

STANDARD

FOR

TRAINING FACILITIES

AND

FIRE FIGHTERS QUALIFICATIONS

FIRST EDITION

MAY 2015

FOREWORD

The Iranian Petroleum Standards (IPS) reflect the views of the Iranian Ministry of Petroleum and are intended for use in the oil and gas production facilities, oil refineries, chemical and petrochemical plants, gas handling and processing installations and other such facilities.

IPS are based on internationally acceptable standards and include selections from the items stipulated in the referenced standards. They are also supplemented by additional requirements and/or modifications based on the experience acquired by the Iranian Petroleum Industry and the local market availability. The options which are not specified in the text of the standards are itemized in data sheet/s, so that, the user can select his appropriate preferences therein.

The IPS standards are therefore expected to be sufficiently flexible so that the users can adapt these standards to their requirements. However, they may not cover every requirement of each project. For such cases, an addendum to IPS Standard shall be prepared by the user which elaborates the particular requirements of the user. This addendum together with the relevant IPS shall form the job specification for the specific project or work.

The IPS is reviewed and up-dated approximately every five years. Each standards are subject to amendment or withdrawal, if required, thus the latest edition of IPS shall be applicable

The users of IPS are therefore requested to send their views and comments, including any addendum prepared for particular cases to the following address. These comments and recommendations will be reviewed by the relevant technical committee and in case of approval will be incorporated in the next revision of the standard.

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GENERAL DEFINITIONS

Throughout this Standard the following definitions shall apply.

COMPANY :

Refers to one of the related and/or affiliated companies of the Iranian Ministry of Petroleum such as National Iranian Oil Company, National Iranian Gas Company, National Petrochemical Company and National Iranian Oil Refinery And Distribution Company.

PURCHASER :

Means the "Company" where this standard is a part of direct purchaser order by the "Company", and the "Contractor" where this Standard is a part of contract document.

VENDOR AND SUPPLIER:

Refers to firm or person who will supply and/or fabricate the equipment or material.

CONTRACTOR:

Refers to the persons, firm or company whose tender has been accepted by the company.

EXECUTOR :

Executor is the party which carries out all or part of construction and/or commissioning for the project.

INSPECTOR :

The Inspector referred to in this Standard is a person/persons or a body appointed in writing by the company for the inspection of fabrication and installation work.

SHALL:

Is used where a provision is mandatory.

SHOULD:

Is used where a provision is advisory only.

WILL:

Is normally used in connection with the action by the "Company" rather than by a contractor, supplier or vendor.

MAY:

Is used where a provision is completely discretionary.

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0. INTRODUCTION

The major concern of Fire fighting department are protection and saving life of employers and plant facilities from fire and industrial accident in their working place.

The fire fighting personals must deal and handle fire and emergency cases that were occurred in plants also they shall be able to use rescue and safety personal protection equipment against fires. It is the responsibility of fire fighting department to provide relevant services required to all emergency and ensures that fire fighters have the required skills and knowledge of as following:

- a) Nature of equipment manufacturing, processing, handling and storage of feed and products;
- b) Hazards involved;
- c) Provision and use of fire equipment suitable for extinction of flammable and combustible materials.

The safety and fire fighting authorities shall be able to provide regulations/procedures for prevention of accident and safeguarding employees and facilities.

In this standard, some of the subjects are adapted from the following specifications and handbooks:

- "The last revision of NIOC safety regulation"
- "NIOC medical procedure recipe"
- "International fire service training association handbook (IFSTA)"

1. SCOPE

This Standard specifies the minimum requirements for training facilities, organizing, operating an effective fire service and qualifications required for fire fighters and fire officers.

The Standard is compiled in two parts as follows:

Part 1: Training and training Facilities

Part 2: Fire Fighters Qualifications

Note 1:

This standard specification is reviewed and updated by the relevant technical committee on Feb. 2004. The approved modifications by T.C. were sent to IPS users as amendment No. 1 by circular No. 227 on Feb. 2004. These modifications are included in the present issue of IPS.

Note 2:

This is a revised version of this standard, which is issued as revision (1)-2015. Revision (0)-1997 of the said standard specification is withdrawn.

2. REFERENCES

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the Company and the Vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)

NFPA 1001 - (2013)	“Standard for Fire Fighter Professional Qualifications”
NFPA 1002	“Standard on Fire Apparatus Driver/Operator Professional Qualifications”
NFPA 600	“Industrial Fire brigades”
NFPA 1583	“Standard on Health-Related Fitness Program for Fire Fighters”
NFPA 1582	“Standard on Comprehensive Occupational Medical Program for Fire Departments”
NFPA 1581	“Standard on Fire Department Infection Control Program”

IPS (IRANIAN PETROLEUM STANDARDS)

IPS-G-SF-540	“General Standard for Safety & Fire Training Centers Fire Station Facilities”
IPS-M-EL-161	“Material and Equipment Standard for General Electrical Items”

3. DEFINITIONS AND TERMINOLOGY**3.1 Recruit or Probational Training**

Basic training.

3.2 Ranking

An official grade of position (in military).

3.3 District Firemaster

Heads of a fire services in an area or district.

4. UNITS

This standard is based on international system of units (SI), as per [IPS-E-GN-100](#) except where otherwise specified.

PART I**5. TRAINING AND TRAINING FACILITIES****5.1 General**

5.1.1 The fire service training shall be carried out under strict discipline and at no time should be allowed to degenerate into anything with the serious undertaking.

5.1.2 A training program shall be prepared in advance covering the topics and period applicable to the requirement of individual and groups responsibilities. It shall consist of instructions and practical exercises and drills and field practices. The schedule of instructions should mainly consist of talks or lectures and practices. Training techniques include explanation, demonstration and participation (see Appendix A).

5.2 Training Facilities

5.2.1 The Engineering Standard for training center is given in [IPS-G-SF-540](#) and Appendix A include:

- a) Lay-out of training ground;
- b) Equipment details;
- c) Installations.

5.2.2 The training facilities given here are for safety and fire service training center and are separate from a training and drill work done at each fire stations. There is an element of convenience, if the training center and fire station can be in the same general neighborhood.

5.2.3 Training facilities should include adequate class rooms, lecture hall and audio-visual for the need of safety and fire department. These space requirements may be used as joint facilities for conference, and assembly areas for other training and development or gathering, but a classroom of sufficient size or similar lecture facility intended for continuing educational training shall be available for safety and fire purposes.

5.2.4 Adequate audio-visual, special apparatus and reference materials shall be available to support the departments training activities and cover all subjects later discussed in this Standard. In addition the department shall have access to training facilities for live fire training to demonstrate flammable liquid fires pumping and drafting operations and driver training.

5.2.5 Training facilities shall be supplemented by:

- Sufficient yard space to provide area for fuel pits, oil tanks and gas supplies for fire and emergency that can be created to make training realistic.
- The site should be sufficiently isolated from other properties to eliminate inconvenience to the public from training activities.
- The site shall have proper drainage, adequate water and foam supplies for hydrants, and fire houses, appropriate pollution abatement equipment and a pond or reservoir for pumping operation.
- A sample oil well, gas well and a bus to put on fire for exercise.
- Suitable lighting and loud hailer systems should be provided.
- Also adequate facilities to monitor operation and safeguard trainees must be provided.

- Finally extra site for parking of vehicles shall be provided (see Clause 10 and Appendices in [IPS-E-SF-540](#)).

5.2.6 The training facilities shall be secured, the site should be fenced and lighted in accordance with [IPS-M-EL-161](#).

5.2.7 Unless otherwise specified, training center should include an appropriate selection of built-in fire protection equipment including, smoke detectors, automatic sprinklers, stand-pipe systems, fire pumps, storage tanks, and other equipment with which the employees shall become familiar.

5.3 Training Program for Plant Personnel

5.3.1 Safety and fire authorities are responsible to develop training program for all departments and shall designate a qualified training officer to act in administrating the program. He should foresee that the budget required for training facilities, expendable supplies, training aids and training staff including in-house and guest instructors are considered.

5.3.2 All heads of line organization shall fully support training activities initiated by fire authorities and make sure that the program is performed as prescribed.

5.3.3 Department heads should consider hazards involved at their work site and recommend special training needed for their personnel assigned to implement their jobs. Fire authorities should include this special training requirement in the program for action.

5.3.4 To improve or maintain standards of proficiency, the training should be planned carefully and be followed by an evaluation discussion in which all personnel should be encouraged to participate.

5.4 Training Officer

5.4.1 As a member of fire authority, training officer should segregate all topics recommended by the Department Heads and should make an appropriate program suitable for each Department Personnel and should ensure that necessary facilities are in hand before the training course begins.

5.4.2 Training officer should select syllabus of training course for inclusion in the program and develop schedules to assure that the respective Department personnel have received instructions accordingly. Instructions can be given either at the Department's own facilities or at safety and fire training center.

5.4.3 The effectiveness of training shall be continuously evaluated using critiques as an aid to such evaluation.

5.4.4 At least annually the program shall be reviewed for up-dating to include new techniques and equipment in the schedule of the course.

5.4.5 If the course is conducted by instructors the training officer should supervise and witness the course of lectures, etc., and the outdoor practical exercises to see that the training procedures are followed as directed.

5.4.6 Records shall be kept of all personnel attending the course. Reports of instructors should be reviewed by Training Officer to evaluate performance of personnel of the facts demonstrated during the operation of the facilities. He should supervise the work of instructors and other personnel assigned in conducting the course and should see that each training session can be measured against a planned program.

5.4.7 Training officer should inspect and find that the operation of training equipment, first aid and other facilities are in good working order.

5.5 Fire Fighters Training Requirements

5.5.1 Success in fighting fires will be achieved if the following points are fully considered and adhered to:

- a) Discipline shall be enforced when the crew members attend the scene of fire.
- b) Fire Fighters shall obey the instructions given by the Firemaster.
- c) Every one of the crew of fire fighters shall carry out the special duty assigned to him as specified in the last edition of NIOC safety regulation.
- d) Fire fighting is a team work. The crew members must always help each other during the operation as this is a recognized activities resulting in the extinction of fire.

5.5.2 Fire authorities shall develop a program to include all essential drills and exercises for fire fighters to practice.

5.5.3 Fire authorities should appoint the Training Officer or his assistant to supervise the daily drill practices and other activities in accordance with schedule of program made.

5.5.4 Performance of fire fighters shall be evaluated periodically to determine the effectiveness of drills and exercises and provide a base for improvement and up-grading the program.

5.5.5 Refresher course shall be programmed to refresh the memory of fire fighters to help smooth running of the operation when called to attend fires.

New techniques shall be considered for inclusion in the program in order to promote the knowledge of fire fighters. Any changes in design and operation of fire equipment must be discussed and demonstrated.

5.6 Training for New Recruits for Fire Brigade

5.6.1 New recruits shall be given comprehensive training at least for the period of 6 months as probationers. This period should be considered as a basic training course for subsequent in service training.

5.6.2 The course of probational training should be consistent with the performance objective as outlined in Fire fighters professional qualification according to "ESSENTIAL OF FIRE FIGHTING HANDBOOK by IFSTA". (See NFPA 1001, 2013).

5.6.3 Some of the following subjects are extracted from practical firemanship:

- 1) Elements of combustion and extinction;
- 2) Fire service equipment;
- 3) Fire extinguishers and foam equipment;
- 4) Incidents involving air craft and shipping;
- 5) Special emergency and rescue appliances;
- 6) Breathing apparatus and resuscitation;
- 7) Pumps and pump operation;
- 8) Structural fire protection;
- 9) Fire protection in buildings;
- 10) Communications;
- 11) Practical fire fighting;
- 12) Emergency plans;
- 13) Topography of the area;

- 14) Some information about fire and emergencies at oil wells;
- 15) Toxic gases, explosives and pyrophoric material and fumes and detection instruments;
- 16) Safety in Oil, Petrochemical and Gas industries including fire prevention;
- 17) Fire and gas detectors;
- 18) First aid and rescue operations;
- 19) Personal protection equipment, specially for fire fighter (PPE);
- 20) Health, safety and environmental courses;
- 21) Fire behavior.

5.6.4 The course duration for new recruits training shall be at least the minimum number of hours necessary to complete the topics given in the schedule of the program.

5.6.5 Regular training

At least 2 hours of each shift on duty should be devoted to training activity. This activity shall be in form of classroom instruction during the night. Fitness practice drill, familiarization inspection during day time.

PART II**6. FIRE FIGHTERS QUALIFICATIONS****6.1 General**

A firefighter must be physically fit, for work at a fire and emergency that will involve considerable physical exertion and be courageous and yet be calm, as his manner and conduct will depend on his reactions in an emergency.

He must be patient when executing his duties and have initiative and must possess the will to keep going for long periods under adverse conditions. He must cultivate his power of observation to the utmost and must also possess an inquiring mind. He must have a keen sense of discipline for unless he himself is able to obey orders without question. His duty may be summed up as, firstly, to save life, secondly, to prevent the destruction of property and thirdly to render humanitarian service. He should endeavor to learn as much as possible of plant and processes, so that if he is called to a fire and emergency in the units and premises he will be aware of the conditions he will meet and of any precautions he must take.

6.2 Selection of Fire Fighter

The selection, training, direction and employment of fire department personnel is the major phase of fire department administration and operation. If these personnel functions are properly conducted, fire prevention and fire fighting procedures can be channeled and handled smoothly, but without properly selected and trained personnel, fire protection efforts are likely to be spasmodic and inefficient with too many important details left to chances. Care shall be taken to get the right type of men, character habit reliability must be unquestioned. His intelligence should be keen. Emergencies require quick decision and good judgment.

It is an accepted practice to require at least satisfactory completion of the basic fireman training course and a reasonable degree of health and physical fitness. Each fire fighter must not only be physically capable of withstanding the hard work of fire fighting over a period of years but must be an outstanding member of fire fighting force.

It is the fire department responsibility for selecting and nominating high standard level of personnel from physical fitness point of view as well as mental ability of the applicants.

6.3 Fire Fighter Requirements

Fire fighter shall be mentally and physically examined according to" NIOC medical procedure recipe" and NFPA 1581 , NFPA 1582 , NFPA 1583.

6.3.1 Medical requirement

Prior to being accepted for fire service membership, new recruits shall be examined and certified by physician as being medically and physically fit. The medical and physical fitness requirements shall take account the risks and tasks associated with the assigned duties.

6.3.2 Fire fighters shall be re-examined annually by industrial medical doctor as being medically and physically fit. If fire fighter involves in fire fighting operation, then shall be examined by industrial medical doctor.

6.3.3 Temperament of the applicants is equally important because fire fighting is primarily a team function in which every member plays a vital assigned role.

6.3.4 Fire fighters shall be encouraged to maintain good medical and physical condition and shall be required to report any changes in their physical and medical fitness that could impair their performance as a fire fighter.

6.3.5 A thorough background investigation of each applicant from security point of view will be

required.

6.3.6 The applicants shall have educational background of not less than associate of arts.

6.3.7 The applicants shall be selected after passing the physical examinations. When they have been selected, they shall be engaged on probationary bases for a period as defined by the latest edition of NIOC safety regulations.

6.3.8 The probationary period shall not be merely a perfunctory period for basic or recruit training, but rather a period permitting a close supervision of each applicant to see that he is sincerely interested in becoming a professional fire fighter.

6.3.9 During six months probation the individual recruit shall be examined closely to ensure his willingness and capability and after the fire authorities have confirmed their satisfaction the applicant can be assigned to a fire fighter's duty.

6.4 Personal Record and Promotion

6.4.1 After fire fighters have completed basic training at the training center and have finished their probationary period, the department shall keep a constant interest in each individual fire fighter, with a record of all assignments, accomplishments, and performance. In some cases these records should be taken into consideration in giving credit towards promotion.

6.4.2 Credit shall be given for certain amount of longevity and activity under theory that experience gained in years of actual fire fighting, emergency services and rescue operations have a value that cannot be measured in written examination alone. In general promotional examinations for each rank should be held at two years intervals or when vacancies arise. Examinations should be based upon the type of work to be performed in the rank in question following a careful analysis of the duties of the rank involved.

6.5 Ranking

Emergency activities and fire fighting operation shall be carried out under-strict discipline and orders shall not be degenerated into anything but the serious undertaking. Therefore, the uniform and ranking is an important factors and should be officially selected and recognized. According to the latest edition of NIOC safety regulations, the following ranks can be use:

6.5.1 Fire fighter ranks:

- a) Fire fighter grade 2.
- b) Fire fighter grade 1.
- c) Fire truck driver and operator.
- d) Crew leader controller, communication.
- e) Section leader-maintenance mechanic.

6.5.2 Fire officer ranks:

- a) Station fire officer.
- b) Firemaster.
- c) Fire protection engineer.
- d) Training fire officer.
- e) Deputy chief fire officer.
- f) Chief fire officer.

- g) F & G and fire protection engineer (See clause 7.2)
- h) Fire department health and safety officer (See NFPA 1021).

6.6 Responsibilities

Brief responsibilities of above ranking and job descriptions are as follows:

6.6.1 Fire fighter grade 2

The fire fighter grade 2 (The lowest ranking) has completed recruit training course and passed satisfactory performance of probationary period of 6 months and assigned to fire fighting duties (for more information see chapter 5 & 6 NFPA 1001-2013).

6.6.2 Fire fighter grade 1

A fire fighter of 4 years experience with good record of background service, physically strong and passed an official examination with ability to be assigned as a leader of 2-3 fire fighters grade 2.

6.6.3 Crew leader

Fire fighter with minimum of 6 years experience with excellent background record with good discipline, physical fitness and having ability to be a leader of 5 to 6 men crew assigned to a fire truck and working as a team leader in assigned fire fighting and emergency duties.

6.6.4 Section leader

Fire fighter with minimum of 10 years experience with excellent record and good discipline. Knowledgeable to direct fire fighting team, all emergency conditions and rescue operations. Acting as shift fire station leader with ability of team work and decision making.

6.6.5 Senior fire control operator (section leader rank)

With minimum of 10 years experience on fire fighting and crew leader. Knowledgeable of communication system and emergency call procedures. Responsible for all call out and communication of messages during emergency conditions.

He is assigned in a central main control room.

6.6.6 Maintenance mechanic (section leader rank)

Mechanical foreman with 2 years experience with all aspects of fire fighting equipment and appliances. Responsible for testing, inspections and repair work of fire fighting and emergency equipment.

6.6.7 Section leader and a helper to be assigned for service and maintenance of all types of fire extinguishers.

6.6.8 Station fire officer (officers ranking)

He is an officer incharge of the station. A comprehensive knowledge of station ground, detailed information of any manufacturing processes and risks involved. On arrival at the fire and emergency ground he takes command before arrival of district fire master or chief fire officer.

6.6.9 Fire master

He is responsible for all fire protection system of an area or district reporting to chief officer. He inspects all plants and fire risk areas and advises fire prevention methods and requirement with close cooperation of plants managers organizes fire fighting team and makes sure that they are regularly trained for fire fighting and emergencies conditions.

6.6.10 Fire prevention engineer (divisional fire officer)

Being as a qualified engineer he is responsible for advising the requirement of fire protection system. He is responsible for the testing and servicing of all fire appliances. He advises fire prevention methods and makes sure that fire service standards are met. He has a broad knowledge of all types of fire protection equipment.

6.6.11 Training fire officer (divisional fire officer)

Being as a qualified engineer, he is responsible for the following training courses:

- 1) Fire service recruit training.
- 2) Plants fire team training.
- 3) Fire officers advance training.
- 4) Supervisors fire prevention courses.

6.6.12 Fire department safety and health officer

Fire department safety and health officer manages the fire department occupational safety and health program, safety training, affecting safety, health and wellness of all fire department members. Also who is responsible for safe operation of fire fighters in incident scenes.

7. OPERATION OF FIRE SERVICES DEVICES/APPARATUS

The fire service devices and apparatus shall be operated only by members who have been qualified in its proper operation by formal training using performance based standards.

7.1 Fire Truck Driver/Operator

7.1.1 Driver of fire trucks shall have valid driver's license for the type of vehicle as specified in Traffic Regulations.

Vehicles shall be driven in compliance with all applicable traffic signs and regulations.

7.1.2 Drivers of fire service vehicles shall be directly responsible for safe and prudent operation under all conditions.

7.1.3 Driver of fire truck is generally operator of fire truck fixed equipment such as pump, foam proportioner, Chemical Dry Powder and fire fighting booms etc.

7.1.4 The fire truck shall be checked by driver as per working shift.

7.2 F and G and Fire Protection System Engineer

Fire protection engineer shall be responsible for all automatic and manual fire and gas detection, alarm, and suppression system, who is responsible for maintenance / operational system and periodical inspection of the system and devices.

APPENDICES**APPENDIX A**

The instructors who teach the subjects, should be familiar with lesson plans. The following is a good example of arrangement for a lesson plan:

1) Title

Must indicate clearly and concisely subject matter to be taught.

2) Objective

- a) Should state what the trainee should know or be able to do at the end of training period;
- b) Should limit the subject matter;
- c) Should be specific;
- d) May be divided into a major and several minor objective for each session.

3) Training aids

Should include such items as actual equipment or tools to be used as charts, slides, films, etc.

4) Presentation

- a) Should give the plan of action;
- b) Should indicate the method of teaching to be used (lecture, demonstration, class discussion or combination of these);
- c) Should contain suggested directions for instructor activity (show chart, write keywords on blackboard).

5) Application

Should indicate by example, how trainees will apply this material immediately (problems may be worked a job may be performed, trainee may be questioned on understanding and procedures).

6) Summary

- a) Should restate main points;
- b) Should tie up loose ends;
- c) Should strengthen weak spot in instruction.

7) Test

Tests help to determine if objectives have been reached they should be announced to the class at the beginning of the session.

8) Assignment should give references to be checked or indicate materials to be prepared for future lessons.