

Finalized TDs of PPDU (Portable Personal Decontamination Unit)

S.N	Technical Specifications	Trial Directives
1.1	Decontamination involves the removal or neutralization of hazardous substances from people, equipment, and the environment. Anyone or anything exposed to a hazardous material must be properly decontaminated in order to stop further exposure thereby preventing any further damage. Decontamination shelter must be able to decontaminate the contaminated victims.	BOO to check and verify through OEM Certificate.
1.2	It should be comprised of a decontamination shower system fed with decontaminant solution and spray nozzles to provide adequate water mist required. The complete structure should be held with Guy Ropes to ensure stability at high air velocity conditions, if prevailing.	BOO to physically check and verify the parameter.
1.3	The equipment must be transportable by road, train, ship and plane as per the international transport regulations. It should be transportable to the desired location on standard transport vehicles and trailers.	BOO to check and verify through OEM undertaking.
2	Decontamination Capacity (effectiveness):	
2.1	Equipment must be capable of reducing chemical contamination (by chemical warfare agents or TICs). Likewise, they should be able to remove biological / nuclear-radiological agents and neutralization.	BOO to check and verify the parameter through OEM Certificate.
2.2	The equipment should be easily decontaminable, even during its operation and compatible with the decontaminating solutions that are employed.	BOO to check and verify through OEM Certificate.
2.3	The Substances (decontamination solution) used as decontaminants should not degrade personnel, equipment and decontaminated vehicles.	BOO to check and verify the parameter through OEM Certificate.
2.4	The shelter must include all the operational and maintenance documentation with a correct compression for the personnel in charge of both tasks.	BOO to check and verify through OEM Certificate.
2.5	The decontamination station units must be capable of operating in adverse climatic conditions.	BOO to check and verify through OEM Certificate.
2.6	Electrical-electronic systems included in	BOO to check and verify

	the equipment must not interfere with general electronic systems, communications, NBC detector systems, etc. being used for the operation.	through OEM Certificate.
3	Shelf life	
3.1	The equipment should have a minimum shelf life of 15 years (operating 80% during this time), in the same way.	BOO to check and verify through OEM Certificate/Undertaking
4	Maintenance and logistics (equipment / consumables)	
4.1	The Decontamination station must have the necessary accessories in terms of shock proof electricity supply, necessary plumbing using flexible pipes, lighting system, tools and spare parts etc.	BOO to physically check and verify the parameter.
4.2	The electrical/ electronic equipment accessories must comply to the relevant CE certifications as regards the radiation and noise levels.	BOO to physically check and verify through relevant certificate provided by OEM.
4.3	All items forming part of the Station must be easy to operate, even with the NBC PPE gear.	BOO to physically check and verify the parameter.
4.4	An effective training for the users must be imparted to the end user on installation/un-installation, maintenance and storage of the Shelter and the accessories.	BOO to check and verify the OEM undertaking for complying the parameter.
4.5	All the water supply couplings should be of Barcelona fitting type and their adaptations to receive water from a fire hydrant system. The main Hose receiver must be compatible with the universal hose couplings used by the Fire department in the fire bowsers and tankers so that the required water supply to the station may be maintained using the fire tankers.	BOO to check and verify through OEM Certificate.
5	FEATURES	
5.1	Required Decontamination capacity per hour: Not less than 120 people per hour.	BOO to physically check and verify through OEM Certificate.
5.2	Water storage autonomy: Should have capacity of water storage for minimum 50 minutes.	BOO to physically check and verify the parameter.
5.3	Transportable by land (road and rail), sea and air	BOO to check and verify the parameter through OEM certificate.
5.4	It should be Lightweight and portable.	BOO to physically check and verify the

		parameter.
5.5	Must have quick setup three chamber column with three columns in each Decon Station, which must be easy to set up.	BOO to physically check and verify the parameter.
5.6	Of the three Columns, two on each side will be used for decontaminating the ambulatory victims whereas the middle column should have provisions for decontaminating the non-ambulatory victims.	BOO to physically check and verify the parameter.
5.7	The middle column should have stainless steel collapsible rolling tray for sliding the stretcher of the non-ambulatory victims.	BOO to physically check and verify through OEM Certificate.
5.8	The plumbing system inside the shower rooms must have provision for water spray through Mist nozzles for spraying of water/decon solutions at varying pressure requirements for proper decontamination of humans.	BOO to physically check and verify through OEM Certificate.
5.9	All shower rooms within the Decon Chamber must be hermetically sealed to prevent the contaminated water/discharge from reaching the dressing and undressing chambers.	BOO to physically check and verify through OEM Certificate.
5.10	The shower Chamber of the decontamination shelter should have water collection system to collect the contaminated discharge to be pumped out into inflatable water using the self-actuating pumps.	BOO to physically check and verify through OEM Certificate.
5.11	The shelter of the decontamination station should have an integral detachable groundsheet with additional Hard Rack for additional support.	BOO to physically check and verify the parameter.
5.12	All electrical systems inside the chambers must have shockproof and spark proof interconnections which can easily be attached or detached at the time of installation and uninstallation.	BOO to physically check and verify through OEM Certificate.
5.13	Electrical Cables used inside the shelter must be Fire Retardant.	BOO to check and verify through OEM Certificate.
5.14	Portable area lighting must also be provided with the station. Additional handheld searchlights must also be provided with the system for any	BOO to physically check and verify the parameter.

5.15	emergent exigency. The beacon station must have a collection capacity of not less than 1000 litres in the form of inflatable tanks for collection of contaminated discharge from the shower chamber.	BOO to physically check and verify the parameter.
5.16	The inflatable shelter should be easy to install very quickly with the help of air cylinder as well as electrically operated pneumatic pumps.	BOO to physically check and verify the parameter.
5.17	The decontamination station must also have inflatable water tanks with storage of not less than 2000 litres to store clean water for use in shower system.	BOO to physically check and verify the parameter.
5.18	Two separate electrically operated water pumps will be required for Inlet and Outlet.	BOO to physically check and verify the parameter.
5.19	The inflatable shelter must have sufficient Guy ropes with Tent Pegs for securing it in position during high wind velocity conditions.	BOO to physically check and verify the parameter.
5.20	The decontamination zone should have at least 3 decontamination Lines (columns) with spray showers that allow a maximum capacity of 150 people / hour (50 people per line with treatment lasting two minutes each).	BOO to physically check and verify through OEM Certificate.
5.21	Showers system should be in doubles allowing two steps in each of the treatments, the first step for washing with decontaminant and the second step for rinsing. The lines should be separated from each other with a minimum space of not less than 600 mm.	BOO to physically check and verify the parameter.
5.22	There should be a provision for defining the duration of each phase of shower which may be continuous or discontinuous and programmable manually or automatically, as required by the operator.	BOO to physically check and verify through OEM Certificate.
5.23	The floor of the showers area should be formed by a floor that prevents the immersion of the feet of the personnel to be decontaminated with the effluents collected in the water recovery vessel. This may be achieved with the help of the pump which are to be connected by means of a flexible pipe to the flexible inflatable tanks.	BOO to check and verify through OEM Certificate.
6.	The Decontamination station should have the following	

	defined zones	
6.1	Undressing area	BOO to physically check and verify the parameter.
6.2	Decontamination area with shower lines and technical zone	BOO to physically check and verify the parameter.
6.3	Drying/dressing area	BOO to physically check and verify the parameter.
7	Required Accessories	
7.1	Robust and sturdy Bag for housing and carrying the inflatable shelter	BOO to physically check and verify the parameters
7.2	Guy ropes of sufficient strength along with tent pegs	
7.3	Repair kit with puncture repair patches	
7.4	Inflation hose - Not less than 5 m	
7.5	Electric Inflator	
7.6	Air Cylinder with regulator for Inflation	
7.7	Decontamination solution	
7.8	Self-actuating Water pumps.	
7.9	Pedestal fan	
7.10	Rechargeable Lights	
7.11	Flexible field electric lines with waterproof Plug & Socket system	
7.12	Hand shower	
7.13	Linen rack	
7.14	Trash Bins with Lid	
7.15	Hand Brush	
7.16	Liquid soap	
7.17	Towels	
7.18	FR Cables IS 17505 (Part 1)	
7.19	Inflation & Deflation Valves	
7.20	Stretcher with wheels	
7.21	Privacy Blinds	
8	The pumps should have the following characteristics	
8.1.1	Discharge rate :50 Litres to 150 Litres per minute (Min-Max)	BOO to check and verify through OEM certificate.
8.1.2	Protection : IP 68	BOO to check and verify through OEM certificate.
8.1.3	Height of water collection : 2mm	BOO to physically check and verify the parameter.

8.1.4	Hose length from container to flexible tank : Minimum 10 meters	BOO to physically check and verify the parameter.
8.2	The floor of the showers should be non-slippery with sufficient inclination to produce a rapid drainage of the effluents in the channel that in turn should reach the pump that drives the effluents outside.	BOO to check and verify through OEM certificate.
8.3	The system must have an initial capacity of 2,000 litres of water (using the flexible inflatable tanks) to immediately start decontamination without external means.	BOO to check and verify through OEM certificate.
9	INFLATABLE HIGH-PRESSURE TENTS	
9.1	The areas before and after the decontamination area, i.e., the undressing area and the drying and dressing area should be designed to accommodate multiple users. The shelter should have rapid assembly without tools or special training by the assembler that allows the interconnection.	BOO to physically check and verify the parameter.
9.2	The inflatable shelter should have 3 modules (chambers) in each column with overall dimension of the tent should not be less than 17 feet by 22 feet in width and length respectively.	BOO to physically check and verify the parameter.
9.3	In deflated condition the shelter should be able to be contained in foldable bag with dimension not more than 5 feet X 2 ½ feet X 1 ½ feet in length width and height respectively.	BOO to physically check and verify the parameter.
10	TECHNICAL SPECIFICATIONS INFLATABLE HIGH PRESSURE TENT	
10.1	The inflatable shelter the decontamination station should be able to be deployed in less than 10 minutes by not more than three persons working together.	BOO to physically check and verify the parameter.
10.2	The inflatable tent should have a wind resistance of not less than 85 kilometres per hour for 30 minutes for both front and side with capacity to tolerate 100 kilometres per hour for 10 seconds with all the anchors.	BOO to check and verify through OEM certificate.
10.3	The tent should have so rain resistance of not less than 40 litres per square metre per hour for 30 minutes without any leaks.	BOO to check and verify through OEM certificate.
10.4	It should have snow acceptability not less than 40 KG per square metre for 12 hours.	BOO to check and verify through OEM

11	FABRIC SPECIFICATIONS		certificate.	
11.1	The fabric to be used in the cover of inflatable shelter should follow the following specifications:		BOO to check and verify the parameters through lab test report from Govt./NABL-accredited labs.	
	Textile	Taffeta		
	Composition Polyester	100%		
	Weight	Not more than 550gr/m2		UNE-EN ISO 2286-2
	Tensile Strength (Warp/Weft)	Not less than 14 daN		DIN 53363
	Tear Resistance (Warp/Weft)	Should be able to sustain not less than 175 daN/ 5cm		EN-ISO-1421
	Treatment Antiputrefactive	YES		
	Reaction To Fire			NM-E-188 EMA
	Colour	Fluorescent Orange or Yellow		
12.	FLOOR FABRIC SPECIFICATIONS		BOO to check and verify the parameter through lab test report from Govt./NABL-accredited labs.	
	Weight	Not more than 700 g/m2		EN ISO 2286-2
	Tensile Strength	Not less than 2400 N/5cm		EN ISO 1421
	Tear Resistance	Not less than 250 N		DIN 53363
	Flexural Strength	Not less than 100000		DIN 53359 A
	Material	PES		ISO 2076
	Thread	1100 dtex		ISO 2060
	Covering	PVC		
	Fire Behavior	M-2 B1		UNE 23.727 DIN 4102
13	STRUCTURE SPECIFICATIONS			
13.1	The main arch should be formed by a high-pressure hose with a width of about 11mm made of POM (Polyacetal or Polyoxymethylene). There should be a provision for inflating the arch through a		BOO to check and verify through OEM certificate.	

	pneumatic system.	
13.2	Transverse bars should separate the arches in two sections allowing the inflatable arches tensing. Each section should comprise of three rods, a top and two sides.	BOO to check and verify through OEM certificate.
14	INFLATION SYSTEM	
14.1	The inflation system should have a hose of polyurethane with several outlets. This hose should be connected to the compressor supplied with the store.	BOO to check and verify through OEM certificate.
14.2	The compressor should have a capacity to inflate the system within 10 minutes.	BOO to physically check and verify the parameter.
15	AIR COMPRESSOR SPECS	
15.1	The air compressor to be supplied with the inflatable decontamination shelter should not be less than 2HP of power and should be able to generate a flow of not less than 350 litres per minute with a pressure of 10 bar.	BOO to check and verify through OEM certificate.
15.2	The compressor should be lightweight and portable with the dimension of not more than 65 X 40 X 45 centimetres.	BOO to physically check and verify the parameter.
16	COLLAPSIBLE WATER TANK SPECS	
16.1	Two flexible tanks each for storage of water as well as contaminated discharge must be supplied with a minimum capacity of 2000 litres each. There should be a provision for deer lifting by using cranes with the help of welded webbings.	BOO to physically check and verify the parameter.
16.2	These storage tanks should be resistant to the decontaminant mixture and the Chemical or Biological warfare agents incorporated in the effluents.	BOO to check and verify through OEM certificate.
16.3	The tanks should have 2 mouths, inlet and outlet with 45 mm barrel fitting.	BOO to physically check and verify the parameter.
17	PORTABLE WEATHER STATION	
17.1	The inflatable decontamination station should be provided with a portable weather station which directly measures barometric pressure, air temperature, relative humidity, rain gauge, wind speed and direction.	BOO to check and verify the parameter through lab test report from Govt./NABL-accredited labs.
17.2	It should have a device for direct data visualization which can be connected to a PC. No weather station able to operate on	BOO to check and verify through OEM certificate.

	minimal energy conjunction and which can be connected to mains or with internal Batteries.	
17.3	It should be able to install in dependently away from the decontamination station.	BOO to physically check and verify the parameter.