

**-SQA- SCOTTISH QUALIFICATIONS AUTHORITY**

**NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**

**GENERAL INFORMATION**

**-Module Number-** 1190026 **-Session-**1996-97  
**-Superclass-** SJ  
**-Title-** FISH FARMING: FLOATING CAGE OPERATIONS

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**-DESCRIPTION-**

**GENERAL COMPETENCE FOR UNIT:** Describing cage farming systems, identifying potential cage sites and conducting routine cage farming operations.

**OUTCOMES**

1. describe cage farming systems;
2. identify potential marine cage sites;
3. relocate a floating cage;
4. conduct routine cage farming operations.

**CREDIT VALUE:** 1 NC Credit

**ACCESS STATEMENT:** Candidates will benefit from already having achieved Standard Grade Biology at Credit level or SQA module equivalents.

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For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

Additional copies of this unit may be purchased from SQA (Sales and Despatch section). At the time of publication, the cost is £1.50 (minimum order £5.00).

**NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**

**STATEMENT OF STANDARDS**

**UNIT NUMBER:** 1190026

**UNIT TITLE:** FISH FARMING: FLOATING CAGE OPERATIONS

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

**OUTCOME**

1. DESCRIBE CAGE FARMING SYSTEMS

**PERFORMANCE CRITERIA**

- (a) The identification of cages in common commercial use is correct with respect to type and name.
- (b) The description of cage components is accurate and includes reference to construction materials.
- (c) The description of cage mooring systems is accurate and includes reference to mooring components.
- (d) The description of methods of cage fouling prevention is accurate and includes reference to common fouling organisms.

**RANGE STATEMENT**

Cages: wooden; steel; polar circle.

Cage components: collar; buoyancy; walkways; guard rails; cage net; predator net.

Mooring systems: single point; double point; four point.

Mooring components: chain; anchors.

Fouling organisms: algae; shellfish; worms.

**EVIDENCE REQUIREMENTS**

Written and/or oral evidence of the candidate's ability to produce an identification and descriptions which satisfy all the performance criteria and critical classes.

**OUTCOME**

**2. IDENTIFY POTENTIAL MARINE CAGE SITES**

**PERFORMANCE CRITERIA**

- (a) The recording of Admiralty chart data is accurate and includes references to the sites investigated.
- (b) The interpretation of Admiralty chart data is accurate and comprehensive with regard to all recorded data.
- (c) The identification of potential cage sites is accurate and appropriate to the requirements of the fish species to be farmed.

**RANGE STATEMENT**

Fish species: Atlantic salmon; rainbow trout.

**EVIDENCE REQUIREMENTS**

Written and/or oral evidence which satisfies all the performance criteria and critical classes.

**OUTCOME**

**3. RELOCATE A FLOATING CAGE**

**PERFORMANCE CRITERIA**

- (a) The preparations for moving the cage are conducted according to recognised procedures appropriate to the cage type.
- (b) The movement of the cage is conducted according to recognised boat handling procedures and health and safety regulations.
- (c) The securing of the cage to its mooring attachment is conducted according to accepted procedures.
- (d) The return of the cage to its normal operational condition is conducted according to accepted procedures.

**RANGE STATEMENT**

The range for this outcome is fully expressed within the performance criteria.

**EVIDENCE REQUIREMENTS**

Performance evidence in the form of observation of activity which satisfies all the performance criteria.

**OUTCOME****4. CONDUCT ROUTINE CAGE FARMING OPERATIONS****PERFORMANCE CRITERIA**

- (a) The maintenance of the cage net is appropriate and includes the secure repair of damage.
- (b) The changing of the cage net is conducted according to recognised procedures to prevent loss of fish stock.
- (c) The crowding of fish stocks is conducted according to the requirements of the fish handling operation.

**RANGE STATEMENT**

The range for this outcome is fully expressed within the performance criteria.

**EVIDENCE REQUIREMENTS**

Performance evidence in the form of observation of activity which satisfies all the performance criteria.

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**ASSESSMENT**

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

**SPECIAL NEEDS**

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of support notes.

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**NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION****SUPPORT NOTES**

**UNIT NUMBER:** 1190026

**UNIT TITLE:** FISH FARMING: FLOATING CAGE OPERATIONS

**SUPPORT NOTES:** This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

**NOTIONAL DESIGN LENGTH:** SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

**PURPOSE** This module may be taken as a free-standing module in a wide variety of programmes. It is particularly suitable for candidates undertaking programmes in the land-based sector.

SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

On completion of this module, the candidate will be able to describe cage systems, identify cage sites and conduct relevant operations.

**CONTENT/CONTEXT** The candidate will be introduced to the range of cage farming systems available and to the application of cage farming technology to modern salmonid production. Integration of the delivery of this unit with Fish Farming: Ongrowing Operations (Salmonid) is recommended.

Corresponding to outcomes:

1. The practical advantages of alternative cage types should be discussed and the structure of components illustrated with diagrams and slides. The reliability and durability of alternative cage designs in the conditions found at Scottish freshwater and marine sites should be related to cage design and the materials used in construction.

Mooring designs should be discussed in relation to cage design, cage layout and the range of possible site conditions encountered. The influence of substrate type and the strength of marine currents on the choice of mooring systems should be included.

Commonly occurring fouling problems should be addressed and environmentally friendly solutions discussed. Reference should be made to the dangers of antifoulants such as tri-butyl tin and the use of net washing machines as part of a net changing regime. The effect of fouling on water quality within the cage and the consequent dangers to fish stocks should be stressed.

2. The candidates should receive initial instruction in reading Admiralty charts as preparation for site selection exercises. The application and limitations of chart data to cage site selection should be discussed. A knowledge of the site requirements for a viable cage farming operation should be developed including the requirements for shelter, minimum water depth, water quality and a suitable shore base. The influence of the species farmed (Atlantic salmon or rainbow trout) and cage farming technology on the suitability of a particular location should be stressed.

Chart work should include the measurement of "fetch" from the most exposed quarters, substrate type, water depth and location of any potential hazards. A variety of charts covering the west coast of Scotland should be provided. Candidates should be shown how to interpret seabed contours, freshwater inflows and substrate type to predict the suitability of water conditions for salmonid rearing from both technical and environmental viewpoints for a range of sites.

Potential salmonid cage sites should be identified by the candidate, accurately referenced and described, providing evidence of their suitability from the chart work.

3. The candidates should be trained in the appropriate handling techniques for small boats (powered) and water safety procedures before undertaking this outcome. Once proficient, candidates should practise cage movement operations following demonstrations, including lifting and securing cage nets, turning a cage and securing cages in their new mooring position. Tuition in the tying of commonly used knots in ropes should be delivered prior to candidates having to secure cages.
4. The candidate should practise routine cage maintenance operations. This could include the checking and securing of fittings, preservation of wooden members, checking the cage net for holes, net washing, securing predator top nets. The repair of tears in the cage net with the assistance of netting needles and stitching on panels should be practised. The importance of reliable repairs should be stressed at all times.

Routine cage farming operations including net lifting and crowding of fish stocks should be practised in the context of preparing a cage for fish grades and harvests. Candidates must change a net when fish stocks are contained without losing fish. The movement of fish stocks by the swim through method as practised by the salmon farming industry could be included.

**APPROACHES TO GENERATING EVIDENCE** After introductory sessions to cover cage systems, routine operations and site selection criteria, candidates should conduct site selection exercises by Admiralty chart interpretation.

Cage moving and cage farming operations should be practised extensively in preparation for practical assessment.

**ASSESSMENT PROCEDURES** Centres may use the instruments of assessment which are considered by tutor/trainers to be the most appropriate. Examples of instruments of assessment which could be used are as follows:

Corresponding to Outcomes 1-4:

- Outcome 1 A test requiring restricted responses is recommended. The inclusion of diagrams of cage types and components that require labelling is suggested for assessment of Performance Criteria (a) and (b).
- Outcome 2 An exercise that requires the candidate to read and interpret Admiralty chart information. The candidate could be requested to locate, reference and evaluate potential marine cage sites leading to the identification of potential cage sites suitable for the farming of Atlantic salmon and rainbow trout. Admiralty charts covering the west coast of Scotland are recommended.
- Outcome 3 Records of candidate performance should be made by the tutor on an observation checklist and could be updated on an ongoing basis.
- Outcome 4 Records of candidate performance should be made by the tutor on an observation checklist and could be updated on an ongoing basis.

**PROGRESSION** This module would allow progress to advanced study and contributes towards the level III General SVQ Land-based Industries qualification.

**RECOGNITION** Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised Groupings of National Certificate Modules'.

## REFERENCES

1. Guide to unit writing. (A018).
2. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment. (B005).
3. Procedures for special needs statements are set out in SQA's guide 'Candidates with Special Needs'. (B006).
4. Information for centres on SQA's operating procedures is contained in SQA's Guide to Procedures. (F009).
5. For details of other SQA publications, please consult SQA's publications list. (X037).



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