources. New policy on enhancement stocks and stocking under review.

Northern Ireland: No salmon ranching in Northern Ireland.

Scotland: No ranching.

Sweden: No ranching has been carried out.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: At present there is no salmon ranching in Norway. The potential for sea ranching in Norway based on salmon, cod, char and lobster has been explored through a special programme to promote commercial development. The programme, named PUSH, has shown that with the present knowledge and level of costs, industrial sea ranching based

on fish species is not economically feasible.

Russian Federation: No measures reported.

U.S.A.: Not applicable - no salmon ranching in the United States.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.3 Salmon ranching

Item: 2.3.2 Harvesting of ranched fish at or close to release site or in fisheries managed in a way that prevents over-harvesting of wild stocks

Canada: Not practiced in Canada.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland This concept is accepted by the Department of the Marine and Natural Resources. New policy on enhancement stocks and stocking under review

Northern Ireland: Not applicable.

Scotland: Not applicable.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: At present there is no salmon ranching in Norway. The potential for sea ranching in Norway based on salmon, cod, char and lobster has been explored through a special programme to promote commercial development. The programme, named PUSH, has shown that with the present knowledge and level of costs, industrial sea ranching based on fish species is not economically feasible.

Russian Federation: No measures reported.

U.S.A.: Not applicable - no salmon farming in the United States.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.4 Salmon farming

Item: 2.4.1 Use of local broodstocks where practicable

Canada: By regulation in some provinces; adherence to NASCO/NAC Protocols.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Not currently in practise.

Northern Ireland: No change to previously reported measures.

Scotland: Not applicable.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: In general, use of local brood-stocks is neither feasible nor interesting in the Norwegian aquaculture industry. There are exceptions, however, where local stocks may be included in the development of special production strategies, inter alia in isolated fjord systems with rivers and salmon stocks of unique national and international value.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.4 Salmon farming

Item: 2.4.2 Efforts to recapture escaped farmed salmon

Canada: Encouraged by governments; done when human safety not put at risk.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland In the rivers Teno and Naatamo there are no special efforts.

Ireland Carried out in limited circumstances, e.g. at times when this will not result in large captures of wild fish as by-catch. Traps may be operated in some circumstances.

Northern Ireland: No change to previously reported measures.

Scotland: Not applicable.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: The efficiency of existing recapture systems in the aquaculture industry is poor. From 1999 salmon farmers have an obligation to recapture escapees. In the last few years, regional authorities have at times opened an extraordinary general fishery in order to recapture escapees.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 2 Measures to Minimise Genetic and Other Biological Interactions

Section: 2.4 Salmon farming

Item: 2.4.3 Establishment of site specific contingency plan in the event of large escapes

Canada: Recovery plans required and improved procedures being developed; human safety first priority; Newfoundland has adopted a Code of Practice that includes Containment measures.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Not possible in most instances. Either fish are too small to be taken in commercial salmon gear or the operation would result in a high wild salmon by-catch.

Northern Ireland: No change to previously reported measures.

Scotland: Not applicable.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Provisions for specific contingency plans are included in the new regulations for aquaculture operations 1st January 1999.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.1 Control and prevention of diseases and parasites

Item: 3.1.1 Aquaculture production process conducted in accordance with appropriate fish health protection and veterinary controls, including the application of appropriate husbandry techniques to minimise risk of diseases (vaccination, use of optimum stocking densities, careful handling, frequent inspection of fish, proper diet and feeding regimes, avoidance of unnecessary disturbance, detailed health inspections, disinfection of transportation equipment and use of disinfection baths at production facilities).

Canada: Federal and provincial regulations and implementation guidelines in place and enforced; veterinarians are provincially licensed; in New Brunswick, ISA Virus Fish Health Surveillance Program adopted. Regulated in fish health quarantine units; voluntary adherence by industry in private hatcheries; In New Brunswick, ISA Virus Management Guidelines based on Norwegian guidelines for disinfection etc. are in place.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland Yearly control of Gyrodactylus salaris by colleting juvenile salmon from the rivers Teno and Naatamo.

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Existing regulations contain provisions to control all these requirements.

Russian Federation: No measures reported.

U.S.A.: New fish health regulations were adopted by the State of Maine in 1999.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.1 Control and prevention of diseases and parasites

Item: 3.1.2 Treatment or removal of diseased stock and measures to ensure diseased fish are not released to the wild

Canada: Good management practice; by regulation in one province or voluntary adherence by industry in others. Diseased fish are prevented from being released to the wild by regulation.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Being carried out.

Northern Ireland: No change to previous reported measures.

Scotland: No change to previous reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Outbreak of diseases is handled with respect to severity. Contingency plans exist for the most serious diseases.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.2 Stocking density

Item: 3.2.1 Aquaculture production adapted to the site's holding capacity and stocking density should not exceed levels based on good husbandry practices

Canada: Part of site licensing. Considerable work done in Newfoundland to identify assimilative capacity of salmonid aquaculture areas.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales:

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: A new system for adaptation of aquaculture production to individual sites - called MOM - (Monitoring of organic effluents), has been established and is expected to be implemented in the near future. The provisions regulating stocking density have been changed during the last years, and the scope has been extended to regulate production in addition to the former aim to improve the health status of the fish and conserve the aquatic environment.

New regulations were implemented 1st January 1999.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.3 Removal of dead of dying fish

Item: 3.3.1 Removal of dead/dying fish and disposal along with waste materials in an approved manner

Canada: Good management practice; disposal practices by federal and provincial regulation.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: New "Animal By-Products Order 1999" sets out rules for disposal.

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: New "Animal By-Products Order 1999" sets out rules for disposal.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: According to the new regulations dead fish should be picked every day. Dead fish must be ground up and disposed of in a container with acid added to a pH of 4 or less. New regulations were implemented 1st January 1999.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.3 Removal of dead of dying fish

Item: 3.3.2 Establishment of procedures for effective removal and disposal of infectious material.

Canada: Good management practice; disposal practices by regulation, especially in fish health quarantine facilities.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Strict regulations for disposal of waste and infectious materials exist.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.3 Removal of dead of dying fish

Item: 3.3.3 Establishment of contingency plans for disposal of mortalities from emergency situations.

Canada: In progress; disposal practices by regulation.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Contingency plans and facilities for approved disposal of heavy mortalities exist.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.4 Adequate Separation

Item: 3.4.1 Separation of aquaculture facilities on the basis of a general assessment of local conditions

Canada: In progress (especially in Bay of Fundy).

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: New "Environmental Impact Assessment (Fish Farming in Marine Waters) Regulations 1999" introduced. Assessment required under these for most new or modified fish farms.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Guidelines regarding separation of units, within and between generations and production periods exist.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.5 Year Class Separation

Item: 3.5.1 Rearing of different generations in separate locations where possible

Canada: In progress in some provinces.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Fallowing involves the separation of age classes at sea.

Northern Ireland: No change to previously reported measures.

Scotland: Becoming accepted practice.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Different generations of salmon to be reared at separate locations, or a fallowing period between different generations at same site is required.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.6 Fallowing of Sites

Item: 3.6.1 Use of a fallowing regime wherever possible

Canada: In progress; see 3.1 for New Brunswick; extensive area being fallowed to control ISA.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland Carried out under Single Bay Management regime.

Northern Ireland: No change to previously reported measures.

Scotland: New fallowing regime for ISA control sites.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: By means of artificial light Norwegian fish farmers are now able to put smolts into the sea all year round. This situation makes it more difficult to establish a strict separation between year classes.

1999: Provisions for regular fallowing is included in the new regulations for aquaculture operations 1st January 1999. Guidelines regarding this were established in 1999. Based on the Guidelines from 1999 new regulations will be implemented in the near future. After 30 months of continuous use of the site, 2 months of fallowing is obligatory. In salmon farms 2 months of fallowing is obligatory before introducing a new year class at the same site. Fallowing is also used as a legal instrument in combat zones.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.7 Use of Medicines and Disinfectants

Item: 3.7.1 Careful use of medicines and disinfectants in accordance with manufacturers' instructions, Codes of Practice and in compliance with regulatory authorities

Canada: Access and dosages by regulation; private and provincial fish health veterinarians prescribe and monitor health of fish.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Regulatory measures and the use of effective vaccines have reduced the use of antibiotics

by more than 99% in the last 10 years.

Due to stronger measures against sea lice, use of specific medicines against this parasite has not been reduced.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 3 Measures to Minimise Disease and Parasite Interactions

Section: 3.8 Lists of Diseases

Item: 3.8.1 Lists of prevailing infectious diseases and parasites and methods for control to be maintained by appropriate authorities

Canada: Pathogens listed in federal and some provincial regulations; method of control not regulated (i.e. use of therapeutants not required by regulation and prophylaxis is not encouraged); names of therapeutants approved for use is public knowledge.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: Infectious Salmon Anaemia (ISA) has been added to the previously reported list of diseases.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Being carried out.

Northern Ireland: No change to previously reported measures.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures. However during 1999 only one case of IPN at an eel farm and one case of furunculosis at an arctic char farm were reported.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Lists of diseases for a broad range of fish, crustacean and mollusc diseases have been established. The diseases are categorised in three groups with respect to their seriousness and distribution in Norway.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.1 Wild salmon protection areas

Canada: Marine Protected Areas provided for under the Canada Oceans Act.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No activity.

Finland

Ireland

Northern Ireland: No activity.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: The provisional regime for wild salmon protection areas with limited or no aquaculture industry has been prolonged and will be evaluated after collection of more substantive data on the effect of such areas. Preliminary results, however, indicate that extensive protection areas with minimal aquaculture within the area can attain the intended goal of such areas.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.2 Sterile salmon

Canada: Research in progress; findings are variable but indications are that the technique is feasible; all-female line of rainbow trout (steelhead) conditionally approved for use in Newfoundland.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No activity.

Finland

Ireland AIR3 – CT94 - 2216 ' Minimising the interaction of Cultured and Wild Fish: A comprehensive evaluation of the use of sterile, triploid Atlantic salmon.

Northern Ireland: No activity.

Scotland: No change to previously reported measures.

Sweden: No action. However the responsible national research authority is recommending a future possible use of sterile salmon.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Norwegian scientists have participated in an EU-funded project, which seeks to evaluate the use of sterile, triploid Atlantic salmon in fish farming. Comparisons between triploid and "normal" salmon have shown marginal differences in growth, quality and survival. The triploids are shown to be more prone to cataract (eye disease). Triploids also have bigger bur fewer muscle fibres. Norwegian scientists have performed studies on triploid behaviour following release.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.3 Tagging and Marking

Canada: In progress; done routinely in some rivers and streams for wild salmon.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales:

Finland

Ireland Marine Institute - Mass tagging and marking with CWT. Electronic tags applied in studies of estuarine and freshwater behaviour

Northern Ireland: DARD R&D Project 8434 contains a large element of tagging. This work, based on the River Bush, produces annual data on marine survival and exploitation of wild and hatchery-reared salmon to ICES. Estimated expenditure 99/00 £45k.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Norwegian scientists have participated in an EU-funded project on this matter. Contact between the relevant research institutions has been established to elucidate the feasibility and possible positive and negative effects for management, research and the industry of schemes for individual marking of aquaculture fish. A pilot project has been started and a status report has recently been finished.

Russian Federation: No measures reported.

U.S.A.: Limited testing on the retention of elastomer tags was conducted in 1999. There was increased discussion on the issue of adopting a universal mark for aquaculture fish in 1999 but no changes have been implemented at this time.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.4 Designation of aquaculture regions

Canada: Zoning under consideration or in progress (varies according to province).

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland

Northern Ireland: No activity.

Scotland: No change to previously reported measures.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: A provision for implementing a system of aquaculture regions (regionalisation) as a measure for disease control was introduced with the new Fish Disease Act which came into force 1st January 1998. Further consideration of the consequences for the industry will be made before the system can be implemented. It is also desirable to get a similar authority in the Aquaculture Act.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.5 Alternative production methods (land-based, closed or contained floating facilities and other containment technologies)

Canada: In progress; land based technology is very expensive; closed bag systems being tested on both coasts.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland

Northern Ireland: No activity.

Scotland: No change to previously reported measures.

Sweden: No action.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Aquaculture in closed systems has been tried on an experimental basis, both in land-based and floating facilities. At present, these production methods are not economically feasible, and containment measures have in some instances been reported to be insufficient.

Russian Federation: No measures reported.

U.S.A.: There was increased discussion on this issue over the past year but no changes have been implemented at this time.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.6 Use of local broodstocks

Canada: In progress; done routinely for enhancement.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: Not applicable.

Finland

Ireland

Northern Ireland: DARD R&D Project 9670 includes work on genetic analysis of the genetic composition of broodstock taken from local rivers under the EU funded Salmonid Enhancement Programme. Estimated expenditure 99/00 £17.5k.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: A project has been carried out to estimate genetically based improvements in production traits within the Norwegian industrial breeding programme. In this programme 4th generation salmon from the industrial breeding stock was compared to a wild salmon stock. The provisional results show significant increase in fish growth, both in fresh and sea water. When regard to diseases, no difference was found in resistance to bacterial diseases such as furunculosis, vibriosis and cold water vibriosis, and resistance to ISA was found to be lower than in the wild stock.

The national breeding program compares on a regular basis the improvement of the

program with wild fish material from 1978 (cryopreservated milt).

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.7 Understanding of genetic interactions

Canada: In progress.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales:

Finland

Ireland AIR CT92 –0719 'An assessment of the consequences of deliberate and inadvertent introduction of non-native Atlantic salmon into natural populations

Northern Ireland: DARD R&D Project 9318 examined interactions between escaped farmed salmon and wild salmon, via field experiments using DNA techniques to identify parentage of planted progeny from inter-strain crosses. Project finished in 98/99 and is in the writing up phase, with a paper on this experiment expected in 2000. A paper detailing the genetic status of a wild salmon population, seven years after an escape of farmed salmon led to interbreeding in the wild, has also been submitted for publication. No direct project expenditure in 99/00.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Throughout the last decade, studies have been carried out on genetic interactions between escapees from the industry and wild stocks of salmon. During the last few years, studies have also been conducted on ecological and genetic consequences for the wild stocks.

Russian Federation: No measures reported.

U.S.A.: Parr and smolt captured in-river and during outmigration were suspected to be aquaculture escapees based on fin condition. Scale analysis and genetic investigation

provided further evidence of escapement from a commercial freshwater hatchery.

Part: 4 Research and Development

Section: 4.1 Research, small-scale testing and full-scale implementation

Item: 4.1.8 Prevention and control of disease and parasites

Canada: In progress; transgenics hold promise here.

Denmark (in respect of the Faroe Islands and Greenland):

Faroe Islands: No change to previously reported measures.

Greenland No salmon aquaculture in Greenland.

European Union:

Denmark: No return received.

England & Wales: No change to previously reported measures.

Finland

Ireland Marine Institute ongoing research and monitoring

Northern Ireland: A sea lice monitoring programme on wild Atlantic salmon and sea trout in N Irish fisheries (funded under Project 8434) continued in 99/00. Expenditure accounted for under 4.1.3 above.

Scotland: No change to previously reported measures.

Sweden: No change to previously reported measures.

France: No return received.

Spain: No return received.

Iceland: No change to previously reported measures.

Norway: Important areas of research on diseases and parasites include:Sea lice (Lepeophtheirus salmonis) and Gyrodactylus salaris: Parasite biology, impacts on wild stocks, monitoring, treatment regimes, taxonomy and host specificity.

Infectious Salmon Anaemia - ISA: Characterisation of the infective agent, development of an improved diagnostic method.

Infectious Pancreatic Necrosis Virus - IPNV: Pathogenesis studies on IPNV in salmon smolts, Atlantic salmon as carrier of IPNV - effect on the immune system.

Vaccines and vaccine-strategies: Development of improved vaccines and vaccine strategies with particularly stress on IPNV.

The vaccine industry: Development of vaccines against ISA and Sea lice.

Russian Federation: No measures reported.

U.S.A.: No change to previously reported measures.

Additional Information Provided by Norway

Approval of floating aquaculture constructions

Background

The Governmental White Book «Aquaculture - a motive force in the Norwegian coastal industry» states that:

> *The Norwegian Ministry of Fisheries aims to introduce a scheme of approval and control which implies that all aquaculture cage constructions must satisfy certain national minimum standards. The scheme will be based upon type approval and certification of new equipment, combined with technical inspection of existing constructions as well as the hiring of advanced technical expertise when deemed necessary.*

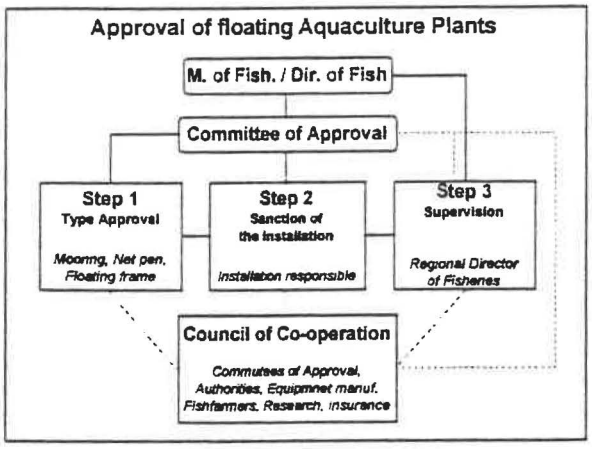
On this basis, the Type Approval Committee (TYGUT) has proposed a scheme of approval, and the Director General of Fisheries has advised the Ministry to establish the scheme broadly as proposed. The arrangement will be the first of its kind in the world.

Scheme of approval (TYGUT)[1]

The scheme of approval is restricted to new floating cage constructions or their main components. The main components being:

- **Mooring**
- **Floating frame**
- **Net pen**

A graphical presentation of the scheme is displayed in the figure below:



Step 1

Type approval of the complete construction/main component is to be documented according to a set of regulations adopted by the Director General of Fisheries. The proposed set of regulations is developed by MARINTEK in conjunction with TYGUT. The project is financed by the Research Council of Norway and the Norwegian Ministry of Fisheries. The proposed regulations will give the designers a considerable degree of freedom with regard to the choice of design, but stringent requirements must be met as regards documentation. (provided that they can document the suitability of their solutions in a satisfactory manner.) Approved products will be equipped with a Certificate of Type Approval. The certificates are issued by the Committee of Approval. The quality systems of the manufacturing companies must be certified according to NS-EN-ISO 9002.

Step 2

The installation of the plant must be sanctioned by the body responsible for the technical standard of the fish farm in whose duty it is to check that the components are within the range of the approval and that they will function as a unit. The body must be approved by the Committee of Approval pursuant to NS-EN 45004, and is engaged by the fish farmer.

Step 3

The day-to-day supervision of the operation of the plants will still be carried out by the Regional Director of Fisheries.

The Committee of Approval

The approval is to be carried out by the Committee of Approval. The committee is appointed by the Director General of Fisheries, and will consist of representatives of the authorities, fish farmers, equipment manufacturers and scientists. The committee's expenses are proposed covered by fees on a non-profit basis.

Implementation

The proposal is now being considered by the appropriate bodies. The deadline for comments is 1. September 1999. It is expected that the scheme will be in effect in 2001.

[1] The scheme is given the name TYGUT, the name of the committee that proposed the scheme.

Internal control in activities related to aquaculture

Background

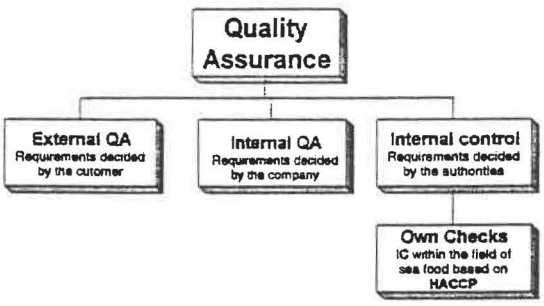
The Norwegian authorities adopted the method of internal control (IC) in the early eighties when they introduced regulations of IC in the offshore sector in order to improve the supervision of the activities. Later, two other regulations of greater importance to the aquaculture industry were introduced, IK-HMS (IC for health, environment and safety in 1991 - new in 1996) and IK-mat (IC for legislation relating to nutrition - in 1994). The transition to IC as supervision scheme was in recognition of the importance of organization to the final result. Instead of detail inspection, the authorities wish to concentrate on the organisation of the activities, and the companies themselves are obliged to supervise that the production complies with current procedures. The Norwegian Governmental White Book "Aqua culture - a motive force in the Norwegian coastal industry" states that:

> *the Norwegian Government deems the scheme of internal control suitable for the aqua culture industry. A co-ordinated plan for internal control pursuant to the acts relating to Fish farming, Pollution, and Fish diseases will be introduced in the industry.*

To a much larger extent than previously, IC demands a comprehensive view both on the part of the industry and on the part of the authorities.

IC versus QA

IC is quality assurance of official specifications. The relation between the terms is shown in the figure below. Own Checks are in the field of sea food.



Quality Assurance versus Internal Control

IC in aquaculture

An expert group consisting of representatives of the Directorate of Fisheries, the State Animals' Health Authority and the State Pollution Control Authority has submitted a report which recommends the introduction of IC pursuant to the Acts relating to Fish farming, Fish diseases and Animal protection. Since the former regulations of IC explicitly state that they apply exclusively to their specific sectors, new regulations (IK havbruk) will be called for. Three of the regulations will be quite similar, but not identical. In the case of salmon slaughter plants, for instance, all three regulations will apply, and, in addition, internal control will be applicable under two different terms (Internal Control and Own Checks).

Supervision

The authorities' supervision will be based on system audit and verification. System audit is a comprehensive and systematic examination that will be carried out in order to make sure that the IC activities comply with the legal requirements. Verification consists of investigations, inspections, spot tests, etc. to check that the IC system is functioning properly.

Integrated or separated systems of internal control

With two or three very similar, but not identical, IC regulations coming into force, there will be a choice between integrating the systems in one comprehensive system or keeping them as individual systems. This decision is left to the company. Generally, companies are recommended to establish one system that may also include the company's quality system, and which has cross-references that indicate where the legal requirements of the different regulations are followed up. The important thing is that the system functions properly. An important assumption in this respect, is to develop the system in such a way that the company gets a feeling of ownership. The main three key words are:

- **Proper interpretation of the system**, taking care of the totality
- **Priority**, deciding on work priority
- **Easily surveyable**, keeping it simple and comprehensible

Implementation

The proposal will be circulated for comments in the near future and will probably come into force by the end of the year.

Internal control in activities related to aquaculture

Background

The Norwegian authorities adopted the method of internal control (IC) in the early eighties when they introduced regulations of IC in the offshore sector in order to improve the supervision of the activities. Later, two other regulations of greater importance to the aquaculture industry were introduced, IK-HMS (IC for health, environment and safety in 1991 - new in 1996) and IK-mat (IC for legislation relating to nutrition - in 1994). The transition to IC as supervision scheme was in recognition of the importance of organization to the final result. Instead of detail inspection, the authorities wish to concentrate on the organisation of the activities, and the companies themselves are obliged to supervise that the production complies with current procedures. The Norwegian Governmental White Book "Aqua culture - a motive force in the Norwegian coastal industry" states that:

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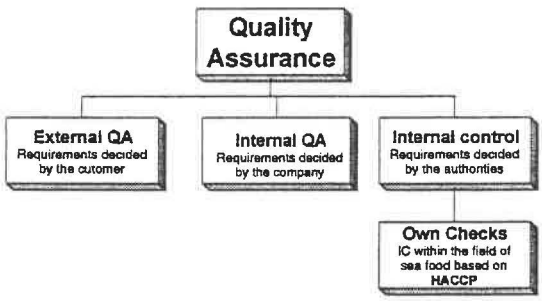

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- **Proper interpretation of the system**, taking care of the totality
- **Priority**, deciding on work priority
- **Easily surveyable**, keeping it simple and comprehensible

Implementation

The proposal will be circulated for comments in the near future and will probably come into force by the end of the year.

Approval of floating aquaculture constructions

Background

The Governmental White Book «Aquaculture - a motive force in the Norwegian coastal industry» states that:

> *The Norwegian Ministry of Fisheries aims to introduce a scheme of approval and control which implies that all aquaculture cage constructions must satisfy certain national minimum standards. The scheme will be based upon type approval and certification of new equipment, combined with technical inspection of existing constructions as well as the hiring of advanced technical expertise when deemed necessary.*

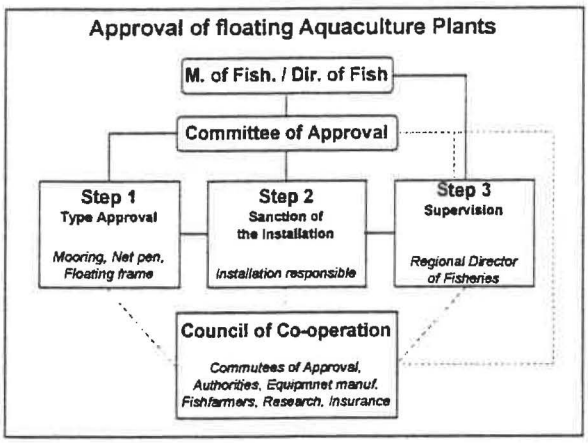
On this basis, the Type Approval Committee (TYGUT) has proposed a scheme of approval, and the Director General of Fisheries has advised the Ministry to establish the scheme broadly as proposed. The arrangement will be the first of its kind in the world.

Scheme of approval (TYGUT)[1]

The scheme of approval is restricted to new floating cage constructions or their main components. The main components being:

- **Mooring**
- **Floating frame**
- **Net pen**

A graphical presentation of the scheme is displayed in the figure below:



Step 1

Type approval of the complete construction/main component is to be documented according to a set of regulations adopted by the Director General of Fisheries. The proposed set of regulations is developed by MARINTEK in conjunction with TYGUT. The project is financed by the Research Council of Norway and the Norwegian Ministry of Fisheries. The proposed regulations will give the designers a considerable degree of freedom with regard to the choice of design, but stringent requirements must be met as regards documentation. (provided that they can document the suitability of their solutions in a satisfactory manner.) Approved products will be equipped with a Certificate of Type Approval. The certificates are issued by the Committee of Approval. The quality systems of the manufacturing companies must be certified according to NS-EN-ISO 9002.

Step 2

The installation of the plant must be sanctioned by the body responsible for the technical standard of the fish farm in whose duty it is to check that the components are within the range of the approval and that they will function as a unit. The body must be approved by the Committee of Approval pursuant to NS-EN 45004, and is engaged by the fish farmer.

Step 3

The day-to-day supervision of the operation of the plants will still be carried out by the Regional Director of Fisheries.

The Committee of Approval

The approval is to be carried out by the Committee of Approval. The committee is appointed by the Director General of Fisheries, and will consist of representatives of the authorities, fish farmers, equipment manufacturers and scientists. The committee's expenses are proposed covered by fees on a non-profit basis.

Implementation

The proposal is now being considered by the appropriate bodies. The deadline for comments is 1. September 1999. It is expected that the scheme will be in effect in 2001.

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[1] The scheme is given the name TYGUT, the name of the committee that proposed the scheme.