

INDUSTRY STANDARD NO. 11

Offshore Medical Examination

16 June 2024

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Document Control Sheet

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This document will be controlled in accordance with the NOGEP A Industry Standard No. 80 on Standards and Document Control.

Terms and definitions

BA	Breathing apparatus
BIG Act	Health Care Professions Act (Wet op de beroepen in de individuele gezondheidszorg)
BMI	Body Mass Index
Dutch CS	Dutch Continental Shelf
ERT	Emergency Response Team
FEV	Forced Expiratory Volume
FVC	Forced Vital Capacity
IDDM	Insulin Dependent Diabetes Mellitus
MCV	Mean Cell Volume
Medevac	Medical Evacuation
NIDDM	Non Insulin Dependent Diabetes Mellitus
NOGEPA	Netherlands Oil and Gas Exploration and Production Association
PIN	Personal Identification Number
PPE	Personal Protective Equipment
TIA	Transient Ischaemic Attack

Legal Requirements

BIG Act	Health Care Professions Act (Wet op de beroepen in de individuele gezondheidszorg)
Article 6.13 lid 4, 18	Working conditions Decree (Arbeidsomstandighedenbesluit)

Related Standards

Standard 10	Rendering First Aid on mining installations
Standard 12	Procedure medical rejection with appeal
Standard 13	Medevac

Important Nomenclature used in this Standard

In the context of this Standard and when so used to describe a method or practice:	
'shall'	means that such method or practice reflects a mandatory provision of law (in Dutch: <i>dwingend recht</i>). Such method or practice is mandatory for those who are the addressees of such provision (mostly the operators). A Standard can describe or quote, but not amend, mandatory provisions. When an operator in exceptional cases for technical, operational or HSE reasons cannot comply, exceptions shall be documented and reported, and risks mitigated. Please note that this does not release the operator from the obligation to comply with the law. *
'should'	means that such method or practice reflects a Good Operating Practice. An operator is generally expected to apply such method or practice, but a specific situation may require a specific alternative. In other words: the operator complies or explains, and documents the explanation. *
'could'	means that such method or practice is of an advisory nature or mentioned by way of example. An operator is not obliged to comply and is not obliged to explain if he does not comply.
* Please refer to paragraph 2.3 of Standard 80 (Standards and Document Control), for further explanation on an exception of a 'shall' provision, or on a comply-or-explain of a 'should' provision.	

1. Executive Summary

The NOGEPA Industry Standards aim to provide guidance and clarity on a range of topics relevant for onshore and offshore oil and gas operations in the Netherlands and on the Netherlands part of the continental shelf. The Standards cover a wide variety of topics, many of them related to health, safety and environment and as well as to operational matters.

The Standard “Offshore medical examination” provides guidance on what is considered to be good practice regarding the assessment of health of persons working or intending to work offshore and guidance on the implications of various medical conditions on fitness to do so.

Working offshore means working in a quite different environment than “regular” work onshore. Offshore tours of duty are of two weeks duration with 12 hours a day or night. Many of the functions offshore still require a large degree of lifting and heavy manual handling. Travel to and from the installation is by helicopter. And although some offshore installations have a fully equipped sick-bay on board, this should not be compared to the level found in hospitals. Therefore all persons working offshore must be examined periodically and classified as medically fit to work in the offshore environment.

The following is a summary of the content of this Industry Standard.

Section 3 provides general guidance notes e.g. requirements for NOGEPA approved physicians and the medical examinations.

Section 4 describes potential concerns related to the organ systems followed by guidance on assessing the individual and specific guidance on commonly encountered conditions.

Section 5 provides guidance on special employment groups.

Note: Specific medical developments in society may have an (immediate) impact on the guidance given in this standard. It may then be necessary to temporarily deviate from the standard. In such case, the NOGEPA medical advisors will send an e-mail to all NOGEPA registered examining physicians and will also publish the additional guidance on the NOGEPA website (www.nogepa.nl).

2. Scope and application

2.1 Scope

The purpose of the NOGEPA medical Standards is to protect individuals and employers from predictable medical emergencies which may arise in an isolated location.

All persons working offshore must be examined periodically and classified as medically fit to work in the offshore environment.

This Standard provides guidance on what is considered to be good practice regarding the assessment of health of persons working or intending to work offshore, and guidance on the implications of various medical conditions on fitness to do so. They are intended to aid an examining physician's assessment of the medical fitness of an individual to work in the offshore environment. Nevertheless, it remains the responsibility of the operator's medical advisor (this term is used to cover the medical advisor to offshore platforms, other production units e.g. accommodation platforms and mobile drilling rigs) to ensure that persons working offshore meet necessary health standards. While operators will normally accept possession of a certificate of fitness for offshore work as evidence of doing so, the final decision regarding offshore employment or visits rests with the operator, whose decision will take account of the medical advice received from the examining physician but may vary from his/her conclusion.

However, an individual having passed such assessment would not be acceptable for unrestricted work in the North Sea unless the assessment also meets the requirements of this Standard.

2.2 Application

This Standard is applicable to oil- and gas activities on the Dutch part of the continental shelf.

3. General guidance notes

3.1 General

All assessments under this Standard must include a personal examination by an examining physician who is approved by NOGEP A and whose name appears on the current NOGEP A list of appointed doctors. The NOGEP A Medical Advisor maintains such a list of physicians – contact NOGEP A in the first instance (+31 (0) 70 3478871). The list of approved NOGEP A physicians is available at www.nogepa.nl.

3.1.1 Requirements for NOGEP A approved physicians

The requirements for NOGEP A approved physicians are:

- To have a valid BIG registration of their medical qualification;
- To have knowledge of the offshore environment and remote medicine. NOGEP A offers annually a half day training programme for approved NOGEP A physicians. It is recommended to attend such training programme at least every two years;
- To have access to appropriate examination facilities;
- To perform annually at least ten offshore medical examinations;
- To understand the principles of the risk based approach embodied in this Standard.

3.1.2 The Medical Examination

The medical examination will always include the following:

- Check of photographic ID of the examinee;
- A comprehensive medical, psychosocial and occupational history;
- Audiometry;
- Urine analysis;
- Visual acuity;
- BMI;
- Appropriate clinical examination;
- Spirometry (required in connection with participation CA-EBS “in-water” training; see also section 4.6.3);
- Further investigations (e.g. blood tests, ECG) may be required to clarify clinical findings but are not a routine requirement.

Note: for health monitoring purposes it is recommended to perform an ECG at the first Offshore Medical.

There is no NOGEPA format for recording the examination. Physicians may use their own format if they wish.

The certificate should, as a minimum, contain the following information:

- Name
- Date of birth
- Employing company name
- Occupation

- ‘The individual has been examined in accordance with NOGEPA Standard 11 Offshore Medical Examination and is medically fit for *[unrestricted offshore work]*’

- Examining physician name
- NOGEPA registration number
- Date of examination
- Signed

The registration of an examination by the examining physician should be treated as a medical file/records, and therefore should be archived for 20 years.

3.2 Certificate of fitness

Examining physicians must note that possession of an unrestricted NOGEPA certificate of medical fitness for offshore work allows the holder to travel to and work on any installation within the Dutch offshore sector. The certificate implies that the individual is fully fit for all normal duties without the individual requiring any additional support or modification to the working environment. Additional specialist duties such as emergency response team membership, diving, and radiological activities will require further assessment under the relevant guidance.

The examining physician should therefore only issue an unrestricted certificate of fitness for offshore work if the individual is indeed found fully fit for offshore work in accordance with this Standard. This must be entered in the Personal Safety Logbook.

Individuals not meeting the criteria which would allow issue of an unrestricted certificate of fitness may still be fit to work offshore subject to specific support measures being implemented, but would then be limited to working on such installations where these specific measures have been implemented. Such requires approval in advance of the Operator of the installations. The restrictions should be noted in the PSL and, if applicable, in an equivalent recording system.

3.3 Frequency of examination

Every person must be examined prior to employment offshore and thereafter at 2 yearly intervals.

The examining physician must consider increasing the frequency of periodic assessments where the individual has a condition which may significantly alter during such time frame. In such circumstances certificates of shorter duration than 2 years should be issued.

A sickness absence due to significant injury or illness, like -but not limited to- admission to a hospital, or a new illness requiring in hospital/clinic treatment by a medical specialist (but not by a dentist or general practitioner), requires the issuing of a new medical certificate.

Any medevac -for any reason- by SAR helicopter is always considered a significant injury or illness and therefore always requires the issuing of a new medical certificate before returning to work.

In these cases the individual's medical fitness should first be re- assessed and he/she cannot return offshore, until certified as medically fit to return to work offshore by a NOGEP approved physician. This assessment and certification should not be carried out by a physician who is either treating or was involved in the Medevac of the individual.

This assessment may, but need not automatically, involve further medical examination and/or written proof of treatment.

3.4 Offshore visitors

Visits to offshore locations are regular occurrences, often involving personnel from external companies or organizations. The risk associated with working offshore is in part a function of duration of exposure to the offshore environment. Consequently visitors may be regarded as being at lower risk than employees who wholly or mainly operate in an offshore location.

Alternative screening procedures are therefore appropriate for visitors. The following procedure is recommended but operators are free to employ any reasonable alternative.

For visits of not more than 72 hours, full NOGEP certification of fitness for offshore work is not required but visitors should be screened for medical conditions prior to offshore travel.

The Operator of the visitor may use for this purpose his own procedure/medical questionnaire. Allowing visitors on an offshore installation remains at the discretion of that operator.

3.5 Information and review process for unsuccessful candidates

Independent Review Procedure

In circumstances where:

- No certificate is issued after a medical examination, or
- No certificate is issued following an examination for fitness to return to work offshore or after illness or injury.

NOGEP A has established a process for review of the examining physician's assessment of the individual and the decision made in his/her case.

Reference is made to Standard 12 "Procedure medical rejection with appeal", see www.nogepa.nl.

3.6 The offshore working environment

The examining physician conducts the assessment in accordance with recognized occupational health standards. In accordance with good occupational medicine practice the examining physician must ensure that the medical assessment of a prospective offshore employee relates to the particular work factors and environment of the worksite. Although the following description provides a brief guide to offshore working conditions, examining physicians must ensure they have adequate knowledge of the environment to make an effective decision in an individual case.

3.6.1 The Physical Nature of the Offshore Environment

Installations range in size from small production platforms with a crew of less than 10 to large fixed leg oil & gas production installations with a crew of up to 60, jack-up drilling rigs with a crew up to 100, and accommodation platforms up to 200.

Installations may be up to 200 miles offshore. Extreme weather and sea conditions may be experienced

All facilities have 24 hour operations, with employees working alternate twelve hour day and night shifts.

Offshore tours of duty are normally of two weeks duration.

Travel to and from the installation is by helicopter or walk-to-work vessel.

Living accommodation is usually in shared cabins of two occupants.

There are recreational facilities normally including satellite television, a gym and social facilities but no alcohol and drugs are allowed offshore. Smoking is still allowed in restricted and dedicated areas.

Many of the functions offshore still require a large degree of physical exertion e.g. climbing stairs, lifting and heavy manual handling and many valves are still manually operated. Much equipment is very heavy and needs regular maintenance and repair which often has to be done in a very confined working space or at height.

Installations are usually of a multi-level design with access between levels by steep, open, external stairs.

Because of the need to contain potential fires and explosions there are numerous fire and explosion proof safety doors which can be extremely heavy to open and close.

3.6.2 Offshore Survival Training

Because the normal transport to any offshore installation is by helicopter and, in an emergency, rescue is likely to involve evacuation by lifeboat or life raft, every employee offshore must hold a valid Certificate of Offshore Safety Introduction and Emergency Response Training.

The training is physically demanding and initially takes 3 days including activities such as embarking a life raft from the water, climbing rescue nets and helicopter underwater escape simulation which includes the use of a re-breather device, a compressed air emergency breathing system and water immersion. Basic fire fighting skills and first aid are taught and attendees are expected to escape from a smoke house using breathing apparatus.

Refresher courses are required every 4 years.

3.6.3 Installation Medical Facilities

Offshore installations with more than 25 persons on board are required to have a trained nurse (Medic) as well as a fully equipped sick-bay, usually consisting of an examination area, a small one or two bedded ward.

For installations with less than 25 persons trained first aiders are available. Sick-bay facilities are not strictly required.

Sickbay medical equipment is reasonably comprehensive normally including an electrocardiograph, defibrillator and pulse oximeter but should not be compared to the level found in hospitals.

The medic has a range of basic medication available including antibiotics, analgesics (including opiates), cough and cold remedies, antacid preparations, antihistamines and a selection of emergency medication for use in cardiac arrest.

The medic is not expected to have the level of training to be able to prescribe the complete range of stocked medication but when necessary their use can be authorised by an onshore physician.

The full set of minimum requirements for the offshore medical facilities and medical training is published in NOGEPA Standard 10 Rendering First Aid on mining installations.

3.6.4 The Offshore Medic – Qualifications and Training

The offshore medics in the Dutch sector are BIG registered nurses with an additional NOGEPA approved medic training course.

3.6.5 Transport and Medical evacuation

Manning levels and accommodation constraints are such that anyone becoming sick for any length of time will have to be returned onshore as soon as reasonable practicable.

An emergency medical evacuation can be expensive for the company and if required in inclement weather conditions can endanger the crew of the helicopter and any medical personnel involved.

There are periods of time where travel by helicopter may be impossible for 2-3 days due to high winds or fog.

The helicopter passenger cabin is small with closely packed seats. Personnel have to wear bulky survival suits and life jackets.

Emergency egress is by doors and windows. Larger or obese passengers may find exit through the windows difficult. Reason why since 2015 all offshore employees travelling by helicopter must have had a shoulder measurement and will be required to sit in a seat where the nearest push-out emergency exit is compatible with their shoulder width.

Flights are conducted at 1.000 – 3.000 feet. Passengers must be fit to fly at this level for the 1 – 2 hour duration of the flight.

Where a person must be evacuated urgently, flights may be diverted to pick up the patient or a dedicated flight can be arranged via the Coast Guard with a SAR (Search and Rescue) helicopter. As a result the delay in evacuation times to shore can be in the order of 4-5 hours or more, dependant on weather conditions.

The management of some patients requiring active care during an evacuation flight may pose difficulties due to the combination of cramped accommodation, noise and vibration. The use of some medical equipment including defibrillators may be curtailed by flight safety considerations.

Individuals diagnosed with psychiatric conditions pose a particular concern as the pilot's cabin is not physically separated from the passenger cabin. This proximity can have safety implications when attempting to medevac severely agitated patients.

4. Determination of risk for specific medical conditions

The assessment of an individual's fitness to travel and work offshore involves making an assessment of the risk which may be posed either to themselves or to others by any underlying medical condition(s) which they may have.

In order to be fit to travel and to work offshore an individual must:

- Be able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Be able to escape the platform or helicopter in event of an emergency;
- Be able to take part in offshore survival training;
- Pose no significant risk to the safety or health of others on the installation by virtue of any underlying medical condition;
- Require no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Require no medical treatment which has significant side effects incompatible with offshore work;
- Have no significant liability to sudden illness requiring medical intervention which cannot be delivered in the offshore environment.

If an individual is unable to meet the criteria mentioned above then they should normally be considered unfit for unrestricted offshore work. An individual who is declared temporarily unfit for offshore work should be reassessed after an appropriate length of time.

In some cases, on an individual basis, it may be possible to mitigate the risk to a level which is deemed acceptable such that the individual may be allowed to travel and work offshore. The individual should then be issued with an offshore fitness certificate limited to travel to such installations. In all such cases the conditions and measures put in place to mitigate the risk must be discussed and agreed with the employer's and operator's company doctor. .

To ensure uniformity of approach, in each of the following sections there is a description of potential concerns related to that organ system followed by guidance on assessing the individual and specific guidance on commonly encountered conditions.

4.1 Cardiovascular system

4.1.1 Risk

Cardiovascular conditions may affect the following requirements and hence examining doctors should focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.1.2 Assessment

In making an assessment it must be noted that cardiovascular disease is one of the most common causes of emergency evacuation from an offshore installation. The individual must be assessed with regard to:

- Exercise tolerance with specific reference to general mobility around the platform (including climbing stairs), ability to perform normal job functions, ability to respond to emergency situations and in particular to successfully take part in evacuations;
- Risk of developing sudden life threatening complications and likelihood of successful medical evacuation;
- Ability to take part in survival training including exposure to smoke filled environments, wearing smoke hoods and BA equipment, helicopter underwater escape training and use of underwater re-breather equipment;
- Side effects of medication.

4.1.3 Notes on specific conditions

Ischemic heart disease

Individuals with a history of myocardial ischemia, including myocardial infarction, angioplasty and CABG, must meet the following criteria for the risk to be compatible with offshore work:

- The examining doctor must obtain a report from the treating physician;
- The individual must be free of cardiac symptoms for at least 3 months;
- The individual must undertake a recognised exercise test and complete stage III without cardiac symptoms or signs of ischaemia.

Initially a certificate restricted to a maximum of one year should be issued, with reassessment by a consultant in cardiology at the end of this period.

Thereafter, the requirement for re-examination will be determined by conducting a risk factor assessment which may take into account information from specialists.

Cardiac Arrhythmias

If these produce symptoms, interfere with function, cause temporary incapacitation, or require anti-arrhythmic medication then expert cardiac opinion must be obtained. The detail of the cardiology report must be considered, when assessing the resultant risk.

Pacemakers

For individuals with pacemakers, it must be demonstrated that they are not likely to suffer any significant symptoms related to it. In addition it must be demonstrated that their pacemaker is not likely to be adversely affected by electromagnetic energy likely to be encountered. Therefore the examining doctor must have:

- A written assessment from the employer / operator detailing the strength of any magnetic field and circumstances when the individual may come into contact with it;
- A written statement from either the cardiologist or the technical representative of the pacemaker manufacturer detailing the risks of exposure to the magnetic field in the circumstances in which it may be encountered;
- A cardiologist report confirming that the individual is free of syncope or pre-syncope as a result of the pacemaker insertion;
- A cardiologist report confirming that the individual is experiencing no complications related to the pacemaker insertion;
- Individuals with overdrive anti-tachycardia pacemakers or implantable defibrillators must be assessed by a consultant cardiologist to confirm that there is no risk of developing syncope.

Individuals with pacemakers require annual review by a cardiologist to ensure continued correct functioning of the device.

Hypertension

Hypertension would not normally give rise to a significant risk during work offshore provided it is uncomplicated and well controlled by treatment. The NICE Guidelines are a useful reference for this condition and should be consulted for further guidance on management.

In respect of work offshore, the following guides appropriate course of action:

- Individuals with accelerated (malignant) hypertension (BP more than 180/110 mmHg with signs of papilloedema and/or retinal haemorrhage) or suspected pheochromocytoma (possible signs include labile or postural hypotension, headache, palpitations, pallor and diaphoresis) must be referred immediately for investigation and

treatment. Certification of fitness must be deferred until stabilized on appropriate treatment when a full certificate may be issued;

- All other individuals with blood pressure above 140/90 must be referred to their GP for further investigation and treatment where appropriate. Uncomplicated hypertension is unlikely to be a reason for refusal to issue a certificate of fitness although individuals may require short periods of sickness absence while being stabilized on treatment.

Congenital heart disease

Other than Atrial Septal Defects or small Ventricular Septal Defects with no haemodynamic significance all congenital heart disease must be individually assessed by a cardiologist and the resulting report used in the risk assessment process.

Valvular heart disease

In all cases of valvular heart disease, a cardiology report must be obtained in order to fully understand the condition, its haemodynamic effects and impact upon exercise tolerance.

Patients who remain on warfarin may be at significant risk of prolonged bleeding time associated with trauma. Reference is made to paragraph 4.21.1.

Peripheral circulation

Individuals with DVT must be assessed with regard to risk of developing complications, particularly pulmonary embolism and side effects of medications, particularly anticoagulant regimes.

Pulmonary circulation

A history of more than one pulmonary embolism indicates a significant underlying condition predisposing to further incidents. Therefore the examining doctor must obtain a specialist report to determine risk of recurrence. Individuals with other than a low risk of recurrence will not be fit to return to unrestricted work offshore.

Cerebrovascular disorders

Individuals who have suffered stroke due to occlusive vascular disease, spontaneous intracerebral haemorrhage, TIA or amaurosis fugax within the past 6 months must be considered at high risk and therefore should not be allowed to work offshore. They may be reconsidered after this time if there is a satisfactory clinical recovery with particular respect to impaired limb function and cognitive defects. Individuals in safety critical jobs may require more than 6 months post event before returning to offshore work and may require more frequent review.

4.2 Diseases of the nervous system

4.2.1 Risk

Nervous system conditions may affect the following requirements and hence examining doctors should focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.2.2 Assessment

The individual must be assessed with regard to:

- Potential for altered levels of consciousness;
- Changes in cognitive function, particularly memory and concentration;
- Loss of muscle power;
- Disturbances of balance or coordination;
- Disturbances of mobility causing impairment in ability to move around installation either during normal work or during emergencies;
- Loss of sensation causing functional deficit related to job requirements or emergency evacuation.

Reference should be made, where appropriate, to the specific notes below, but individuals exhibiting significant problems in any of the areas above are unlikely to be able to meet the requirements referred to above. The risks may, in certain circumstances be able to be mitigated sufficiently such that the individual may be considered for travel to a specific named location following discussion with the employer's and operator's medical advisors.

4.2.3 Notes on specific conditions

Epilepsy

The diagnosis of epilepsy with persisting epileptic seizures of any type will normally give a risk profile incompatible with unrestricted work offshore. Those with a history of epilepsy, but who are able to meet the criteria below may be considered for offshore work.

For the purposes of an assessment of fitness for offshore work individuals must be categorized by their job function:

- Category 1 – individuals whose job function is such that sudden impairment of consciousness may adversely affect the safety of, or result in serious injury to or death of, either themselves or others. Examples of such job functions include crane operators, rope access personnel, scaffolders and drill crew;
- Category 2 – all other individuals.

In making an assessment of fitness for work the examining doctor must have:

- A written statement from the employer determining which of the above categories the individual is in;
- a report from the individual's GP and/or specialist in order to verify the medical history, and establish facts on which the individual risk assessment can be based.

Based on this:

- Category 1 occupations require the individual to have been seizure free for the last 10 years without taking anticonvulsant medication during that period or have an assessed risk of further seizures of less than 2%.
- Category 2 occupations must be:
 - Seizure free for a minimum of 6 months, whether taking medication or not. Individuals who stop medication must demonstrate a seizure free period of 6 months before returning to offshore work;
 - If taking medication, free from significant side effects of this;
 - If taking medication, demonstrate from the GP/specialist report that they have no indications of subtherapeutic levels on clinical monitoring (where appropriate), nor any indication of poor compliance with treatment.

For alcohol related seizures individuals in category 2 must be seizure free (by day and night) and off all medication for at least 6 months before returning to any offshore employment. Those in increased risk (i.e. Category 1) occupations must be seizure free for a minimum period of 2 years by day and night and off all medication. Individuals must also be in full compliance with the requirements of section 4.4.

Following significant head injury or cranial surgery, and when there have been no epileptic seizures, the risk of post-surgical or post-injury epilepsy must be low (normally accepted to mean as being below 2%) in category 1 occupation (see above). For category 2 occupations, if the risk cannot be determined to be less than 2%, individuals may be considered fit after a minimum seizure free period of 6 months. Individuals stopping prophylactic anticonvulsant medication must either have a risk less than 2% or demonstrate a seizure free period of 6 months following stopping medication. Specialist neurological opinion should be obtained in all cases.

Single Seizure

The above guidelines for epilepsy must also be followed for individuals who have suffered a single seizure in whom a diagnosis of epilepsy has not been made.

Loss of consciousness/altered level of awareness

Individuals must be fully investigated by an appropriate specialist in all cases. Where a specific underlying cause is found, reference should be made to the appropriate section of the guidance, otherwise the individual may be considered for offshore work after 6 months if there has been no further recurrence.

Chronic neurological disorders

Individuals with conditions such as Multiple Sclerosis, Parkinson's disease, motor neurone disease and other disorders of muscle and movement must be assessed with regard to the factors described above. Those with mild or predominantly sensory symptoms are likely to be at minimal risk and therefore may be fit for offshore work. More severely affected individuals may be fit to travel to specific named locations if specific measures can be put in place to mitigate the risk to a level deemed acceptable by the operating company medical advisor. An increased frequency of medical review may be appropriate, dependent on the rate of progression.

Migraine

The majority of cases are straightforward in symptomatology and treatment, and are unlikely to give rise to an unacceptable risk for offshore work. Some more severe cases may result in episodic protracted incapacity or unusual neurological features. In such cases examining doctors must obtain a neurological report confirming the condition and optimum treatment to enable an informed risk assessment to be made.

Narcolepsy/Sleep Disorders

It is likely that individuals with unpredictable drowsiness during periods of normal wakefulness, consequent on narcolepsy/sleep disorders, will pose a risk incompatible with offshore work. Individuals who have been successfully treated for such conditions may be fit, but a specialist report is required providing objective evidence of the success of such treatment.

4.3 Psychiatric disorders

4.3.1 Risk

Psychiatric conditions may affect the following requirements and hence examining doctors should focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Poses no significant risk to others on the installation by virtue of any underlying disease;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.3.2 Assessment

In assessing individuals with psychiatric disorders, examining doctors must consider the potential for exacerbation or precipitation of the condition by factors such as the remote location of offshore installations, the possible social isolation, disruption of normal social patterns, the impact of shift working and the potential for perception of the environment as being stressful in some individuals.

Examining doctors should make clinical assessment of the functional effect of symptoms of the condition such as:

- Mood;
- Memory;
- Concentration;
- Agitation;
- Psychotic symptoms;
- Behavioural disturbance;

- Side effects of medication.

Reference must be made, where appropriate to the specific notes below, but individuals exhibiting significant problems in any of the areas above are likely to pose a risk which would be incompatible with unrestricted offshore work. They may, in certain circumstances be considered for travel to a specific named location following discussion with the employer's and operator's medical advisor.

4.3.3 **Notes on specific conditions**

Mild Anxiety or Depressive disorders

When assessing the risk, the examining doctor must be satisfied that the individual has no significant memory or concentration problems, no suicidal thoughts, no behavioural disturbance or agitation and that workplace factors will not exacerbate the condition. If the individual is on medication, the examining doctor should be satisfied that they are stable on medication and not suffering from significant side effects.

More severe Anxiety or Depressive Disorders

If the individual is exhibiting memory or concentration problems, has behavioural disturbances, agitation or suicidal thoughts, the risk is likely to be high enough to be incompatible with offshore work until stabilized on medication.

Psychoses – including bipolar disease and schizophrenic disorders

The risks associated with acute psychotic episodes are incompatible with offshore work. Following treatment and recovery, the examining doctor must, in all cases, obtain a specialist report to confirm that the individual:

- Has made a good functional recovery;
- Has insight into their problem;
- Is fully adherent to the agreed treatment plan;
- Is fully engaged with medical services;
- Is free from any significant adverse effects of medication (e.g. effects on alertness, concentration, motor performance);
- Has a low risk of recurrence.

All cases must be discussed and agreed with the employer's and operating company doctor before being allowed to travel and work offshore.

The risk associated with individuals who have exhibited extreme violent tendency in the past is unlikely to be compatible with offshore work.

Personality and behavioural disorders

The risk associated with those personality and behavioural disorders which are characterized by violence or serious anti-social behaviour is unlikely to be compatible with offshore work.

Developmental disorders - including Asperger's syndrome, autism and Attention Deficit Hyperactivity Disorder

Individuals need to be assessed with regard to impulsivity and lack of awareness of the effects of their behaviour on others. These risks may be significant such that they are incompatible with the safety requirements of offshore work, or ability to live in community.

Other psychological disorders

Other psychological disorders such as eating disorders, phobias and childhood behaviour disorders (including post head injury syndrome and non-epileptic seizure disorder) must be assessed individually with respect to the requirements listed above to determine the individual risk profile. Examining doctors must obtain a psychiatric report if unable to accurately assess the risk.

4.4 **Alcohol dependence**

4.4.1 **Risk**

Alcohol related conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Poses no significant risk to others on the installation by virtue of any underlying disease.

Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.4.2 **Assessment**

Examining doctors should be aware that employers or operators may have specific alcohol abuse policies which must be referred to in addition to this guidance as appropriate.

Individuals who have a physical dependence on alcohol will not be fit to work offshore until it can be demonstrated that such dependence is under control. In making such determination the examining physician must confirm compliance with the following:

1. The individual must have completed a recognised initial alcohol treatment programme.

2. The individual must be participating in and responding to an ongoing alcohol rehabilitation programme.
3. The examining doctor must obtain a report from the individual's treating healthcare professional(s).
4. The individual must have evidence of an improving trend of liver function test results and MCV.
5. The examining doctor must make enquiries to determine continued compliance with established treatment goals.
6. The certificate should be restricted to a maximum of 3 months during the initial 12 months following treatment.
7. The certificate should be restricted to a maximum of 6 months during the following 12 months.
8. At each review the examining doctor must confirm that continued compliance with items 2, 4 and 5 above.

Individuals who have suffered an alcohol withdrawal induced fit should be assessed in accordance with the guidance given in section 4.2.

4.5 **Drug abuse**

4.5.1 **Risk**

Drug abuse may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Poses no significant risk to others on the installation by virtue of any underlying disease;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.5.2 **Assessment**

Examining doctors must be aware that employers or operators may have specific drug abuse policies, which should be referred to in addition to this guidance as appropriate.

Individuals who are demonstrated, by any means, to be actively misusing illegal or prescription medication will not be fit for offshore work.

Prior to return to work offshore the examining physician must ensure that the following criteria are met:

1. If the individual is dependent on drugs, then they must have completed a drug abuse treatment programme.
2. Where appropriate, the individual must participate in and respond to an ongoing drug rehabilitation programme.
3. The examining doctor must obtain a report from the individual's treating healthcare professional(s).

4.6 **Respiratory system**

4.6.1 **Risk**

Respiratory conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.6.2 **Assessment**

In assessing the impact of respiratory disease on an individual's ability to work offshore, the examining physician must consider the following:

- Exercise tolerance with specific reference to general mobility around the platform (including climbing stairs), ability to perform normal job functions, ability to respond to emergency situations and in particular successfully take part in evacuations;
- Risk of developing sudden life threatening complications and likelihood of successful medical evacuation;
- Ability to take part in survival training including exposure to smoke filled environments, wearing smoke hoods and BA equipment, helicopter underwater escape training and use of underwater compressed air emergency breathing system (CA-EBS) equipment;
- Consideration of potential exposure to respiratory irritants and sensitizers.

4.6.3 Notes on specific conditions

Asthma

The following guidance must be used by examining doctors when assessing the risk:

- Resolved childhood asthma does not present a significant risk
- For the risk profile to be compatible with offshore work the examining doctor must ensure that the individual has:
 - infrequent, non-disabling episodes;
 - normal exercise tolerance;
 - absence of hospitalizing episodes;
 - good knowledge and awareness of illness with ability to modify own treatment as necessary;
 - symptoms which do not require high dose inhaled or oral steroids.
- Individuals not meeting these criteria will require a specialist report to fully assess the situation and should not be issued with a certificate of fitness without discussion with the operating company medical advisor.

Pneumothorax

The examining doctor must obtain a specialist report to determine the risk of recurrence. Individuals with other than a low risk of recurrence will not be fit to return to unrestricted work offshore.

Obstructive or restrictive pulmonary disease

Conditions such as chronic bronchitis, emphysema, and any other pulmonary disease causing significant disability or recurring illness, such as bronchiectasis must be assessed using standard spirometry measurements.

Individuals with an $FEV_1 > 60\%$ of predicted and an $FVC > 75\%$ of predicted are likely to have sufficient pulmonary reserve to meet the requirements of offshore travel and work.

For individuals who do not meet this standard the examining doctor should, by practical functional assessment, ensure that the individual is able to perform his normal work duties and has the capacity to respond in a platform emergency and evacuation.

Lung function

Offshore employees are trained in the use of CA-EBS (Emergency Compressed Air Breathing System) during the four annual Safety Training. The CA-EBS is available on all Dutch offshore helicopters. It is a compressed air system and the replacement of the re-breather system. It

gives more survival time in an emergency to get out of a helicopter which has landed in the water.

Being a compressed air system, there are specific diving medical examination rules. As the training that is necessary for this is only intended for participants to learn to safely escape from an underwater object in a controlled environment of a swimming pool with the presence of divers, the legislator decided to implement specific requirements in the Working Conditions Decree (article 6.13 lid 4). This makes it possible to practice the CA-EBS in a conditioned environment (CA-EBS “in-water” training). This will only take place just under the surface. The training centers have been informed of this and are aware of the requirements they must meet.

This means that all offshore employees must undergo a lung-function examination prior to participating in a training course to establish that there is no increased risk in following the training. This entails that a full work-related medical examination by a certified diving doctor is not needed. This is sufficed by a lung-function examination which establishes that there is no increased health risk in following the training. The examination does not have to be performed by a certified diving doctor. A lung-function examination is designed to detect conditions which could lead to the expanding air during the ascent, damaging the lungs. Doctors who perform this lung-function examination can make use of the spirometry protocol which can be found on the ‘Nederlandse Huisartsen Genootschap’ (<https://www.nhg.org>), or the ‘COPD & Astma Huisartsen Advies Groep’ (<https://cahag.nhg.org>).

A lung-function examination must be conducted for every offshore examination whereby a minimum of a FEV1, FVC and FEV1 / FVC ratio and flow-volume curve is performed. The case history must also be well discussed to check for the presence of (old) lung problems such as: pneumothorax, asthma, COPD, medication etc., and this data must be well recorded in the medical files. Participation in a CA-EBS “in-water” training is only possible if the participant has undergone the lung-function examination prior to the training, and it has been established that there is no increased health risk in following the training. This must be indicated in the PSL (Personal Safety Logbook) from 01-01-2017 (separately) with **Fit for CA-EBS “in-water” training**. If an employee is medically unfit for participation in the CA-EBS “wet” training but is otherwise medically fit for working offshore, this must be indicated in the PSL (e.g. by filling: **Fit for offshore, but unfit for CA-EBS “in-water” training**). This allows them to participate in a CA-EBS “dry” training and they can thereby meet the requirements for the trainings-criteria for offshore work.

4.7 Endocrine disorders

4.7.1 Risk

Endocrine conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is fit to carry out their normal assigned duties without risk to themselves or others;
- Is fit to escape the platform in event of an emergency;
- Requires no ongoing medical treatment which would not be able to be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden illness requiring medical intervention which cannot be delivered in the offshore environment.

4.7.2 Assessment

In assessing the impact of endocrine disease on an individual's ability to work offshore, the examining physician must consider the following:

- Risk of developing sudden life threatening complications and likelihood of successful medical evacuation;
- Side effects of medication;
- Ability to take part in survival training including exposure to smoke filled environments, wearing smoke hoods and BA equipment, helicopter underwater escape training and use of underwater re-breather equipment;
- Disturbances of mobility causing impairment in ability to move around installation either during normal work or during emergencies;
- The requirements for lone working, safety critical work and shift work;
- The effects of any chronic complications such as visual field defects, muscle weakness, mental disturbances such as anxiety, depression or mania.

4.7.3 Notes on specific conditions

It should be noted that undermentioned exemptions to allow workers working offshore with these medical conditions, can exclusively be made on an individual basis, for a single installation and within de Dutch sector of the Continental Shelf of the North Sea only. It should be seen as an additional occupational Health surveillance programme offered by the Operator

of the offshore installation and is to be closely monitored by their Medical Staff and by Line Management.

Non Insulin Dependent Diabetes Mellitus (type II)

Individuals with NIDDM must be assessed with regard to:

- Risk of hypoglycaemic attack;
- Presence of complications which may affect mobility or ability to respond in emergency situations.

Further it is important that the individual can do self-checking of blood sugars and colleague awareness should be stimulated.

An increased frequency of medical examination may be appropriate to ensure regular review of the overall condition and specifically those issues above. If the individual has secondary complications of their diabetes these must be assessed under the relevant criteria for that condition.

Insulin Dependent Diabetes Mellitus (type I)

The risks associated with IDDM are not compatible with unrestricted fitness to work on the Dutch CS and will not be declared fit to work offshore.

Tailor made solutions may be considered for an individual for restricted certification of fitness to work on designated offshore installations if the following requirements are met:

1. The examining doctor must obtain a report from the individual's treating physician regarding presence of stable Hb A 1c results in blood.
2. The Individual must have a good awareness about events of hypoglycaemia
3. The Individual is capable of checking his /her own blood sugar levels and demonstrate a responsible attitude towards life style and diet.
4. A Medic is available on the offshore installation of the individual, with appropriate medication to deal with DM first aid events (if you have any questions call: +31703047408 Nogepe Secretary or email: secretariaat@nogepa.nl).
5. Colleagues and line management are aware of the individual's medical condition.
6. The individual does not work on night shifts.
7. The individual is not working on high risk locations, and in physically demanding jobs.
8. The validity of the medical certificate is for one year only.
9. The posting of the individual is for one specific installation on the Dutch Continental Shelf. No inter Company transfers are permitted, unless these conditions are met.
10. "Dutch Continental Shelf only, Installations with Medic" only to be mentioned in the PSL by the examining doctor. The posting is approved by the Operator Medical adviser.

4.8 Obesity

4.8.1 Risk

Obesity may affect the following requirements and hence examining doctors should focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency.

4.8.2 Assessment

The individual must be assessed solely with regard to their fitness and capability to perform the duties required. Although moderate to severe obesity may predispose to conditions such as cardiovascular disease or diabetes, the presence of obesity as a risk factor should not be considered, unless such co-morbidity such as smoking, age, blood pressure, raised blood cholesterol, raised total cholesterol and prescribed medication is demonstrably present or the obesity itself reaches a very high level.

Individuals with a BMI equal to or over 40 are not fit for ongoing offshore work.

If an individual's BMI is 40 (or more) and if the Nogepe doctor deems so appropriate, he/she can (but does not need to) be issued a one-time conditional certificate with a validity of not more than six (6) months.

Condition: In this case the individual should demonstrate and show proof that he/she is actively seeking medical treatment and agree to inform the examining Nogepe doctor about the outcome of such treatment. If this condition cannot be met, the individual should be deemed unfit.

35<BMI<40 kg/m²: unfit unless normal RR, rhythm, blood sugar, blood cholesterol and family history. Refer to General Practitioner and/or Employer for a fitness programme. Advise: re-assessment after 6-12 months. Limited duration of a medical certificate, if issued, should be standard practise.

30<BMI<35 kg/m²: fit, but to be referred to a fitness programme via his/her GP and or Employer. Refer to General Practitioner in presence of cardiac risk factors. Advise: reassessment after 12 months.

For all individuals, with a BMI between 25 and 40, the examining doctor must determine that the individual has an appropriate level of physical fitness:

- to adequately perform his normal job functions;
- for general mobility around the platform (including climbing stairs);
- to respond to emergency situations and in particular successfully take part in evacuations without compromising either their own safety or that of others.

4.9 Diseases of the gastrointestinal system

4.9.1 Risk

Gastrointestinal system conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.9.2 Assessment

Clinical assessment of any gastrointestinal system disturbance should consider the impact of the condition on an individual's function as well as any medication taken. In particular the examining physician should consider the following:

- The risk the individual may develop sudden life threatening complications such as acute bleeding, perforation or obstruction;
- The effects of chronic complications such as anaemia, fistulae or malabsorption syndromes;
- Side effects of medication.

4.9.3 Notes on specific conditions

Peptic ulceration

The risks associated with active peptic ulcer disease are unacceptable for offshore work. Where there is a past history of ulceration, an individual may be deemed fit for work offshore provided that the examining physician is satisfied that the risk of recurrence or complications is reduced to a minimum by the use of appropriate treatment. For risks to be considered acceptable the individual must be asymptomatic and, if required, be on maintenance acid suppression therapy and/or have undergone successful helicobacter eradication therapy.

Oesophagitis and gastritis

Oesophagitis and gastritis are unlikely to cause significant complication, hence, the risk must be considered low and individuals are acceptable on appropriate treatment. Other non-specific upper GI disorders including "dyspepsia" and diaphragmatic hernia are unlikely to give rise to significant risk provided they are non-disabling and the physician is satisfied they are not indicative of a more serious underlying disorder.

Inflammatory bowel disease

Inflammatory bowel disease is unacceptable in the acute phases until the individual is stable and controlled on medication compatible with offshore work. Where the condition is in remission and symptoms are under control, the individual may be fit for return to offshore work if, following consultation with the treating specialist, the risk of sudden disabling relapse is considered to be minimal.

Hernia

A hernia should be assessed with regard to the risk of strangulation and its effects on an individual's ability to carry out their normal assigned tasks. Those considered to be of high risk of strangulation are unacceptable until surgically repaired. Those with hernia of low risk who are assessed as able to carry out their normal assigned tasks should be given a time restricted certificate while awaiting surgical assessment and repair if appropriate.

Haemorrhoids, fistulae and fissures

Haemorrhoids, fistulae and fissures are unlikely to cause significant risk unless causing sufficient pain as to limit an individual's mobility and ability to perform their duties. Perianal abscess will normally cause acute pain and require treatment before being compatible with offshore work.

Uncomplicated stoma

An uncomplicated stoma will not normally give rise to significant risk but the examining physician should be satisfied that the underlying cause is compatible with offshore work and that the personal management of the condition is acceptable within the confines of the offshore community.

Liver diseases

Liver diseases where the condition is serious or progressive and/or where complications such as oesophageal varices or ascites are present will give rise to an unacceptable level of risk. Those with chronic active hepatitis requiring interferon need to be carefully assessed with regard to the potential side effects of treatment. Assessment of all individuals with a significant history of liver disease should include an update from their clinical specialist and a recent (within 3 months) prothrombin time.

Chronic or recurring pancreatitis

Chronic or recurring pancreatitis must be assessed regarding the length of periods of remission and frequency of acute attacks. The risks in individuals suffering frequent attacks requiring strong analgesia are not compatible with offshore work.

4.10 Musculoskeletal conditions

4.10.1 Risk

Musculoskeletal conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Does not require treatment which has significant side effects incompatible with offshore work.

4.10.2 Assessment

Irrespective of pathology, all musculoskeletal disorders should be assessed according to the following criteria:

- Locomotor function;
- Balance and coordination;
- Stability of joints and risk of subluxation or dislocation;
- Disturbances of mobility causing impairment in ability to move around installation either during normal work or during emergencies;
- Ability to don and wear a survival suit;
- Side effects of medication.

4.10.3 Notes on specific conditions

Joint Replacements

Joint Replacements pose no significant risk so long as the individual can meet the mobility requirements and there is low risk of dislocation.

Limb prostheses

Limb prostheses pose no significant risk so long as an individual can meet the mobility requirements of offshore life. Arrangements for fitting the prosthesis in an emergency must be considered.

4.11 Skin

4.11.1 Risk

Dermatological conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the health and safety of themselves or others;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work.

4.11.2 Assessment

Individuals with skin disorders should be assessed with regard to:

- The effects the condition may have on an individual's ability to perform their duties, including potential sleep disturbance and possible fatigue;
- Side effects of medication;
- Compatibility of offshore rotational duties with treatment regimens;
- The probability of exposure to substances which may act as allergens, irritants or sensitizers should be understood and taken into account when making the assessment.

4.11.3 Notes on specific conditions

Psoriasis

Psoriasis which is well controlled by topical medication poses no significant risk. Assessment of more serious disease requiring inpatient treatment and chemotherapy must include the compatibility of offshore rotational duties with treatment regimes. Psoriatic arthropathy should be assessed according to its effect on musculoskeletal function.

Dermatitis

Dermatitis accurate assessment may require specialist referral and patch testing, the results of which should be taken into account in the risk assessment process. Offshore working will normally be possible with appropriate use of PPE to mitigate the risk.

4.12 Genitourinary system

4.12.1 Risk

Genitourinary conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.12.2 Assessment

A history of a short-term illness will usually present no difficulties for offshore work but chronic or recurrent disease should be carefully considered with particular reference to:

- Risk of developing disabling or life-threatening complications;
- Side effects of medication;
- Chronic or secondary effects of the disease such as anaemia, lethargy, osteoporosis.

4.12.3 Notes on specific conditions

Renal Calculi

Following an episode of renal colic, the individual requires assessment with regard to the risk of recurrence. Specialist report should be obtained where appropriate. Only individuals with low risk of recurrence should be considered for unrestricted offshore work. Individuals with high risk of recurrence should be discussed with the employers and operating company medical advisor with regard to the acceptability of the increased risk of medevac.

Chronic Renal Disease

In addition to considering the chronic effects of the disease on the individual's ability to work offshore, the examining doctor should also obtain a specialist report to determine the risk of developing acute renal failure.

Haematuria

Asymptomatic haematuria may be found on routine urinalysis at the medical examination. Although this will usually require further investigation to determine the underlying pathology, the examining doctor should make an adequate risk assessment with regard to the factors above to determine the fitness of the individual to continue working offshore pending further investigation. Dependent upon the outcome of the risk assessment the issue of a full, restricted or failure certificate may be appropriate.

4.13 Diseases of blood or blood forming organs

4.13.1 Risk

Haematological conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.13.2 Assessment

Individuals with haematological disease must be assessed with particular reference to the following:

- Exercise tolerance with specific reference to general mobility around the platform (including climbing stairs), ability to perform normal job functions, ability to respond to emergency situations and in particular successfully take part in evacuations;
- Risk of developing sudden life threatening complications and likelihood of successful medical evacuation;
- Ability to take part in survival training including cold water immersion, helicopter underwater escape training and use of underwater re-breather equipment.

Due to the complex nature of haematological disease, examining doctors must consider obtaining a specialist opinion before issuing or refusing certification. In chronic conditions it is frequently inappropriate to issue a certificate of normal duration and the use of restricted duration certificates is appropriate to permit active monitoring of the individual's condition and continuing fitness for work.

4.13.2 Notes on specific conditions

Anaemia

Anaemia must be assessed with regard to the underlying cause as well as any specific symptoms related to the anaemia.

Thalassaemia trait and Sickle Cell trait

Thalassaemia trait and Sickle Cell trait are unlikely to pose significant risk for offshore work. However, the symptoms associated with Thalassaemia Major and Sickle Cell Disease are likely to give significant risk and cases should be considered individually in conjunction with the Employer's and Operator's medical advisor.

Polycythaemia

Primary polycythaemia (Polycythaemia Rubra Vera) is normally asymptomatic and provided the individual is receiving appropriate treatment is unlikely to pose significant risk. In secondary polycythaemia the causative condition is likely to be the limiting factor and full assessment of this should be made.

Haemophilia and other bleeding disorders

Must be assessed with regard to the risk of acute bleeding offshore and the availability of appropriate treatment offshore. A specialist report and discussion with the operator's medical advisor will always be required. The use of anticoagulant medication is covered in paragraph 4.21.1.

4.14 Organ Transplants

4.14.1 Risk

Organ transplants may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

Organ transplant of itself will not be a bar to offshore work provided the organ is functioning adequately but will need to be assessed with particular regard to the potential complications and side effects of medication.

4.15 Malignant neoplasms

4.15.1 Risk

Malignant neoplasm may affect the following requirements and hence, examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.15.2 Assessment

Assessment of an individual with malignancy must consider both the effect of the neoplasm on the individual's function and the effect of any treatment. In all cases the following must be considered:

- The nature and location of the neoplasm and any disability caused;
- The likelihood of sudden complication such as haemorrhage, seizure or sudden loss of consciousness;
- The compatibility of treatment programmes with offshore rotation patterns;
- Side effects and other complications of treatment;
- The psychological impact of the illness and availability of appropriate support.

It will normally be appropriate to issue a restricted duration certificate during the initial phases of the disease process in order to provide appropriate review of the condition. Individuals in remission should be issued with certificates based on the length of remission and requirements for clinical follow up.

4.16 Infectious diseases

4.16.1 Risk

Infectious disease may affect the following requirements and, hence, examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training;
- Poses no significant risk to the safety or health of others on the installation by virtue of any underlying medical condition;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.16.2 Assessment

Individuals suffering from minor infectious disease should not be refused a certificate of fitness. However, all individuals should be restricted from travel offshore during the active stages of an infectious disease, if there is significant risk of spread within the offshore community.

Catering staff require special consideration to exclude acute or chronic disease involving the gastrointestinal tract, chest, ear, nose, throat and skin due to the risk of food borne spread of the disease.

Individuals suffering from chronic communicable disease should be assessed to determine:

- The risk of transmission to other individuals;
- Any effects of the condition which may adversely affect the individual's ability to perform their duties or effectively participate in emergency evacuation;
- The requirements for long term therapy and side-effects of such therapy.

4.16.3 Notes on specific conditions

Open pulmonary tuberculosis

The risk posed to others by individuals with active pulmonary tuberculosis is not compatible with offshore work. Once an individual is being treated examining doctors must obtain a specialist report to confirm that they are no longer infectious and that they are not suffering from significant treatment side effects.

4.17 Ear, nose and throat

4.17.1 Risk

ENT conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;
- Is able to take part in offshore survival training.

4.17.2 Assessment

Conditions of the ear nose and throat can impact on an individual's ability to perform safely in a working environment. The functional impact on the individual's ability to hear and communicate as well as any impact on balance must be assessed, in addition to considering any underlying pathological process.

Hearing

If an individual requires a hearing aid for normal conversational speech then the examining doctor must obtain confirmation that they are able to hear essential safety announcements in flight or on board a platform without a hearing aid. **Hearing aids must be certified as intrinsically safe.**

Balance

Where an individual has a history of a balance disorder sufficient to affect normal movement around the platform or impair ability to take part in emergency evacuation procedures they should be considered unfit for offshore working until such time as symptoms have resolved or are controlled by medication.

4.18 Eyes

4.18.1 Risk

Ophthalmological conditions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Is able to carry out their normal assigned duties without compromise to the safety of themselves or others;
- Is able to escape the platform or helicopter in event of an emergency;

- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.18.2 **Assessment**

Visual acuity adequate to permit the individual to mobilize and work safely in the offshore environment is essential and should be confirmed at each medical examination. Any eye disease or visual defect rendering, or likely to render, the applicant incapable of carrying out job duties efficiently and safely, gives rise to an unacceptable risk.

Visual Acuity

Corrected visual acuity must be sufficient to perform normal work duties. In addition individuals should have an uncorrected visual acuity sufficient to permit emergency mobilization around a location. Individuals with an acuity of at least 6/60 will normally meet this requirement. For individuals with an uncorrected acuity less than this the examining doctor must satisfy himself, by practical testing, that they have a sufficient acuity to effectively mobilize around the platform and escape in case of emergency without the use of corrective spectacles.

Monocular Vision

Monocular Vision is acceptable provided the above minimum standard of acuity is met and the individual shows appropriate adaptation to the loss of binocular vision.

Diplopia

Diplopia may pose a safety hazard and requires assessment in conjunction with the Employer's and Operator's medical advisor.

Visual fields

Individuals with significant field deficits should undergo a practical determination of their ability to perform their normal job function and ability to evacuate the platform in an emergency.

Colour vision

Colour vision is only required for specialist tasks such as electrical work and need not be assessed unless specifically required for this purpose or a similar colour dependant task.

4.19 **Dental Health**

4.19.1 **Risk**

Dental conditions may affect the following requirements and, hence, examining doctors must focus on assessing that the individual:

- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.19.2 Assessment

Dental problems are a frequent cause of medevac from offshore, causing significant disruption to platform operations. Consequently a dental screening process is an important part of the offshore fitness for work certification process. The examining physician must make specific examination of the oral cavity to determine that the candidate is free from:

- Bleeding gums or periodontal disease;
- Broken teeth exposing root canals;
- Large missing fillings.

If the examiner thinks that there is sufficient dental pathology to present a risk of acute dental pain requiring emergency treatment, then certification of fitness for offshore work should be withheld pending a dental opinion and treatment if necessary.

Individuals medevaced for dental reasons may lose validity of their medical certificate of fitness, see also section 3.2.

4.20 Allergies and Anaphylaxis

4.20.1 Risk

Allergies and consequent anaphylactoid reactions may affect the following requirements and hence examining doctors must focus on assessing that the individual:

- Requires no ongoing medical treatment which cannot be effectively delivered in the offshore environment;
- Does not require treatment which has significant side effects incompatible with offshore work;
- Poses no significant risk of sudden incapacitating illness requiring medical intervention which cannot be delivered in the offshore environment.

4.20.2 Assessment

Individuals with diagnosed allergies cover a wide range of allergens and potential reactions. In making an assessment the examining physician should therefore consider the following:

- The nature of the allergen, the likelihood of exposure offshore and the potential for preventing exposure;
- The nature and severity of the reaction;

- The frequency of attacks and time since last attack;
- The medication required and the ability of the individual to self-administer.

4.21 Medications

Individuals taking regular medication either prescription or non-prescription (including Chinese herbal and health supplements) must be assessed with regard to:

- The nature of the underlying condition, whether this is fully controlled by the medication or whether there are residual symptoms which may affect the individual's fitness to work offshore (see notes under relevant category);
- The nature of any side effects, paying particular attention to altered levels of consciousness, impairment of memory, concentration or alertness or extra pyramidal side effects;
- The nature of any therapeutic or side effects which may result in a medical emergency (e.g. prolonged bleeding time leading to haemorrhage), the ability of the installation to deal with such emergency and likelihood of successful evacuation;
- Issues surrounding compliance in taking medication and likely effects of sudden withdrawal.

Individuals with significant issues in any of the above categories will normally not be fit for unrestricted offshore work but may be considered for travel to specific installations following discussion with the medical advisor of the employer and operator.

4.21.1 Specific considerations for medication

Individuals on cytotoxic agents, anticonvulsants, immune suppressants, systemic anti-viral agents and on oral steroids are generally unacceptable. For more details see notes on specific medical conditions: section 4.

The following guidelines apply to individuals who use anticoagulant medication:

Aside from the risk of spontaneous hemorrhaging, the NOGEPA doctor should inform any worker who takes anticoagulants, that work tasks carrying a risk of trauma may pose an additional safety risk as a result of the required transportation time to hospital.

The NOGEPA doctor should make a thorough assessment of the risk associated with the primary disease and the complications of the anticoagulant therapy - if necessary with reference to medical specialist/consultant statements. The NOGEPA doctor should determine whether the risk of working offshore for the individual is acceptable. It is imperative to consider the function of the individual (high risk function vs low risk function). The individual should not perform in an ERT role onboard the platform.

In general the below guidelines will have to be met:

1. First and foremost, the condition for which the medication is prescribed will have to be stable (=> 2 months) and will have to comply with NOGEPA Standard 11, "Offshore medical examination".

2. The individual will have to provide a letter from their medical specialist/consultant, which will have to state the reason for the anticoagulant therapy, the name and dosage of the medication and -if possible- the expected duration of the therapy.

3. In regards to the most commonly prescribed anticoagulant therapy

- Aspirine alone is acceptable
- Clopidrogel alone acceptable
- Aspirine + Clopidrogel on platform with medic only
- Coumarine derivates (acenocoumarol, fenprocoumon, warfarine) are acceptable under conditions
- DOAC's are acceptable under conditions

Conditions for coumarin derivates that will have to be met:

- INR < 3
- INR stabile for at last 2 months
- Low-risks jobs only
- Platform with offshore medic only

Conditions for DOAC's that will have to be met:

- Stable condition for at least 2 months
- Low risk jobs only, no ERT role
- Platform with offshore medic only
- Apixaban, dabigatran and edoxaban are allowed
- But rivaroxaban is not allowed

Important

- The NOGEPA doctor should explain the importance and obligation of the offshore medic being informed by the individual him/herself, that he/she is taking anticoagulant drugs.
- The required antidotes for anticoagulant therapy with coumarin derivates (vitamin K) is available at platforms with medication from the NOGEPA medication list and comply with NOGEPA Standard 10.
- The required antifibrinolytic for anticoagulant therapy with DOAC's (tranexamine) is available at platforms with medication from the NOGEPA medication list and comply with NOGEPA Standard 10.

4.21.2 General considerations for medication

- All medication (both prescription and non-prescription) must be reported to the Offshore Medic (if available) or the Offshore Installation Manager on arrival at a platform or location. It is advised to take a printout from your pharmacy or a doctor's statement of the medication¹;
- All offshore workers must take sufficient medication for their requirements for the duration of their trip plus a small contingency supply in the event of a location becoming fog bound.

Unidentified substances such as Chinese herbal medications, dietary supplements or similar are liable to confiscation by security under the industry substance abuse control measures. Where these substances are being legitimately used, the individual should carry appropriate identification and prescription details to verify legal and appropriate use thereof.

4.22 Pregnancy and offshore work

NOGEP A clearly recognizes that pregnancy is not a medical condition and is a normal physiological state. It is, however, appropriate to consider any additional medical risks faced by the pregnant worker in an offshore environment. The employer of any employee who wishes to work offshore whilst pregnant should conduct a risk assessment and discuss the findings with the employee. On the basis of the consideration of this risk, a decision about the suitability of offshore working whilst pregnant must be recorded in writing. Factors to be considered during this risk assessment include:

- Previous obstetric history, particularly any risk factors or history of ectopic pregnancy, hyperemesis, pre-eclampsia, premature labour or pregnancy induced diabetes;
- Any relevant medical conditions which may complicate pregnancy including endocrine disease, cardiovascular disease or epilepsy;
- Proposed location and means of medevac should this be necessary;
- The nature of the work and potential for exposure to physical, biological or chemical agents which could be harmful to the foetus;
- The need for regular clinical review of the employee and any additional logistical requirements this imposes.

Contraindications to working offshore whilst pregnant include:

¹ With the entry into force of the AVG (General Data Protection Regulation), the rules on personal data protection have been tightened. However, it remains important to know when a person is taking high-risk medicines.

- Active complication of current pregnancy including threatened miscarriage and hyperemesis;
- Any concomitant complicating medical condition such as cardiac disease or diabetes which would preclude offshore work when assessed under the relevant section above.

Following a risk assessment it may be reasonable to consider offshore working but in all cases the following must be satisfied:

- The pregnancy has been assessed by a physician as low risk and confirmed at ultrasound as intrauterine;
- The employee understands and accepts the additional risks entailed in working offshore whilst pregnant;
- The company doctor has been informed and agrees to offshore working for the named worker.

5. Special Employment Groups

5.1 Emergency response teams

5.1.1 Introduction

Operators are required to have arrangements in place to provide for an effective response in the event of an offshore emergency. This is achieved by a series of measures summarized in the safety case and includes preventative and reactive measures.

One element of the response is a trained emergency response team (ERT) some of whom will have a range of duties including firefighting, assisting with a controlled platform evacuation and casualty search and rescue.

Participation in emergency response could require engaging in significant physical activity suddenly and without warning, working in a variety of potentially stressful environmental conditions, sometimes with long hours and extended physical demands in situations significantly beyond the individual's routine job duties.

The roles of some of the ERT members will involve wearing protective clothing and breathing apparatus that further add to the physical load. Such activities are likely to put additional physiological burdens on the individual and therefore require higher standards of medical fitness.

Some designated team members will have sedentary functions such as Radio Operator and Control Room Operator and would not require this higher standard of physical fitness beyond the standard NOGEP A medical assessment.

Because the duties required of ERT members may involve a higher level of physical exertion than that required in their normal job function employers need to establish that such individuals will be physically capable of carrying out such duties.

NOGEP A therefore recommend that ERT members tasked with physically strenuous activities undergo regular:

Medical examination

A medical evaluation should be conducted to ensure that the individual does not have a medical or physical condition that would preclude them from safely performing the essential job functions, and is able to safely complete the essential physical requirements of their emergency response role.

The examination requires the attainment of standards specific to the ERT function, as described in Section 5.1.2.

Aerobic Capacity Assessment

ERT members will be required to undergo aerobic capacity assessment to ensure they have the stamina to engage in sudden and sustained physical activity. The standards are related to the physical requirements of the various emergency responder groups related to the risk-assessment for each installation or location.

The standards detailed in section 5.1.3 relate to those required for installations or location using fixed Fire-Fighting Apparatus. For other types of fire-fighting on installations or locations whose risks assessment identifies more extensive response, a higher aerobic capacity standard will be required to match the essential physical requirements of each role.

5.1.2 Medical fitness standards

Examining doctors must satisfy themselves that the individual does not have any medical condition which is likely to impair his ability to perform the essential duties required for their emergency response role, and that the performance of such duties is unlikely to have significant adverse effect on the medical condition. The examining physician should, in particular, consider the following when making their assessment:

Respiratory function

All emergency response team members who may wear BA must have their respiratory function tested and meet the minimum standards as defined in the IP standards Guidance for Physicians for RPE Use and specifically :

Measured FEV₁ and FVC must be 80% of predicted values. Measured FEV₁/FVC ratio must be at least 70%.

Cardiovascular system

Any form of cardiac pathology including dysfunction or myocardial insufficiency will normally render an individual unacceptable for ERT duty. Mild hypertension, controlled if necessary by medication, may be acceptable providing the medication does not limit exercise tolerance.

Note that the use of some medication, for example Beta Blockers, may interfere with the standard evaluation of cardiovascular aerobic function and therefore alternative methods may need to be considered.

Nervous system

A history of epilepsy, recurrent impaired consciousness, vertigo or impaired coordination is unacceptable for ERT members.

Psychological disorders

Phobic anxiety relating to heights or confined spaces is unacceptable. Evidence of current alcohol and or substance abuse is unacceptable. History of significant/recurrent anxiety and/or depression would normally be unacceptable.

Vision

A minimum standard of 6/9 with both eyes open is required if necessary using appropriate corrective lenses compatible with BA use. If visual correction is required an uncorrected visual acuity of 6/60 with both eyes open is appropriate to allow the safe escape of the individual following an event. Visual fields must be normal. Monocular vision is unacceptable.

Hearing impairment

Individuals should be able to hear conversational speech without difficulty. A hearing impairment in excess of 35dB in the better ear (averaged over 0.5, 1,2 kHz) may raise doubts about the ability of an individual to hear in a hazardous environment. Such cases should be individually assessed by the examining physician but are normally unlikely to be fit for unrestricted ERT membership.

Endocrine disease

Significant endocrine disease requiring ongoing treatment will normally render an individual unfit to participate in an ERT.

Medication

Individuals dependent on medication required to control an identified medical condition that would deteriorate significantly should a dose be missed will normally be unfit for ERT membership as will those taking medication that causes side effects that would interfere with any of the ERT functions.

Musculoskeletal system

The examining physician should examine the musculoskeletal system to exclude any pathology that would interfere with the execution of the individual's essential job functions in the ERT.

At a minimum, this evaluation will include confirmation that the following are within the normal range: active range of motion, limb strength, reflexes, flexibility, and joint integrity. In addition particular attention should be paid to any history of back disorders.

5.1.3 Aerobic Capacity Standards

It is appropriate to use the measurement of maximal oxygen uptake (VO₂ max) to predict aerobic capability and resistance to fatigue. This VO₂ max may be determined either by performing a

‘shuttle run’, by cycle ergometer, or by using the Chester Step Test or formally by physiological laboratory testing. Experience in the offshore oil industry has shown the Chester Step Test is an acceptable and reasonably reproducible method (see Appendix I).

Based on the experience of other occupational groups, it has been determined that a VO_2 max of 35 mls/Kg/min is the minimum that would indicate that individuals will have a physical capability adequate for normal ERT duties as described in section 3.2.1 (applicable to installations and locations with fixed fire-fighting apparatus). In the Dutch offshore in general VO_2 max of 35 mls/Kg/min will be adequate.

Certain installations may, on the basis of risk assessment, define more extensive physical requirements where a higher physical standard is required. In these cases a VO_2 max of 40 mls/Kg/min or greater may be appropriate as assessed by the Operator.

5.1.4 Frequency of assessment

Formal medical examinations and aerobic capacity assessment must follow the normal NOGEPA periodicity of two years.

5.1.4 Roles and responsibilities

Medical examination should be performed by a NOGEPA approved physician in possession of a valid NOGEPA stamp and PIN.

The aerobic capacity assessment may be carried out by a NOGEPA approved physician or by an offshore medic, a nurse or other suitably trained person working under the supervision of a NOGEPA approved physician.

5.1.5 Certification of fitness for ERT duties

Following successful completion of the medical examination, for candidates whose duties contain a physical component, the examining physician must enter this in the Personal Safety Log book.

In addition to confirming fitness to participate in ERT duties, operating companies may wish to use this certificate as confirmation of fitness for fire-fighting training.

5.2 Catering crews

The following initial health assessment must be undertaken on all catering workers. Validity of medical is like the other personnel working in the Dutch offshore 2 years.

The assessment can be undertaken by a doctor, nurse or medic with appropriate experience and should be performed pre-employment and, following a suitable risk assessment, as required thereafter.

A catering worker is someone involved in the preparation of food or who spends a substantial period of time within the galley. This includes those involved in the cleaning of utensils, maintenance of equipment or undertaking supervisory duties.

The assessment will normally consist of the following:

- A questionnaire, specifically related to symptoms of enteric illness and communicable disease;
- An assessment of current hygiene practices. The assessment also provides an opportunity to re-emphasise the principles of basic food hygiene;
- Thorough clinical examination of potential communicable disease sites, for example skin, ears, upper respiratory tract and gastrointestinal tract;
- Special attention should be paid upon return from a period of sickness absence related to a gastro-enteritis;
- Laboratory examination of stool specimens should only be undertaken where this is considered clinically appropriate.

Further assessment of individual catering workers will be required under the following circumstances:

- Frank or suspected infectious gastrointestinal disease;
- Close contact with an individual known to be suffering from gastro-enteritis;
- Upon return from a visit to an area with known high endemic incidence of infectious gastrointestinal disease.

5.3 Crane operators

In addition to the standard NOGEP requirements the following standards are required for crane operators:

- Have a minimum corrected visual acuity of 6/9 with both eyes open. In addition the corrected visual acuity must be no worse than 6/18 in each eye separately;
- Monocular vision is unacceptable for crane driving because of the lack of stereoscopic vision and the impact on field of vision;
- Candidates should be screened for loss of visual field by confrontation to exclude major defects;
- Diplopia is unacceptable;
- Colour vision need only be tested if crane operations are colour dependent (e.g. red/green signal lamps controlling movements);
- Depth perception is necessary for safe crane movements. In most cases this will be effectively established by demonstration of competence during onshore training and

consequently medical examination to establish stereoscopic depth perception will not normally be necessary. Medical examiners who choose to use stereoscopic screening procedures prior to attending training should be aware of the potential for false positive results.

5.4 **Air crew and commercial divers**

Workers subject to the statutory medical examination requirements for aircrew and commercial divers and in possession of a valid certificate do not require a further specific examination for offshore medical fitness.

Annex I Protocol for a Chester Step Test

EQUIPMENT

- i) A bench or step 30cm high
- ii) A metronome
- iii) A heart rate monitor
- iv) A stopwatch
- v) Borg scale showing Rate of Perceived Exertion (6) (Figure 1)
- vi) A room thermometer

PRE-TEST CHECK

The subject should not:

- i) have any medical contraindication to performing the test
- ii) have eaten, smoked or drunk coffee or tea for at least 2 hours before the test
- iii) be suffering from any debilitating illness

TEST PROCEDURE

Room temperature should be between 18° and 22°C and the subject should wear loose clothing.

Calculate the subject's maximum heart rate (MHR) by subtracting the subjects age from 220. Calculate 80% of the MHR.

Draw two horizontal lines on the graph (Table 1) to represent these values.

Attach the heart rate monitor to the subject and demonstrate the initial stepping rate of 15 steps per minute (60 beats/min). **Stage 1**

The subject should commence stepping to the following sequence:

- First foot onto step - 1st beat
- Second foot onto step - 2nd beat

First foot returned to floor - 3rd beat

Second foot returned to floor - 4th beat

The subject should commence stepping at this stepping rate and continue for two minutes.

After two minutes record the heart rate on the graph and ask the subject to indicate their rate of perceived exertion (RPE) on the Borg scale.

Providing the heart rate is below 80% of MHR and the RPE is below 14, the stepping rate can be increased to 20 steps per minute (80 beats/min). **Stage 2**

After a further two minutes record the heart rate and ask the subject to indicate their level of exertion on the Borg scale.

Providing the heart rate is below 80% of MHR and the RPE is below 14 the stepping rate can be increased to 25 steps per minute (100 beats/min). **Stage 3**

Continue to increase the stepping rate every 2 minutes until either the subject reports an exertion level greater than 14 and/or a heart rate greater than 80% MHR. Record the heart rate every 2 minutes. Normally the individual would be permitted to finish the 2 minute stage even if the heart rate was slightly above the 80% target, providing the exertion level was below 14.

Stage 4 = 30 steps per minute (120 beats/min)

Stage 5 = 35 steps per minute (140 beats/min)

SCORING THE TEST

Draw the best visually straight line through the points on the graph up to MRH.

At this intersection drop a perpendicular line down to predict VO_2 .

The nomogram can be used to give a fitness rating.

Borg Scale

Rate of Perceived Exertion (RPE)	
6	
7	Very, very light
8	
9	Very light
10	
11	Fairly light
12	
13	Moderately light
14	
15	Hard
16	
17	Very hard
18	
19	Very, very hard
20	Exhaustion

Figure 1 - Rate of Perceived Exertion

Norms for Aerobic Capacity (ml O₂/kg/min)

Males	Age Group				
Fitness Rating	15-19	20-29	30-39	40-49	50+
Excellent	60+	54+	50+	46+	44+
Good	48-59	43-53	39-49	37-45	35-43
Average	39-47	34-42	31-38	29-36	27-34
Below Average	30-38	27-33	24-30	22-28	20-26
Poor	<30	<27	<24	<22	<20

Females	Age Group				
Fitness Rating	15-19	20-29	30-39	40-49	50+
Excellent	54+	49+	44+	42+	40+
Good	43-53	38-48	34-43	33-41	32-39
Average	35-42	31-37	28-33	26-32	25-31
Below Average	28-34	26-30	23-27	20-25	18-24
Poor	<28	<26	<23	<20	<18

Chester Step Test Resource Pack

A resource pack, which includes a cassette tape, giving test instruction and stepping frequencies, together with perceived exertion chart, graphical data sheets and instruction manual is not available. Details from Dr K Sykes, PO Box 1343, Chester CH4 8WW, Phone/ Fax 01244 571533.