

**15-67****Fire Fighting  
Instructor  
Personnel**

(1) **Purpose.** To assure that members assigned as fire fighting instructors and exposed to smoke and its associated components are in all respects qualified for such assignment.

(2) **Additional Standards.** Some of the items listed in section III may be duplicated here for emphasis. The following will be cause for rejection or disqualification:

(a) **Nose, Mouth, Throat.** Sinus disease. Waiver request requires an ENT consultation and statement which recommends disposition regarding repeated exposure to smoke.

(b) **Eyes**

(1) Acute or chronic eye disease.

(2) Uncorrected vision greater than 20/80 in one eye and 20/100 in the other eye.

(3) Near vision with glasses must be sufficient to read printed material of Jaeger Number 4 size type without difficulty.

(c) **Pulmonary System**

(1) A history of respiratory tract allergic response.

(2) Reactive airway disease (asthma) after age 12.

(d) **Skin and Cellular Tissues**

(1) Contact allergies of the skin that involve substances associated with fire fighting.

(2) Skin conditions and facial contours which interfere with activity and the use of personal protective equipment.

(e) **General and Miscellaneous Conditions and Defects.** History of more than one episode of diminished heat adaptation capability or any other serious deviation from sound condition.

(3) **Special Studies.** In addition to the special studies required in article 15-9, the following studies will be performed.

(a) Blood chemistry studies to include: sodium, potassium, glucose, bicarbonate, BUN, creatinine, uric acid, total protein, albumin, A/G ratio, calcium, alkaline phosphatase, aspartate aminotransferase (ASAT) or SGOT, alanine aminotransferase (ALAT) or SGPT, LDH, CPK, bilirubin.

(b) Standard chest x-ray, within the previous 6 months or if clinically indicated.

(c) Pulmonary function test.

(4) **Periodicity.** Medical examination is required every 5 years while serving as an instructor.

**15-68****Occupational  
Exposure to  
Ionizing  
Radiation**

(1) **General.** NAVMED P-5055, Radiation Health Protection Manual, is the governing document for the naval service Radiation Health Protection Program. NAVMED P-5055 provides ionizing radiation exposure limits, dosimetry requirements, medical examination requirements, administrative and reporting requirements, and command duties and responsibilities for the Radiation Health Protection Program. The medical examination requirements are reprinted here from NAVMED P-5055 for convenience. All efforts are made to ensure this manual and NAVMED P-5055 are consistent and updated simultaneously. Should differences in requirements exist between the two documents, NAVMED P-5055 takes precedence.

(2) **Command Responsibility.** The commanding officer or officer in charge of each naval facility will ensure that personnel have a radiation medical examination prior to being occupationally exposed to ionizing radiation. If it is known that a visitor is to perform duties requiring a radiation medical examination, the visitor's parent command must determine the visitor's physical qualifications.

(3) **Responsibility of Individual.** All personnel assigned to duties involving occupational exposure to ionizing radiation will report the following to their supervisor or Medical Department personnel in a timely manner:

(a) Any physical condition which they feel affects their qualification to receive occupational exposure.

(b) Any radiation therapy treatment received.

(c) Any radiopharmaceutical received for diagnosis or treatment.

(d) Any occupational radiation exposure received from secondary or temporary employment.

(e) Any open wounds or lesions.

(4) **Types of Ionizing Radiation Medical Examinations**

(a) **Preplacement Examination (PE).** Personnel who are being considered for routine assignment to duties requiring occupational exposure to ionizing radiation will be given a radiation medical examination, defined as a preplacement examination, prior to assignment or transfer to those duties.

(1) Personnel who are not routinely exposed to ionizing radiation as a result of their normal duties or occupation and who are not likely to exceed 0.5 rem (0.5 centisievert) per year (e.g., visitors, including messengers, servicemen, and delivery men; emergency response personnel; dentists, dental technicians, and other dental paraprofessionals; explosive ordinance disposal team members; and certain crew

members or employees whose exposure is truly sporadic) are not required to have a preplacement examination (see appropriate radiological controls manual for specific program).

(2) Individuals in this category (i.e., not required to have a preplacement examination) who exceed 0.5 rem (0.5 centisievert) exposure in a calendar year, must have a preplacement examination within 1 month of the time they exceed 0.5 rem (0.5 centisievert) or as soon thereafter as operational requirements permit.

(b) **Reexamination (RE).** Personnel who are to be continued in routine duties requiring occupational exposure to ionizing radiation must have a radiation medical examination, defined as a reexamination, at the periodicity listed in article 15-11. The reexamination is required to be performed no later than 1 month following the anniversary date (month and year) of the previous radiation medical examination or other medical examination accepted and documented as a radiation medical examination, e.g., for an examination performed on the 15th of February 1985, the reexamination must be completed by 31 March 1990.

(c) **Situational Examination (SE).** Any individual who has exceeded the radiation protection standards for occupational exposure per chapter 4 of NAVMED P-5055, or has ingested or inhaled a quantity of radioactive material exceeding 50 percent of the maximum permissible body burden (MPBB) or as deemed necessary by the responsible medical officer must be given a radiation medical examination, defined as a situational examination. MPBBs are listed in the National Council on Radiation Protection and Measurements (NCRP) Report No. 22 (NBS Handbook 69). MPBBs for commonly-used isotopes are found in Appendix A of NAVMED P-5055. The medical history must contain summary statements which provide the basis for performing the examination.

(d) **Termination Examination (TE).** Reasonable efforts will be made to ensure that a worker receives a termination examination. If a termination examination is not completed or not performed (e.g., due to lack of employee cooperation, etc.), a SF-88 will be completed to the maximum extent practicable. The reasons why the form is incomplete will be recorded in block 73 of the SF-88. Personnel will be given a radiation medical examination, defined as a termination examination, if they satisfy one of the following conditions:

(1) Upon separation or termination of their active duty or employment if they received a preplacement radiation medical examination, have documented occupational radiation exposure (including personnel monitored for exposure but who received 00.000 rem), and have not had a TE.

(2) When permanently removed from the radiation health program.

(3) When assigned or transferred to duties no longer involving occupational exposure.

(5) **Other Examinations.** Medical examinations other than radiation medical examinations and results of consultations for individuals physically qualified for routine assignment to duties requiring occupational exposure to ionizing radiation will be reviewed by a medical officer or Medical Department representative for findings or evaluations affecting continued qualifications for duties involving occupational exposure. The scope of other medical examinations need not be expanded to cover the requirements of this article unless the examination is to be used as a radiation medical examination. Medical examinations performed outside the Department of Defense are not to be requested for routine review. Individuals may submit medical information from their private physicians for consideration by the responsible medical officer. In these cases, the Navy remains solely responsible for determining whether the medical information from the private physician will be accepted or rejected.

(6) **Scope of Examination.** The medical examination will place particular emphasis on determining the existence of malignant and premalignant lesions and other conditions which could be related to radiation exposure. A medical officer with knowledge of the potential biological effects of ionizing radiation will review any medical history or presence of disease states or abnormalities related to the following: History of occupational exposure to ionizing radiation in excess of that allowed by current directives; history of radiation therapy; or medical conditions which may be associated as having been caused by exposure to ionizing radiation. The radiation medical examination will include, but not be limited to, a careful medical history, physical examination, complete blood count (CBC), urinalysis, and other clinical laboratory studies or procedures, and bioassays, as indicated.

(a) **Medical History.** A complete medical history on an SF-93 will be obtained. In addition, medical histories will include:

- (1) History of occupational or accidental exposure to ionizing radiation.
- (2) History of cancer or precancerous lesions.
- (3) History of anemia.
- (4) History of cataracts.
- (5) History of radiation therapy.
- (6) History of radiopharmaceutical received for therapeutic or experimental purposes.
- (7) History of work involving the handling of unsealed radium sources or other unsealed sources.
- (8) Family history of cancer, anemia, or cataracts.

(b) **Medical Examination.** The examination will consist of the items described in blocks 18 through 43 of the SF-88 with the following modifications for civilian personnel:

- (1) Pelvic examination (SF-88, block 43) is not required. Breast examinations are required for females age 36

or older. The anus/rectal examination is only required for male examinees age 36 or older. For personnel who are less than 36, the above examinations may be offered but are not required.

(2) Medical examinations of civilian personnel will be documented on a SF-88 and will include a SF-78, or copy of the front side of the SF-78, with Parts A, B, and C completed as an attachment to the SF-88. The reverse side of the SF-78 need not to be completed. Locally generated forms that contain the pertinent identifying data and functional and environmental factors may be used in lieu of the SF-88.

(c) **Special Studies.** The required special studies are a CBC, with differential, and a urinalysis. In addition, the following special studies may apply:

(1) **Internal Monitoring.** All personnel assigned to duties involving the handling of radioactive material in a form such that they could reasonably be expected to exceed 10 percent of a MPBB through inhalation, ingestion, or absorption will be evaluated for evidence of a partial body burden before and after assignment to such duties, e.g., at the start and completion of a tour involving these duties. Periodic monitoring will be conducted as deemed necessary by the responsible medical officer or radiation health officer. Additional requirements to perform internal monitoring due to specific work environments will be issued in applicable program radiological control manuals with BUMED concurrence or as conditions of radioactive material permits.

(2) **Radon Breath Analysis.** All personnel assigned to duties involving the handling of radium, or its compounds, not hermetically sealed such that they could reasonably be expected to receive 10 percent of a MPBB will have radon breath analysis at the beginning and end of such assignment or following personnel contamination incidents involving loose surface contamination of radium compounds such that the individual could have received 10 percent of a body burden. NAVMED P-5055 provides guidance for obtaining a radon breath analysis. Other methods of determining internal radium deposition may be used if approved by BUMED.

(3) **Bioassay.** When deemed necessary by the responsible medical officer or radiation health officer bioassays may be performed on body tissues, secretions, and excretions to estimate an exposure from internal contaminants. If a command lacks the capability to perform appropriate bioassays, a request will be submitted to one of the support facilities designated in the NAVMED P-5055.

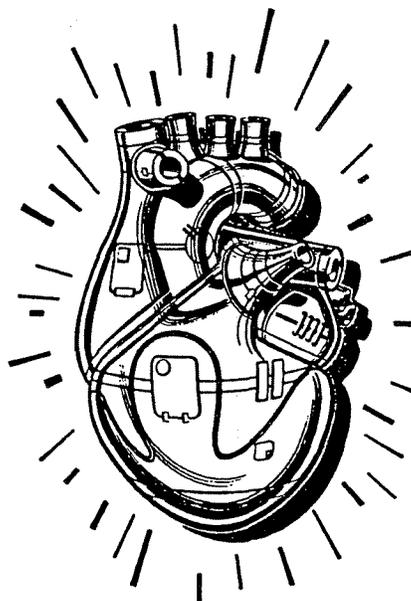
(4) Additional requirements to perform special examinations due to specific work environments can be provided in the applicable program radiological control manual with BUMED approval.

(7) **Standards.** The general requirements are those for active duty in the military service or in civil service employ-

ment, as amended by this article. Individuals disqualified based upon these requirements may be reevaluated at a later date. The following will be cause for rejection or disqualification:

(a) History of systemic malignancy.

(b) History of radiation therapy which may have compromised bone marrow reserves.



**TABLE I**  
**(Complete Blood Count Parameters)**

Blood Parameter	Male	Female
Hematocrit (Hct)	40-52 %	37-47 %
Hemoglobin (Hgb)	13.5-18g/dl	12.5-16g/dl
White Blood Count(WBC)	4,000—12,000/cubic mm	
Platelet Count	150,000—400,000/cubic mm	

**Differential Count**

There are two acceptable laboratory methods for determining differential count, manual and automated machine.

Manual	Male & Female
Neutrophils (N)	40-80 percent
Lymphocytes (L)	20-50 percent
Bands (BF)	0-10 percent
Eosinophils (E)	0-10 percent
Basophils (B)	0-3 percent
Monocytes (M)	0-10 percent
Atypical Lymphocytes (ATL)	0-10 percent

Some automated machines will provide differential counts that categorize the white blood cells (leukocytes) by the traditional manual leukocyte classification, as above. Other machines may use other classifications, which are as acceptable for diagnosis and prognosis, for example:

Automated	
Lymphocytes	20.5-51.1 percent
Monocytes	1.7-9.3 percent
Granulocytes (Neutrophils)	42.2-75.1 percent
Large unstained cells	less than 4 percent

Any clinically acceptable automated blood count method suffices for the needs of the radiation health program. However, if the categorization differs from either of those provided above the normal ranges for the machine used must be recorded along with the results of the study.

TABLE II

	Male & Female
Hematocrit	35-56 percent
Hemoglobin	11g/dl-19g/dl
White Blood Count	3,500-14,000/cubic mm
Platelet	less than 100,000 or greater than 500,000/cubic mm

- (c) History of polycythemia vera
- (d) Cancerous or precancerous lesions.
- (e) A family history of cancer which is suggestive of clustering or a genetic tendency toward a specific lesion.
- (f) Open lesions or wounds (including lacerations, abrasions, and ulcerative, eruptive, or exfoliative lesions) are disqualifying either on a temporary or permanent basis, depending on the condition, for individuals who handle radioactive material which is not hermetically sealed, until such time as the Medical Department representative or medical officer considers the wound to be adequately protected from radioactive contamination.
- (g) Abnormal blood count
  - (1) Any deviation outside the ranges of the values in Table I must be evaluated by a medical officer and a determination made as to whether the individual is CD or NCD. The responsible medical officer will comment in item 73 of the SF-88, when the values are not within the ranges of Table I.
  - (2) Values which persist outside the ranges in Table II will be CD until further review. The medical officer's evaluation of the CBC and the requests for other studies or consultations must be directed toward the determination of malignant or premalignant conditions and hematopoietic system reserve.

(h) Urinalysis. Red blood cells (RBCs) in the urine (greater than 5 RBCs per high power field) persisting on repeat urinalysis, will be CD, pending definitive determination of other than a malignant condition. Other abnormal urinalysis results may be of clinical significance (e.g., low specific gravity, positive sugar or albumin, WBCs, or casts) dictating followup evaluation at the discretion of the examiner. They are not, however, in themselves disqualifying for occupational exposure to ionizing radiation.

(i) If an individual exceeds 5Q percent MPBB the individual must be disqualified from duties involving occupational radiation exposure pending BUMED review. (MPBBs are listed in NCRP Report No. 22 (NBS Handbook 69).)

(j) Other defects which pose a health or safety hazard to the individual, coworkers, or degrade the safety of the work place.

(8) **Special Documentation Requirements.** In addition to the requirements for completing the SF-88 and 93, as listed in MANMED, the following specific requirements will be adhered to:

(a) Use of an overprint or rubber stamp on the SF-93 for the required supplemental history questions is acceptable. Instructions in blocks 19 and 21 of the SF-93 require certain additional information be provided for a positive answer, for the purpose of radiation medical examinations, the name of the doctor, clinic, or hospital is not needed.

(b) All radiation medical examinations require a medical officer's signature in block 82 of the SF-88. This medical officer is responsible for reviewing the complete medical examination including laboratory and other information to determine qualification. The reviewing medical officer may be the same as the examining medical officer. The SF-88 block 82 entry will include the date of final review in the margin immediately below the signature of the reviewing official.

(c) The medical history will be signed by the examining medical officer.

(d) SF-88s and SF-93s performed by PAs or nurse practitioners must be countersigned by a physician.

(e) For block 74 of the SF-88 and block 25 of the SF-93 any entry concerning an abnormal finding will have an indication of NCD or CD per article 15-8.

(f) Noncompletion of a radiation medical examination must be documented in block 73 of SF-88 with specific reasons for noncompletion.

(g) Radiation medical examinations will clearly state whether the individual is PQ or NPQ for occupational exposure to ionizing radiation.

(h) The fact that a termination medical examination is required will be entered on the front of the individual's Health Record jacket or employee medical file as Termination Radiation Medical Examination Required.

(i) Medical examinations conducted for a purpose other than occupational exposure to ionizing radiation may

be amended per article 15-10 at the discretion of the responsible medical officer. If a previous medical examination is accepted the date of the required reexamination will be based on the original date (month and year) of the accepted examination.

(j) Results of bioassay, internal monitoring, etc., which document monitoring for internally deposited radioactivity, will be documented as required in NAVMED P-5055.

(9) **Reporting Requirements.** The following Health Records must be submitted to BUMED (MED-21) for review. The transmittal letter must include the reason for submittal, total lifetime exposure of the individual, summary of the individual's duties, and, if appropriate, the current or disqualifying diagnosis.

(a) Findings on a radiation medical examination which disqualify an individual from receiving occupational exposure to ionizing radiation.

(b) Findings on a medical history or medical examination of:

(1) History of occupational radiation exposure or internal deposition in excess of that allowed by NAVMED P-5055.

(2) History of radiation therapy

(3) An excess of 10 percent MPBB of radioactive material not intentionally administered for medical diagnosis or treatment. A description of the analysis technique must be included with the submission.

(4) Abnormal personal or family history of cancer, if family history then the submission must include the family pedigree using standard genetic symbols.

(c) Results of medical examination for which the requirements are not explicit.

(d) Any medical examination or condition which the responsible medical officer or commanding officer recommends for BUMED review. Such request for review will not be denied by any member of the chain of command.

(e) All situational radiation medical examinations.

(f) Allegations or claim by a service member or employee that their physical condition was caused by exposure to ionizing radiation.

## 15-69

## Submarine Duty



(1) **Purpose.** The purpose of the standard is to maximize the mission capabilities and to reduce the morbidity of the submarine force. The risk of medical morbidity, including the concomitant hazard of medical evacuation, is considered. Requirements for embarking nonsubmarine personnel, military, civilian government, or contractor are specified in SECNAVINST 6420.1 series.

(a) **Entrance.** Submarine candidates must meet the physical standards for submarine duty. Medical examinations should be performed by a medical officer, preferably a UMO. The member's unit medical officer, i.e., the squadron or group medical officer, should perform the examinations of personnel attached to their unit and subordinate units. Only those individuals not physically qualified for submarine duty, but for whom waivers to the standards appears justified, need BUMED review per section V.

(b) **Continuation of Submarine Duty.** The standards for continuation of submarine duty will be the same as for first acceptance for submarine duty. Waivers may be applied for per section V.

(1) Submarine personnel reporting for duty following absence of greater than 90 days due to serious illness or injury; hospitalized for any reason; reported on by a medical board (see article 18-27(3)); or when returning to submarine duty after other duty of more than 2 years, will, at the earliest practicable date, have a Health Record review and such medical examination as may be required by an UMO to determine their physical qualification to resume submarine duty. This examination will be completed prior to the transfer of the member (see article 15-30). If a UMO is not available at the parent command, the nearest available UMO should perform this examination to ensure personnel arrive at their permanent duty station physically qualified for submarine duty.

(2) Submarine personnel who have developed or are found to have disqualifying defects which preclude their ability to reasonably perform the duties of their grade or rate in submarines, or whose duty in submarines would be detrimental to their health, other members of the crew, or to the mission of the submarine, should be processed for submarine disqualification. The proximate UMO will make a recommendation on the SF-88 or SF-600 for all persons being processed for submarine physical disqualification.

(2) **Additional Standards.** Some items from section III may be duplicated here for emphasis. In addition to the