



MARINE SAFETY

AGENCY

**Examinations for Certificates of
Competency for Fishing Vessels**

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**Engineer Officer (Fishing) Requirements and Syllabuses
Revised April 1995**

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In this booklet there are references to M Notices Nos. M1516 Written Examinations for Fishing Certificates, M1494 Fire-fighting Training, M1367 Fisherman's Safety Training, M813 First Aid at Sea Training, M1249 (Amended) List of Colleges and examination centres.

M Notices can be obtained from any office of the MSA.

INTRODUCTION

This booklet, issued under The Fishing Vessels (Certification of Deck Officers and Engineer Officers) Regulations 1984 (SI 1984 No 1115) (referred to here as the Fishing Vessels Officers Regulations), made under Section 43 of the Merchant Shipping Act 1970, specifies the standards of competency and the conditions to be satisfied before a Certificate of Competency under those Regulations will be issued. Particulars are given of the conditions of entry to, and the conduct of, the examinations to be held by the MSA for Certificates of Competency in an engineering capacity for service in United Kingdom registered fishing vessels.

The Fishing Vessels Officers Regulations provide for the following classes of Marine Engineer Officer certificates:-

Engineer Officer Certificate of Competency
(Fishing Vessel) Class I

Engineer Officer Certificate of Competency
(Fishing Vessel) Class 2

Note. Certificates of Competency (Fishing Vessel) Class I and Class 2 are only issued for Diesel Engine Propelled Fishing Vessels.

The Fishing Vessels Officers Regulations specify that from 1 January 1987 every sea-going United Kingdom fishing vessel which has a propulsive power of 750 kilowatt (approximately 1005 HP) or more shall carry at least two qualified Engineer Officers, the chief engineer to hold a (Fishing Vessel) Class I Certificate and the second engineer to hold at least a (Fishing Vessel) Class 2 Certificate regardless of the vessel's length, tonnage or area of operation. (See also 1.6 about dual certification).

1. GENERAL CONDITIONS AND CONDITIONS OF ENTRY

1.1 Proof of Nationality

Every candidate for a Certificate of Competency will be required to produce proof of nationality. Proof of British nationality will in general involve the production of a passport, birth certificate or of a certificate of naturalisation. Failing this, the applicant should furnish all possible documentary evidence of nationality or of parental birth and nationality. If necessary the case will be referred for consideration by the Chief Examiner.

1.2 Days and Places of Examination

The examination for a (Fishing Vessel) Class I certificate is part written and part oral, the written part is administered by SCOTVEC (Scottish Vocational Education Council) in approved colleges on behalf of the MSA.

The examination for Class 2 is oral only.

The days on which and places where examinations are held are published annually in Merchant Shipping Notices.

1.3 Fees

Each candidate will be required to pay the proper fee on each occasion of making application for entry to an examination. Any candidate who is found ineligible (due to the lack of sea service for example) may have his fee either refunded or placed to his credit until he is eligible.

The examination for a (Fishing Vessel) Class 2 certificate is oral only and the whole fee is payable to the MSA, the oral will be conducted by examiners at Marine Offices.

Fees will be payable to SCOTVEC and the college for the written part of the Class I examination. A separate fee for the oral part of the Class I examination will be payable direct to the MSA. As stated above the oral will be conducted by examiners at Marine Offices.

1.4 How to Apply to Sit an Examination

Candidates for examination should complete an application form EXN 3, obtainable from any of the colleges listed in M1249 Amended, or from the Marine Safety Agency, Seafarers Standards Branch, Spring Place, 105 Commercial Road, Southampton SO15 1EG.

The completed form, together with appropriate fee, testimonials, certificate of discharge, proof of nationality, birth certificate and other certificates where applicable should be returned to the SSB at the address above. It is recommended that the Post Offices Recorded Delivery system be used for sending important documents to the MSA.

The application should be sent at least one month before the day of the examination, because discharges and testimonials may have to be checked against the records.

Confirmation of acceptance to sit the examination will

be sent to each candidate in the form of a Notice of Eligibility, this will be issued within 28 days of receipt of an application. The Notice of Eligibility will authorise admission of a candidate to the written or oral examination as appropriate. It will be required by the college where the written examinations are to be taken and by the MSA examiner conducting the oral examination.

1.5 Particulars of Sea Service

A candidate's eligibility for examination will depend (among other things) upon the amount of sea service which he has performed and upon the ranks which he has held on board the various vessels in which he has been employed. It is therefore imperative that the particulars which the candidate inserts on the application form (EXN 3) should be accurately stated and the declaration signed. The amount of service laid down in these requirements for each grade of Certificate of Competency is the absolute minimum that can be accepted, and unless a candidate can prove the full amount he will not be admitted to the examination.

1.6 Testimonials

Each candidate must produce testimonials in respect of all sea service performed. These testimonials, which should state the type of main propelling machinery and the nature of duties performed, are to be signed by the Chief Engineer Officer and endorsed by the Skipper or Engineer Superintendent, or a responsible representative of the employer. Testimonials covering services as Chief Engineer Officer are to be signed by the Engineer Superintendent or a responsible representative of the employer. A recommended form of testimonial to cover sea service is shown in Appendix A. Testimonials will be returned to candidates when the examination is completed.

1.7 Fraud and Misrepresentation

Section 43(5) of the Merchant Shipping Act 1970 provides that if a person makes a statement that he knows to be false or recklessly makes a statement which is false in a material particular, such as representing himself as having served in a higher capacity than his actual rank for the purpose of obtaining for himself or for another person a certificate or other document which may be issued under the Fishing Vessels Officers Regulations, he shall be liable on summary conviction to a fine.

1.8 Attempted Bribery

A candidate who offers a gratuity to any officer of the MSA or SCOTVEC will be regarded as having committed an act of misconduct and will be rejected. He will not be re-examined until a period of at least twelve months has elapsed. This penalty is in addition to any penalty to which the candidate may be liable under criminal law.

1.9 Unsatisfactory Conduct

Candidates who, after having signed crew agreements, have neglected to join their vessels, or who, after having joined, have deserted their ships or who have committed misconduct on board, will be required to produce satisfactory proof of two years' subsequent service with good conduct at sea, unless the MSA after investigation, should see fit to reduce this period.

1.10 Failure to Appear

A candidate who fails to appear for any part of any examination at the appointed time may be failed by default in absence of acceptable proof that failure to attend was unavoidable and in such cases of default the fee will be forfeited.

1.11 Deafness and other Physical and Mental Disabilities

If in the course of the examination the examiner finds that a candidate is afflicted with deafness, with an impediment in speech or with some other physical or mental infirmity, and upon further investigation is satisfied that the degree of infirmity is such as to render the candidate incapable of discharging adequately the ordinary seagoing duties of the holder of the Certificate of Competency, he will not allow the candidate to complete his examination and will return the examination fee. Every such case will be reported to the Chief Examiner and the candidate's Certificate of Competency, if any, will be forwarded with the report. If the candidate subsequently produces a medical certificate to the specific effect that his hearing, speech, or physical or mental condition has improved or is normal, the MSA will consider the candidate for re-examination.

1.12 Knowledge of English

Each candidate must prove to the satisfaction of the Examiner that he is sufficiently conversant with the English language to perform the duties required of him in a British ship.

1.13 Issue of Certificates

A SCOTVEC certificate will be issued to candidates who are successful in the (Fishing Vessel) Class 1 written examination, and the result of the oral examination for (Fishing Vessel) Class 1 or Class 2 examination will be entered on to the Notice of Eligibility by the examiner.

When a candidate passes the oral examination and has all of the required subsidiary qualifications, he will be sent an EXN 16(FV) (Temporary Certificate) from the SSB, valid for six months.

Candidates who pass the examination but who do not have all the required subsidiary qualifications will not receive an EXN 16(FV) (Temporary Certificate) until all subsidiary qualifications have been obtained. Once obtained, application for a Temporary Certificate should be made by sending the Notice of Eligibility with all other documents to the SSB.

A hard cover certificate will be forwarded to the candidate usually within two months. This will be issued by the Registry of Shipping and Seamen, PO Box 165, Cardiff, CF4 5FU.

To apply for re-examination in the event of failure, the previous Notice of Eligibility together with a new fee should be submitted to the address given in 1.4 and a new Notice of Eligibility will be issued.

When candidates pass an examination for a Certificate of Competency (FV) which is superior to the Certificate of Competency (FV) or Certificate of Service (FV) already held, the lower certificate must be surrendered.

2. SEA SERVICE & TRAINING

2.1 Qualifying Sea Service

Qualifying sea service means service under crew agreement as an Engineer Officer on regular watch over main propelling machinery or on UMS duties.

2.2 Training

To be eligible to sit for a Certificate of Competency (Fishing Vessel) Class 2 a candidate must have satisfactorily completed one of the following courses of training.

An approved course of instruction of at least 6 weeks duration on the operation and maintenance of machinery found in fishing vessels, together with a period of 24 months qualifying sea service in an engineering capacity on fishing vessels of 100 kW (134 HP) or more propulsive power.

OR

A full engineering apprenticeship and 6 months qualifying sea service in an engineering capacity on fishing vessels of 100 kW or more propulsive power.

OR

A full engineering apprenticeship followed by at least 3 months at sea in the Merchant Navy or Royal Navy in an engineering capacity together with 3 months qualifying sea service in an engineering capacity on fishing vessels of 100 kW or more propulsive power.

OR

A period of 30 months qualifying sea service in an engineering capacity on fishing vessels of 100 kW or more propulsive power.

To be eligible to sit for a Certificate of Competency (Fishing Vessel) Class I a candidate must, while holding a Certificate of Competency (Fishing Vessel) Class 2 have satisfactorily completed at least 21 months qualifying sea service on fishing vessels of 750 kW or more propulsive power.

2.3 Verification of Service

Sea service is to be verified by either a Sea Service Testimonial (see Appendix A for suggested style) or a proper reference from an Agent, Owner or other recognised official. Sea service which cannot be properly verified will not be accepted.

2.4 Dual Certification

The MSA acknowledges that individual crew members of a Fishing Vessel may have more than one responsibility, and therefore the MSA is willing to consider applications from deck officers or other crew members to take the Engineer Officer Certificate of Competency (Fishing Vessel) Class 2 examination. Applicants will have to show qualifying sea service equating to one of the options detailed in 2.1 and also meet the conditions detailed in 3.1.

No person may serve in the dual purpose capacity of Skipper and Second Engineer and the Chief Engineer must be a dedicated engineer and hold an Engineer Officer (Fishing Vessel) Class I certificate on vessels of 750 kW or more propulsive power.

2.5 Calculation of Service

Sea service which has been properly verified will be reckoned by the calendar month, that is, the time included between any given day in any month and the preceding day of the following month, both inclusive. The number of complete months from the commencement of the period, ascertained in this way, should be computed, after which the number of odd days should be counted. The day on which the voyage commences, as well as that on which it terminates, should both be included, all leave of absence excluded and all odd days added together and reckoned at thirty days to the month.

2.6 Remission of Sea Service

In recognition of the structured nature of shore based training the MSA will grant two days remission of qualifying sea service for every day spent on a suitable course, up to a maximum of 90 days for either the Class I or Class 2 Certificate.

A suitable course may be any described under the broad headings of instrumentation/control, welding or machinery manufacturers' courses.

It will be necessary to provide documentation to authenticate course attendance. A specimen testimonial is given at Appendix B, which shows the kind of information required.

3. CONDITIONS TO BE MET FOR THE ISSUE OF AN ENGINEER OFFICER CERTIFICATE OF COMPETENCY (FISHING VESSELS)

3.1 Class 2

To qualify for the issue of a Certificate of Competency (Fishing Vessel) Class 2 each candidate must:

Be not less than nineteen years of age. A birth certificate will have to be produced when application is made to sit the examination.

Have completed the qualifying sea service and training set out in 2.2.

Hold a fire-fighting certificate which is awarded after completion of a 4 day course at one of the approved centres listed in M1494.

Hold a First Aid at Sea Certificate. Courses are held at approved centres listed in M813. (Certificates are valid for 5 years).

Hold a basic sea survival course certificate.

Pass the (fishing vessel) Class 2 oral examination (Syllabus Appendix C).

A list of centres conducting approved courses and other relevant information is contained in M1249 Amended.

3.2 Class 1

To qualify for the issue of a Certificate of Competency (Fishing Vessel) Class 1 each candidate must:

Hold a Certificate of Competency (Fishing Vessel) Class 2 and while holding it have satisfactorily completed 21 months or more qualifying service as an Engineer Officer on fishing vessels which have a propulsive power of 750 kW or more.

Hold a fire-fighting certificate which is awarded after completion of a 4 day course at one of the approved centres listed in M1494.

Hold a First Aid at Sea Certificate. Courses are held at approved centres listed in M813. (Certificates are valid for 5 years).

Hold a basic sea survival course certificate.

Pass the Certificate of Competency (Fishing Vessel) Class 1 examination which consists of 4 written papers which will be set and marked under SCOTVEC administration (Syllabus Appendix C), and the oral which will be conducted by the MSA's examiners.

Candidates will be allowed to take the oral part of the examination before the written part, or vice versa.

4. ORALS

4.1 Any candidate who in the oral shows ignorance of topics vital to an Engineer Officers duties and which, if neglected, could lead to conditions whereby life and/or the ship are endangered will not be accepted for re-examination until he has done a further 12 months sea service, or such lesser time as the Examiner may decide.

5. VALIDITY OF CERTIFICATE

The STCW Convention regarding validity of certificates does not ordinarily apply to Fishing Vessel Officers certificates. If these certificates are used by officers in vessels such as Stand-by vessels and Survey vessels the convention on validity will apply.

EXAMPLE OF SEA SERVICE TESTIMONIAL

SEA SERVICE

Name and address
of company

I certify that the following is a full and true statement of the sea service performed by under my supervision in O.N.....

Period of Service (Dates)	Rank of Officer, Seniority on watch	Nature of Duties (see list)	Description (i) main machinery and power (ii) auxiliary machinery and power
From To			

During the whole period stated above this engineer officer,

- (a) was granted no leave of absence
- (b) was granted days leave of absence whilst still on crew agreement

Report as to ability

Report as to conduct

Report as to sobriety

Description of vessel

Signature of Chief Engineer Officer

Signature of | Engineer Superintendent

 | or Master or other representative of owners

DESCRIPTION OF DUTIES

Day work

Regular* watch on auxiliary machinery

Regular* watch on main propulsion machinery:

- (a) in full charge
- (b) in subsidiary capacity

4. Regular work practices in ships possessing:

- (a) centralised control room,
- (b) full or partial automation,
- (c) facility to operate machinery in the unmanned mode for a significant proportion of each 24 hour period.

This form should be used when the engineer officer concerned, or Chief Engineer Officer, leaves a ship. *

Regular watch means 8 hours in every 24 hours.

APPENDIX B

EXAMPLE OF A SHORE-BASED COURSE ATTENDANCE STATEMENT

STATEMENT OF SHORE-BASED COURSE ATTENDANCE

Name and address of
fishing company

I certify that the following is a full and true statement of the shore based training courses attended by whilst in this company's employment.

Course Title and Location	Rank of Officer and Certificate Held at Time of Course	Dates		Course Duration (Days)	Qualifying Sea Service Remission (Days)
		From	To		
*TOTAL REMISSION =					

Signature of fishing vessel company representative

Signed



Date...../...../.



Company Stamp

* The maximum period of remission from either period of qualifying sea service for the Class 1 or Class 2 certificate shall be 3 months (90 days).

ENGINEER OFFICER (FISHING VESSELS) EXAMINATION SYLLABUSES

Syllabus Content

CERTIFICATE OF COMPETENCY (FISHING VESSEL) CLASS 2

Oral - Engineering Knowledge

Preparing main and auxiliary machinery for sea, testing of steering gear.
 Compilation of engine room log book and understanding of significance of readings taken.
 Routine pumping operations of fuel oil, fresh and salt water and bilge system, location of common faults.
 Preparing, starting, coupling and changing over alternators or generators.
 Safety precautions to be observed during a watch and the immediate actions to be taken in the event of a fire or accident, including electric shock.
 Precautions to be observed to prevent environmental pollution. Emergency equipment, its operation and maintenance. Knowledge of the Code of Safe Working Practice on Fishing Vessels, and Knowledge of appropriate M Notices.

Syllabus Content

CERTIFICATE OF COMPETENCY (FISHING VESSEL) CLASS I

General Engineering Science I

The setting out of calculations, extraction and cancellation of common factor, significant figures, degree of accuracy.
 Averages, percentages, ratio, proportions.
 Rearrangement of formulae—use of brackets and factors, simplification of fractions.
 Solutions of simple equations by algebraic and graphical methods.
 Theorem of Pythagoras, properties of triangles.
 Measurement of acute angles in degrees and radians. Simple trigonometrical functions.
 Area of triangle, parallelogram, circle. Area and mean height by mid-ordinate rule.
 Ratio of areas for similar figures.
 Surface area and volume of cylinder, sphere, cone and cube.
 Ratio of masses and volumes of similar solids.
 Representation of a force by a vector and showing how a number of forces can be combined to give a Resultant (single plane only).
 The principle of moments, application to simply supported beams and cranked levers.
 Centre of Area, Centre of Gravity.
 Displacement, time, speed velocity and acceleration (Linear only).
 Force, moment of force, torque.
 Work, energy and power (Electrical, Mechanical and Hydraulic).
 Simple machines, velocity ratio, mechanical advantage, efficiency.
 Friction, laws for dry surfaces, coefficient of friction (horizontal plane only).
 Direct stress and strain, Hookes Law, modulus of elasticity, elastic limit, ultimate tensile stress, limit of proportionality, safety factor, shear stress.
 Relative density. Variation of fluid pressure with depth. Archimedes' principle.
 Elementary treatment of transverse stability of a box shaped vessel, using knowledge of centre of buoyancy, centre of gravity and the metacentre. Transverse movement of masses across deck. Free surface effect.

General Engineering Science II

Temperature and its measurement. Temperature scales. Significance of absolute temperature. Heat as energy, conservation of energy applied to heat and work. Fuels. Calorific value.
 Expansion and contraction of solids, liquids and gases. Change of phase. Specific enthalpy of fusion, evaporation.
 Properties of working fluids e.g. refrigerants.
 Compression and expansion of gases. Gas Laws. Boyles Law, Charles Law. Characteristic gas equation. Gas constant. Specific heat capacity.

CERTIFICATE OF COMPETENCY (FISHING VESSEL) CLASS I - *continued*

Elementary qualitative treatment of heat transfer by conduction, convection and radiation. Effect of insulation.
Elementary principles and cycles of operation of IC engines, showing how power developed is illustrated by indicator diagram. Fuel consumption relative to power developed. Principles of combustion and effects of insufficient or excess air.
Simple electric circuits, both ac and dc, effects of electric current, i.e. chemical, magnetic and thermal. Ohm's Law.
Series and parallel circuits. Electromotive force, voltage. Units of current, resistance, voltage, energy.
Distribution of current in circuits. Resistance of conductor, variation with dimensions, material, temperature. Temperature coefficient of resistance. Insulators. Principles of electrical transformers.
Secondary cells (acid and alkali). Construction. Capacity ampere-hour.
The use of electrical measuring instruments.
Magnetic field. Lines of force. Field due to current in a straight conductor. Motor and generator principle. Commutation.

Engineering Knowledge I

Ability to transmit information relating to machinery components by means of simple drawings with supplementary notes and specifications .
Knowledge of the methods of manufacture of the various machinery components and the effects of various treatments on the physical properties of the materials commonly used.
Constructional details, arrangements and management of refrigeration plants.
Construction, arrangement and operation of steering systems. Construction details and maintenance of pressure vessels.
Constructional details and principles of action of pumps. General requirements for pumping systems.
Safe and efficient operation and maintenance of electrical equipment.
Fire prevention and detection. Fire fighting equipment, its use, construction and maintenance.
Knowledge of the Code of Safe Working Practices for Fishing Vessels in machinery rooms and other enclosed spaces.
Safe and efficient operation and maintenance of electrical equipment.

Engineering Knowledge II

Working principles and constructional details of marine diesel engines, together with their ancillary equipment such as Gearboxes, Clutches, Thrust Bearings and Transmission Systems. Operation and maintenance of diesel engines. Determination of engine power. Starting and reversing systems. Properties of fuel and lubricating oils used in diesel engines. The fuel system. The lubricating oil system.
Constructional details and working principle of air compressors.
Operation, testing and fault rectification of automatic control and alarm panels.
Basic hydraulic circuits and their maintenance.
Construction, safe operation and maintenance of deck machinery.

Oral

The Oral examination will cover the following topics:

Managerial responsibilities of a Certificated Engineer Officer
Management of engines and pressure vessels, electrical machinery.
Prevention of fire, methods of fire fighting at sea.
Supervisory duties, work to be done in port, periodical examination of the working parts.
Constructional details, arrangements and management of refrigeration plant.
Construction, arrangement and operation of steering systems.
Construction details and principles of action of pumps. General requirements for pumping systems.
Working principles and constructional details of marine diesel engines, together with their ancillary equipment such as Gearboxes, Clutches, Thrust Bearings and Transmission Systems.
Operation and maintenance of diesel engines.
Determination of engine power. Starting and reversing systems.
Properties of fuel and lubricating oils used in diesel engines. The fuel system. The lubricating oil system.
Operation, testing and fault rectification of automatic control and alarm panels.
Basic hydraulic circuits and their maintenance.
Construction, safe operation and maintenance of deck machinery.
Knowledge of the Code of Safe Working Practices for Fishing Vessels in machinery rooms and other enclosed spaces.
Knowledge of appropriate M notices.