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VI.09 Establishment of Hydraulic Pressure Test Facility for Portable Fire Extinguishers and Self Contained Breathing Apparatus (SCBA) Filling Facility in IGCAR

In IGCAR there are around 3500 nos. of various type & capacity portable fire extinguishers are installed. Out of which 1500 nos. (Water type, Mechanical foam type and Dry Chemical Powder type fire extinguishers) can be hydro tested in house as per IS 2190:2010. Each fire extinguisher (gas cartridge) installed in IGCAR campus shall be hydraulically pressure tested as per the schedule given in Table 1.

Industrial & Fire Safety Section has established hydraulic pressure test facility to meet the statutory requirements as well as to ensure the healthiness of the portable fire extinguisher. The hydraulic pump (Fig. 1) is electric motor driven having pressure set valve to fix the required test pressure and also a pressure relief valve to release the stored pressure after every test. The main function of a hydraulic test is to ensure that the fire extinguisher can still withstand its pressure rating. When a fire extinguisher undergoes hydraulic pressure testing, it is filled above its pressure rating with water. At that point, the technician monitors the fire extinguisher, looking for any drop in pressure. A drop in pressure during the test indicates that the fire extinguisher has a leak, and should be permanently removed from service. Extinguisher, which fails during the pressure testing, shall be replaced.

The hydraulic pressure testing will be carried out such that at least one third (1/3) of the extinguishers are tested every year and the pressure testing cycle of all extinguishers are completed every three years.

Table 1. Schedule for hydraulic pressure testing of fire extinguishers				
S.No.	Type of Extinguisher	Test Interval Year	Test Pressure kg/cm ²	Pressure Maintained for Min
1.	Water type	3	35	2.5
2.	Mechanical foam	3	35	2.5
3.	Dry powder type	3	35	2.5

A self-contained breathing apparatus (SCBA) enables a person to remain in irrespirable and poisonous atmosphere for a specified period of time, if required. It is also known as a rescue apparatus or gas mask. In this type of SCBA, compressed air carried in cylinders is fed through a demand valve and breathing tube to a full face-piece. These cylinders require refilling after every usage during rescue operations, entry in confined spaces and training to the employees.

Industrial & Fire Safety Section has established Self Contained Breathing Apparatus (SCBA) cylinder filling facility to meet the requirement of filling cylinders in house. This compressor (Fig. 2) will be used to refill the high pressure cylinders at 200 bar & 300 bar with breathing air at charging rate greater than 240 Liters Per Minute. Filling station comprises of breathing air compressor and safe filling containment chamber (Fig.3) and it can accommodate two cylinders at a time during refilling. This two cylinder SCBA filling enclosure is complied with NFPA 1901 requirements and it also has safety automatic interlock which requires no actuation of secondary latching mechanism from outside during filling.



Fig. 1: Hydraulic pressure testing facility



Fig. 2: Self Contained Breathing Apparatus (SCBA) cylinder filling compressor



Fig. 3: Cylinder safe filling containment chamber

VI-10 Industrial, Fire and First Aid Training Program to Meet AERB Regulation

As per the AERB guidelines, Industrial Safety, Fire Safety and First Aid training programmes have to be conducted every year for IGCAR employees and workers. The programme consists of series of lectures from various experts from IGCAR. Safety induction training, one day safety seminar for workers training by workers and first aid training were scheduled and conducted for the year 2022. Among them some of the important programmes are briefly given in this report.

As per AERB guidelines employees and contract workers are to be trained in industrial and fire safety and also in first-aid training every year. A two day Industrial and fire safety training was organized to enhance the awareness of safety among officers/engineers, supervisors of IGCAR during Jan-2022, Mar- 2022, June- 2022 and Augt-2022 Total 235 participants were attended for this training programme. First-aid training programme was conducted on 02 occasions Feb, July-2022 for 111 employees. All the contract workers (772 nos.) were given safety induction training before inducting them into work and Height-pass test & training was conducted for 436 nos. of workers who are working at height. One day “Safety Seminar” for workers by workers was been conducted during Mar-2022 at RFG. A total of 49 employees were attended the programme and lectures were delivered by respective participants of their group.

Industrial & Fire Safety Training (IFST)

Total five IFST programmes were organized and conducted to enhance the awareness of safety among officers/engineers, supervisors of IGCAR.

Live demonstration of various types of fire extinguishers used to put off the different type of fire scenarios were conducted with the co-ordination of NPCIL Fire officers & CISF Fire Wing during the IFST programme.



Fig. 2: Fire Safety Training by CISF Fire Wing



Fig. 3: First Aid Training - CPR demonstration

Table1: IFST programmes organized during 2022

Programme	Date	Participants
IFST-1	04 th & 05 th – Jan 22	60
IFST-2	29 th & 30 th – Mar 22	60
IFST-3	28 th & 29 th – June 22	63
IFST-4	24 th & 25 th – Aug 22	52
IFST-5	09 th & 10 th – Nov 22	60

First Aid Training (FAT)

Total three FAT programmes were conducted by doctor’s team from Apollo Hospitals, Chennai at IGCAR campus.

Table 2: FAT programmes organized during 2022

Programme	Date	Participants
FAT-1	25 th Feb 22	46
FAT-2	27 th July 22	65
FAT-3	30 th Nov 22	51



Fig. 1: Industrial Safety Training

At the end of each FAT programme, theory and practical examination were conducted. First Aid Training Certificates are distributed to the successful employees.