



Government of India
Ministry of Home Affairs
Directorate General National Security Guard
(Provisioning Branch/Ord Section)
Mehram Nagar, Palam, New Delhi – 110037
Fax No. 011-25663258/25671639

No : P/604/2019(389)/Bomb Suit/Prov (Ord)/HQ NSG/ 356

Dated : 02 Feb 2023

**FORWARD OF FINAL QUALITATIVE REQUIREMENT (QRs)
AND TRIAL DIRECTIVES (TDs) OF BOMB SUIT (REVISED)**

The final QRs and TDs of Bomb Suit (Revised) duly approved by competent authority is forwarded herewith for your information and necessary action please.


(PC Sharma)
Group Commander (Proc)





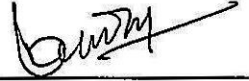


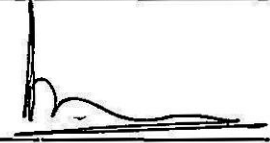

Encl : As above

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3.	IG/Director (R&D), BPR&D, Mahipalpur, New Delhi Email : igmod@bprd.nic.in / dd-mod@bprd.nic.in / sushilkumar@bprd.nic.in	
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QUALITATIVE REQUIREMENTS(QRs) AND TRIAL DIRECTIVES (TDs) OF BOMB SUIT (REVISED)

Ser No	QRs	Trial Directives
1)	<p>Bomb Disposal Suit is used to protect the operator/ technician from blast/heat & fragmentation effect of bomb/ IED (Improvised Explosive Device) during handling of bomb/IED.</p> <p>The Bomb suit to be NIJ 0117.01 or NATO STANAG 2920 or MIL Standard 662F or NATO APE 2920 compliant.</p> <p>With regard to para 2 of this QR & TDs with NIJ 0117.01 or higher value of the parameter will be accepted.</p>	<p>OEM to furnish NATO STANAG 2920 or MIL Standard 662F or NIJ 0117.01 or NATO APE 2920 test certificate</p> <p>To be checked physically by BOO by relevant test certificates from NABL accredited lab /Indian Govt Lab/ international accredited lab</p>
1.1)	<p>Bomb suit should be designed to protect against IEDs with acceptable standards of ergonomics, optics, head protection; spine protection, fragmentation protection, blast integrity, electrostatic discharge safety, flammability safety and Drag rescue features.</p>	<p>OEM to furnish live test reports from NABL/ international accredited lab for protection standards offered by the Bomb Suit and OEM to provide undertaking that no up-radiation/ changes in terms of ballistic properties have taken place in the Bomb Suit offered since the last date of the test report.</p> <p>Drag and rescue features to be physically checked by the BOO.</p>
1.2)	<p>Protection against Threats: The Bomb Suit should offer protection against following effects of bomb/IED explosion.</p> <ul style="list-style-type: none"> • Fragmentation • Impact. • Blast Over pressure. • Thermal effect. 	<p>To be checked physically by BOO by relevant test certificates from NABL/Indian Govt Lab/international accredited lab for protection standards offered by the Bomb Suit.</p>

Ser No	QRs	Trial Directives
1.3)	<p>Body Protection: Following parts of the body should be protected from the explosion effect of bomb/IEDs:-</p> <ul style="list-style-type: none"> • Arms • Feet, Lower leg, Knees & Thighs. • Chest, Groin & Collar. • Spinal cord. • Face (with helmet & visor). • Head, Thorax, Abdomen and Pelvis 	OEM to furnish live test reports from NABL/ Indian Govt Lab /international lab for protection standards offered by the Bomb Suit.
1.4)	The suit should consist of the following items, which collectively make a complete garment:-	
(a)	Jacket with attached adjustable collar & patch chord, with additional plate for enhanced protection of chest, neck and groin	The subject (Bomb technician) will be made to wear the suit after warming up. The subject should be able to perform the EOD task mandated by BOO. During and after completion of the task all parts must be intact and allow technicians to execute RSP without any hindrance during operations.
(b)	Trousers adjustable	The subject (Bomb technician) will be made to wear the suit after warming up. The technician should be able to adjust the trousers as per his fitting and capable of performing the EOD task.
(c)	Foot protection with the help of boot over shoes or similar arrangement.	The subject (Bomb technician) will be made to wear the boot over shoes. The subject will be made to walk and run .The subject should be capable of performing the EOD task without any discomfort. The boot over shoes should be capable of providing complete foot protection from heat ,blast and fragmentation waves and will be tested with relevant test certificate

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Ser No	QRs	Trial Directives
.1.4) ✓	<p>(d) Helmet consisting of following :-</p> <p>(i) Visor (Replaceable when damaged).</p> <p>- The visor should have arrangement for opening without getting detached from helmet.</p> <p>(ii) Same helmet to be capable for various fitting sizes</p> <p>(iii) Visor cover. (a) For storage- For protection during storage. (b) During operation- Should be detachable for increasing protection level of visor to min 1000m/s for 17 grain V50 STANAG 2920/MIL STD 662F/APE STANAG 2920 with limited visibility.</p> <p>(iv) Balaclava.</p> <p>(v) Ear protection</p> <p>(vi) Ventilation system with Blower.</p> <p>(vii) Communication system.</p> <p>(viii) Power supply.</p>	<p>The subject (Bomb technician) will be made to wear the Helmet along with complete Bomb Suit. The subject will be made to walk, Run and perform the EOD task. The protection parameters will be verified using the test certificates produced. However operator should be able to execute EOD task without any hindrance and same will be checked by BOO. When the subject is bent and performing the task, the helmet should be intact.</p> <p>OEM to furnish NATO STANAG 2920 or MIL Standard 662F or NATO APE 2920 test certificate for Steel visor.</p> <p>To be checked physically by BOO by relevant test certificates from NABL accredited lab /Indian Govt Lab/ international accredited lab</p>

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1.4)	(ix) Minimum one front facing live video camera.	
	(x) Minimum one front facing search light.	
	(xi) Built in microphones and headphones/ integral radio communication in helmet facilitating clear communication between bomb technician and commander without comprising the comfort of the bomb technician.	
(e)	Flame resistant non-static hand gloves (detachable).	OEM certificate to be provided. Certificates to be checked by the BOO
(f)	Transit bag :- (i) Soft Carrying Bag(s) for bomb suit, helmet and cooling suit. (ii) Hard Cases for bomb suit, helmet & cooling suit.	Bomb suit will be placed in the transit bag and checked for handling during transportation.
(g)	Groin protection	The subject (Bomb technician) will be made to wear the groin protection as a part of suit .The subject will perform EOD task and there should not be any hindrance in RSP task.
(h)	Hydration bag – Min 1 ltr	The subject (Bomb technician) will be made to wear the complete suit and functionality of hydration bag will be checked.
(i)	Complete body cooling suit. (i) Cooling Trouser (ii) Cooling Jacket (iii) Cooling Balaclava for head and face. (Cooling overall having multiple items as above combined into single piece shall be accepted) (iv) Water bottles (v) Pump unit	The subject (Bomb technician) will be made to wear the complete cooling suit along with Bomb suit . the subject will be made to perform EOD tasks . The suit should provide effective cooling for minimum 30 minutes with ambient temperature at 35°C or less.

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1.4	<p>(k) Communication system. (Both wired and wireless)</p> <p>(i) Wireless hands-free (VOX) Communication without use of PTT</p> <p>(ii) Wireless range of 200 mtrs (Min)</p> <p>(iii) Hard Wire Spool 100 mtrs (Min) for wired communication.</p> <p>(iv) Control Module cum amplifier for communication system.</p> <p>(v) Recording facility for recording live communication.</p> <p>(vi) Head set</p> <p>(vii) Built in microphones and headphones/ integral radio communication in helmet facilitating clear communication between bomb technician and commander without any hindrance in performing EOD task.</p> <p>(l) Atleastthree different sizes(small, medium, large) to be made available by the Firm. (User requirement to be specified at tendering stage.)</p> <p>(m) Back protector with easy adjustment/ custom fitted as per best fit for bomb technicians comfort</p>	<p>The subject (bomb technician) in the fully equipped bomb suit gear should be carrying out clear communication with commander at the ICP. The communication system should not hamper the technician while performing EOD tasks. The range of communication are as follows :-</p> <p>(a) with wire- 100 mtrs</p> <p>(b)wireless communication -- 200 mtrs</p> <p>One Bomb technician will be made to wear the Bomb suit (Indian medium size) and perform the EOD tasks. The Operators fitting and ability to perform EOD tasks without suit causing any inconvenience will be checked by BOO.</p> <p>The subject (Bomb Technician) will be made to wear back protector and physically BOO to check the same.</p>

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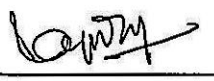




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2)	The suit protection performance figures should be compliant to NIJ 0117.01 /STANAG 2920/ MIL 662F/ NATO APE 2920 for below mentioned parameters:-	OEM to furnish test report from NABL/ international lab for protection standards offered by the Bomb Suit.
	(i) Front Chest – for 17 grain V0 simulator -1800 m/Sec or better	To be checked physically by BOO by relevant test certificates.
	(ii) Front Groin-- for 17 grain V0 simulator -1800 m/Sec or better	To be checked physically by BOO by relevant test certificates.
2.1)	The suit protection performance figures should be of NIJ 0117.01/STANAG 2920/ MIL662F/ NATO APE 2920 compliant and 17 grain fragment simulator V50 protection levels to be as under-	OEM to furnish test report from NABL/ international lab for protection standards offered by the Bomb Suit.
	(i) Jacket Front 550M/s. or Better	To be checked physically by BOO by relevant test certificates.
	(ii) Jacket Rear 525 M/sec. or Better	To be checked physically by BOO by relevant test certificates.
	(iii) Sleeves Front – 525 M/Sec or better	To be checked physically by BOO by relevant test certificates.
	(iv) Sleeve Rear- 450 M/s. or Better	To be checked physically by BOO by relevant test certificates.
	(v) Collar Front – 850 M/Sec or better	To be checked physically by BOO by relevant test certificates.
	(vi) Collar rear : - 450M/s.	To be checked physically by BOO by relevant test certificates.
	(vii) Front Groin- 500 M/s. or Better	To be checked physically by BOO by relevant test certificates.
	(viii) Rear Groin- 325 M/s. or Better	To be checked physically by BOO by relevant test certificates.
	(ix) Trousers Front Thighs– 625 M/Sec or better	To be checked physically by BOO by relevant test certificates.
	(x) Trousers Front Shins – 525M/Sec or better	To be checked physically by BOO by relevant test certificates.
	(xi) Rear Trousers- 325 M/s. or Better.	To be checked physically by BOO by relevant test certificates.
	(xii) Boots- 450 M/Sec or better	To be checked physically by BOO by relevant test certificates.

Ser No	QRs	Trial Directives
2.2)	The Bomb suit should offer protection against shock wave and blast overpressure..	OEM to furnish report from NABL/ international lab for protection standards offered by the Bomb Suit against shock wave and blast overpressure.
3.	Cooling Suit	
3.1	The Cooling Suit kit should include-	Each of these items will be physically checked by the BOO. Thereafter the subject will be made to wear the cooling suit along with complete bomb suit and will be made to perform EOD tasks. The cooling suit should provide effective cooling for at-least 30 mins before the next bottle is replaced.
(a)	Long sleeve shirt with cooling tubes sewn into trunk and arms.	
(b)	Long legged pants with cooling tubes sewn into legs.	
(c)	A closed fitted open faced hood for head.	
(d)	Cooling unit and pouch. Pouch should be on /over the bomb suit..	
(e)	Two water bottles.	
(f)	Battery pack and charger.	
(g)	Carrying bag.	
(h)	Water pump.	

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3.2) ✓	(a) Material: Manufactured from a suitable flame retardant knitted fabric. Should have negligible pilling, flexible, very soft, comfortable to wear and can be worn under virtually any outer clothing without encumbrance. It should be available as detachable shirt, pant & hood. The fabric should be washable.	To OEM to furnish self declaration certificate regarding the material of the suit as per specification. The individual item part of the cooling suit will be inspected by the BOO but the functionality will be checked as integrated suit along with Bomb suit to perform EOD tasks.
	(b) The cooling suit should have integrated tubes for circulation of cooling water with a battery-operated pump to mitigate heat stress of the bomb technician	The tubes will be checked physically. but the functionality will be checked as a integrated suit along with Bomb suit to perform EOD tasks.
	(c) The cooling suit should provide effective cooling for minimum 30 minutes with ambient temperature at 35°C for less.	The subject (Bomb technician) to wear the cooling suit and bomb suit over it . the subject to perform EOD tasks and cooling period of the suit will be checked by the BOO with the help of stop watch while the subject undergoes EOD tasks.
	(d) A powerful battery pack (rechargeable/ Dry battery) to be provided with the minimum operation capacity of 2.5 hrs.	The subject (bomb technician) with complete bomb suit worn and perform EOD tasks ,the capacity of Battery pack will be tested from the starting of EOD task till 2.5 hrs ,it should be in functional condition. The time will be noted with the help of stop clock.
	(e) A spare battery pack with charger may also be provided with cooling suit.	The charger will be physically checked by BOO for functionality.
	(f) Requisite arrangement to be available to attach cooling unit and water bottle to the bomb suit without causing inconvenience and interference to the bomb technician ability to carry/ operate other eqpt and mobility of the bomb technician	The subject (Bomb technician) in complete suit with this arrangement will be made to perform EOD tasks. During the same it should not cause inconvenience to bomb technician.

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3.2)	(g) Should be available indifferent sizes to suit user's requirement.	To be checked physically by BOO.
	(h) The peak heat removal rate of full cooling suit should be at least 270 watts or better.	OEM to furnish test reports from NABL/ international accredited lab for cooling standards offered by the cooling Suit.
	(i) The cooling suit pump should be operate on dry or rechargeable batteries.	To batteries be displayed and physically checked by BOO.
	(k) A second compatible water/ice bottle should be the supplied with the cooling suit	To spare water bottle will be displayed and physically checked by BOO.
	(l) The cooling source should be ice/water.	To be checked physically by BOO.
	(m) Spare connect or for water circulation tube should be supplied with cooling suit.	To be checked physically by BOO.
	(n) Weight of complete cooling suit (i.e. suit, cooling unit, ice cubes with Water and battery pack) should not exceed 5kgs.	The digital calibrated weighing machine will be used by The BOO to check the same.
4.	Helmet	
4.1	Helmet components: Should include following items: -	The components of Helmet will be physically checked by the BOO and there after the subject (Bomb technician) will be made to wear the helmet along with the complete bomb suit and perform EOD tasks during which all the components should function .The BOO will check the functions of each component.
(a)	Visor	
(b)	Adjustable helmet size	
(c)	Visor cover.	
(d)	Balaclava.	
(e)	Ear protection.	
(f)	Ventilation system with Blower.	
(g)	Communication system.	
(h)	Power supply.	
(i)	Minimum one front facing live video camera.	
(k)	Minimum one front facing adjustable search light.	
(l)	Built in microphones and headphones/ integral radio communication in helmet facilitating clear communication between bomb technician and commander without comprising the comfort of the bomb technician	

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Ser No	QRs	Trial Directives
4.2	Ballistic EOD Helmet protection performance figures should be NIJ 0117.01/STANAG 2920/ MIL 662F/NATO APE 2920 for 17 grain V50 simulator compliant for standards as mentioned below :-	OEM to furnish test report from NABL/ international accredited lab for protection standards offered by the helmet..
(a)	Helmet- 600 M/Sec or better	To be checked physically by BOO by relevant test certificates.
(b)	Visor- 700 M/Sec or better	To be checked physically by BOO by relevant test certificates.
(c)	Weight with visor not more than 6 Kgs	The BOO to use the digital calibrated weighing machine to check the same.
(d)	The system should have an arrangement for breathing in a hazardous gas environment.	Firm to bring all accessories to be used during breathing in hazardous gas environment and demonstrate to the User. (To be checked physically by BOO)
(e)	Ventilation and Demisting. A helmet mount fan should provide effective ventilation with control unit within easy reach and vicinity of the bomb technician. Should be provided with an effective demisting arrangement.	To be checked physically by BOO.
(f)	The helmet should have built in microphone and speaker for operator to hear all the conversation taking place in the vicinity and automatic decibel cutout sys(85 to 95db) to protect the ears of the operator.	OEM to furnish test reports from Indian Govt Lab/ NABL/ international accredited lab for protection standards offered. BOO to be check the certificate.

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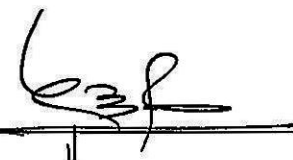






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Ser No	QRs	Trial Directives
4.2	(g) Two way Communication It should provide a two way communication on radio and on wire between operator and base station up to a min distance of 100 meters wired and 200 mtrs wireless. (LOS). Built in microphones and headphones/ integral radio communication in helmet facilitating clear communication between bomb technician and commander without comprising the comfort of the bomb technician	The subject (bomb technician) will be made to wear the complete bomb suit. The subject should be able to clearly communicate with base station and ranges as mentioned in QR will be checked by BOO.
	(h) Search Light . The helmet must be fitted with min one front facing adjustable search light for working in dark condition.	The BOO to check the item for functionality.
	(i) Live Video Camera Helmet must have min one front facing video camera of min 2 Mega pixel configuration for Live Video transmission in 480P or better to base station located at a distance of 200 mtrs LOS and 100 mtrs in BUA (Non-line of sight). The system should be equipped with an electronic system-digital transmission- so that the feed from the operator can be relayed to the base station in Built up Areas (Non line sight) without any interference. The system should also be equipped with video recording capability. Min 10 inch size of screen with all accessories to be provided for base.	To be checked physically by BOO.
	(k) The system must have hand operable arrangements for users to operate electronic features including light, audio levels, ventilation easily.	The system must have hand controlled panel/ within easy reach and vicinity of the operator for electronic features including light, audio levels, ventilation. No dangling wires to be present, more than 15 cm.

Ser No	QRs	Trial Directives
4.2)	(l) Provision for water intake facility to be provided.	To be checked physically by BOO.
	(m) Provided with suitable padding arrangement/other custom fit and chin strap arrangement for the comfort of the wearer.	To be checked physically by BOO.
	(n) Quick release Arrangement/ mechanism to open and close the visor.	To be checked physically by BOO.
	(o) 10 x Spare balaclavas or one spare helmet liner hood (where applicable) should be provided with the bomb suit helmet.	To be checked physically by BOO.
5.	Jacket	
	(a) Arrangements to be made available for immediate removal/quick release of the jacket by the wearer.	To be checked physically by BOO.
	(b) The jacket should have pouches/molle straps for keeping working tools	To be checked physically by BOO.
	(c) It should have high quality Ballistics inserts for chest protection, groin protection, collar protection, sleeves , flame resistant and anti-static hand gloves, arrangements to be made available to remove the ballistics inserts from the jacket	To be checked physically by BOO.
	(d) Outer cover of jacket to be made in good quality washable material preferably NOMEX IIIA, Silicon blended Kevlar/Aramid or better fabric.	OEM to submit certificates of supplier of Outer cover of jacket from which it has been procured. To be checked physically by BOO by relevant test certificates from National/ international accredited lab.
	(e) Moulded chest protection plate, groin protection plate and collar protection plate should be provided. Blast plates should be molded from woven roving with added fire retardant polymer/ GRP/Composite material or better without metal.	To be checked physically by BOO by relevant test certificates for material composition and fire retardant from Indian Govt Lab/ NABL/ International accredited lab.
	(f) Velcro/quick release arrangements with adjustment strap may be provided for comfortable fittings.	To be checked physically by BOO.

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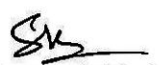
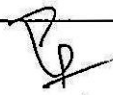

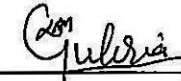




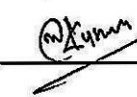
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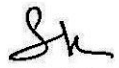




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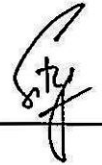


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(g)	<p>The Jacket should have ballistics inserts made from light weight multilayered, water repellent, Aramid, Kevlar blend non static fiber or better.</p> <p>(i)<u>Outer cover</u>: Kevlar blend fabric, with Kevlar thread or better.</p> <p>(ii)<u>Weight</u>: Not more than 15 kg (without armor plate)</p> <p>(iii)<u>Colour</u>: Olive green/Desert Tan/Navy Blue/Black etc.</p> <p>(iv)<u>Size</u>: Should be available in different sizes to suit the user's requirement.</p> <p>(v)<u>Blast plate pouch</u>: 725 Denier Nylon or equivalent and should be water and fire retardant.</p> <p>(vi)<u>Attached system</u>: Nylon webbing & Velcro, Hook & Loops, Acetal.</p> <p>(vii)<u>Soft components</u>: Layered Aramid fiber contained in water and fire retardant fabric.</p> <p>(viii)<u>Rigid component</u>: Polycarbonate, Foam, UHMPE (Ultra High Molecular Weight Polyethylene) or better material.</p>	To be checked physically by BOO by relevant test certificates from NABL/ international accredited lab.
6.	Trousers	
(a)	The trousers should be adjustable catering for different sizes	The subject (Bomb Technician) will be made to wear the trousers. And all the parameters mentioned in QR will be physically checked by the BOO.
(b)	Immediate removable/quick release of the trouser should be achievable, break way zip and Velcro tape may be provided for trouser fitments.	To be checked physically by BOO.
(c)	The trousers may be designed for thigh protection, leg protection, shoulder strap with buckle and Velcro tape adjustments added with waistband.	To be checked physically by BOO.
(d)	<p>The Trouser should have ballistics inserts made from light weight multilayered, water and fire retardant, Aramid, Kevlar blend static reducing fibre and shin guard HAP.</p> <p>(i) <u>Outer cover</u>: Kevlar blend fabric, with Kevlar thread or better.</p> <p>(ii) <u>Weight</u>: Not more than 9 kg (without armor plate)</p> <p>(iii) <u>Colour</u>: Olive green/Desert Tan/Navy Blue/Black etc.</p> <p>(iv) <u>Size</u>: Should be available in different sizes to suit the user's requirement.</p> <p>(v) <u>Knee & Shin Guard cover</u>: Silicon filled aramid/Kevlar blended fabric.</p> <p>(vi) <u>Attached system</u>: Nylon webbing & Velcro, Hook & Loops, Acetal.</p> <p>(vii) <u>Soft components</u>: Layered Aramid fiber contained in water and fire retardant nylon.</p> <p>(viii) <u>Shin Guard</u>: Polycarbonate, Foam, UHMPE (Ultra High Molecular Weight Polyethylene or better material.</p>	To be checked physically by BOO by relevant test certificates from NABL/ international accredited lab.

Ser No	QRs	Trial Directives
7.	Power Pack	
	<p>7.1 Suitable power packs should be provided with the suit which can provide min 2.5hrs of working time with all systems switched on. There should be an arrangement at the suitable location on the BD suit to accommodate it, which should not cause inconvenience and interference to the bomb technician's ability to carry/ operate other eqpt and mobility of the bomb technician. The power pack should have battery status indicator on it or on the hand worn controller within the clear vision of the bomb technician. The Battery type should be rechargeable and commercially available off the shelf. The powerpack should have outlets:-</p>	<p>(a) Power Packs (batteries) endurance for 2.5 hrs working of bomb suit with all systems switched on to be checked physically by BOO. (b) OEM/Bidder undertaking for commercial availability of batteries to be submitted.</p>
	(a) Dedicated to helmet ventilation.	To be checked physically by BOO.
	(b) For all accessories.	To be checked physically by BOO.
	(c) Recharging: - A charger should be provided. Also, a compatible charger for plugging into a 12V-DC source such as a cigarette lighter	To be checked physically by BOO.

Ser No	QRs	Trial Directives
8.	The complete weight of the suit along with complete accessories should not exceed 45 Kgs.	To be checked physically by BOO.
9.	<u>Back Bone Protection</u> The suit should provide a high impact back bone protection arrangement.	OEM to furnish test reports from NABL/ international accredited lab for protection standards offered.
10.	<u>Operational Time.</u> The suit with all accessories should take no more than 10 minutes to wear when assisted by a trained technician.	The BOO will use the stop watch to ascertain the time. The subject (Bomb Technician) will be provided with complete suit laid on the table. The subject will be provided with trained technician for assistance. The timings to don the suit will be noted by BOO.
11.	<u>Static Discharge</u> The bomb suit should have protection against static charge	OEM to furnish test reports from NABL/ international accredited lab to this effect and self declaration certificate.
12.	All replaceable items/accessories of the bomb suit that provide protection, should be of the same or better protection levels	OEM to furnish test reports from NABL/ international accredited lab to this effect.
13	<u>Drag Rescue feature.</u> Drag rescue device should be incorporated in a Bomb Suit for the purpose of moving/ mobilizing an incapacitated bomb technician.	OEM to furnish test reports from NABL/ international accredited lab to this effect. To be physically checked by the BoO.

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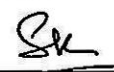

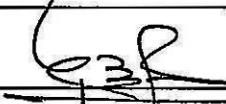
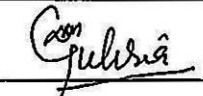



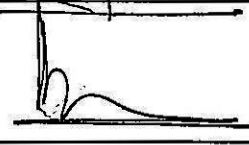

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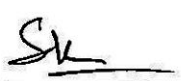
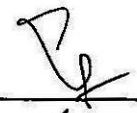







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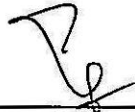

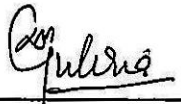
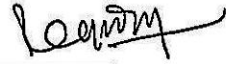
Ser No	QRs	Trial Directives
14.	<p>Comfort and Fitting. The Bomb Suit should be comfortable to wear and should not cause inconvenience and interference to Bomb Technicians ability to carry/ operate other eqpt and mobility of the bomb technician</p>	<p>The comfortness and fitting of the Bomb Suit will be tested as enumerated below:-</p> <p>Donning and quick Doffing Test:-</p> <p>(a) One sample of bomb suit offered by the supplier shall be submitted for testing.</p> <p>(b) One subject (Bomb Technician) is required to test bomb suite. The test subject selected for bomb suit being tested shall be appropriate based on the supplier's sizing chart.</p> <p>(c) An armless chair is required.</p> <p>(d) A timer is required.</p> <p>(e) Test subject initially shall wear loose-fitting, nonrestrictive clothing.</p> <p>(f) The subject shall review and practice the supplier's donning, doffing, and adjustment procedures prior to the start of the test.</p> <p>(g) The donning test shall begin with the subject sitting in an armless chair with the bomb suit in front of the subject on the floor and out of the package.</p> <p>(h) The subject may be assisted by a single donning assistant, and the chair may be used during the process.</p> <p>(i) At a cue from the BOO, the subject shall rise from the chair and begin donning the bomb suit with all accessories as mentioned in Ser No 1 to 7 above in accordance with the supplier's instructions. Timing shall start when the subject receives the cue from the test administrator to begin donning the bomb suit.</p> <p>(k) After completely donning the bomb suit, the subject shall cue the test administrator.</p> <p>(l) Timing shall cease at the cue from the subject. The BOO shall record the donning time.</p> <p>(m) The quick doffing test shall begin with the subject wearing the properly donned bomb suit and sitting in an armless chair.</p>



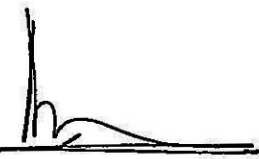
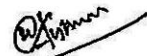










Ser No	QR's	Trial directives
14)		<p>(n) At a cue from the BOO, the subject shall rise from the chair and begin doffing the bomb suit in accordance with the supplier's instructions. Timing shall start when the subject receives the cue from the BOO to begin doffing the bomb suit.</p> <p>(o) The subject shall doff the bomb suit unassisted. The chair may be used during the process.</p> <p>(p) After completely doffing the bomb suit, the subject shall cue the BOO.</p> <p>(q) Timing shall cease at the cue from the subject. The BOO shall record the doffing time.</p> <p>(r) The subject shall perform donning and quick doffing of the bomb suit in three trials for the appropriate bomb suit size.</p> <p>(s) The result of the test is the average time of the three trials for donning and quick doffing.</p> <p>(t) The donning and quick doffing times for bomb suit shall be recorded and reported.</p> <p>(u) The average of the three trials for donning of each suit shall be recorded and reported.</p> <p>(v) The suit with all accessories should not take more than 10 minutes for donning and 5 minutes for doffing when assisted by a single donning assistant.</p>

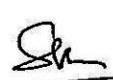












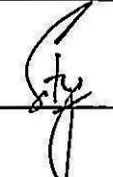
Ser No	QRs	Trial Directives
14)		<p>Coin Recovery Test:-</p> <p>(a) One sample of the size recommended by BOO of bomb suit offered by the supplier shall be submitted for testing.</p> <p>(b) Bomb suit shall be submitted for testing with all required accessories as mentioned in Ser No 1 to 7.</p> <p>(c) One subject (Bomb Technician) is required to test bomb suit . The subject selected for each bomb suit size being tested shall be appropriate based on the supplier's sizing chart.</p> <p>(d) A coin, whichever available is required for this evaluation.</p> <p>(e) The subject shall don the bomb suit with all required accessories as mentioned in Sr no 1 to 7. A coin is to be placed directly behind the subject at a distance of 30 cm (12 inches) from the back of the heels to the center of the coin.</p> <p>(f) The subject may bend over to see the coin and is allowed one and only one step in any direction. The subject shall turn around and pick the coin up.</p> <p>(g) While picking up the coin by the subject all the accessories attached to the bomb suit, velcros, straps ,zips and various connectors are required to be intact, unbroken and undamaged. The helmet should not show any evidence of slack and loose fitting. Complete Bomb Suit alongwith complete accessories should not show any evidence of any hole, cracking, spalling or damage. Protective elements shall remain attached to the bomb suit and maintain shape integrity. No gaps that expose the bomb technician will be permitted.</p>









Ser No	QRs	Trial Directives
14)		<p>Mobility Test:-</p> <p>(a) One sample of the size recommended by BOO of bomb suit offered by the supplier shall be submitted for testing.</p> <p>(b) Bomb suit shall be submitted for testing with all required accessories as mentioned in Ser No 1 to 7.</p> <p>(c) One subject (Bomb Technician) is required to test bomb suit. The subject selected for each bomb suit size being tested shall be appropriate based on the supplier's sizing chart.</p> <p>(d) The subject shall don the bomb suit.</p> <p>(e) The subject will be made to walk for a distance a 100m. While walking subject will be persistently communicating with the commander.</p> <p>(f) While walking all the accessories attached to the bomb suit, velcros, straps zips and various connectors are required to be intact, unbroken and undamaged. The helmet should not show any evidence of slack and loose fitting. Complete Bomb Suit alongwith complete accessories should not show any evidence of any hole, cracking, spalling or damage. Protective elements shall remain attached to the bomb suit and maintain shape integrity. No gaps that expose the bomb technician will be permitted. Loss of communication will also be not permitted.</p> <p>(g) The subject will again be made to run for a distance a 100m. While running subject will be persistently communicating with the commander.</p> <p>(h) While walking all the accessories attached to the bomb suit, velcros, straps ,zips and various connectors are required to be intact, unbroken and undamaged. The helmet should not show any evidence of slack and loose fitting. Complete Bomb Suit alongwith complete accessories should not show any evidence of any hole, cracking, spalling or damage. Protective elements shall remain attached to the bomb suit and maintain shape integrity. No gaps that expose the bomb technician will be permitted. Loss of communication will also be not permitted.</p> <p>(i) Incapacitated doffing:</p> <p>The subject should wear the complete bomb suit with all its accessories and lie in face up position. One trained assistant shall remove the bomb suit (excluding cooling suit) in less than 2 minutes without injuring the subject.</p> <p>The same test to be conducted in face down position also.</p>






Ser No	QRs	Trial directives
15.	Miscellaneous. The firm should be able to provide the following as applicable, along with the equipment: -	
(a)	Spare Sets of all kinds of rechargeable batteries used in suit including all accessories	To be checked physically by BOO. The OEM must specify the list of spare parts provided by them with Bomb Suit and the life of rechargeable batteries. The manufacturer must submit list of cleaning kit tools required for Bomb Suit.
(b)	All operator level maintenance tools	To be checked physically by BOO, The manufacturer must submit list of special maintenance tools required for Bomb Suit.
(c)	Training aids – charts, slides, training brochure, training work model, blow up diagram, video films etc, if any	To be checked physically by BOO, manufacturer to submit training aid list available with them for Bomb Suit.
(d)	Physical training in India	Firm to provide as per Acceptance of Tender.
(e)	Proof schedule to include details of testing and acceptance criteria by the supplier and manufacturer.	To be physically checked by BOO
(f)	Technical Manual and user handbook in English giving shelf life and full description of the item	To be checked physically by BOO during technical bid evaluation, manufacturer to give options of providing technical manual in local language. (Hindi, English)
(g)	Specification for packing handling/transportation/ storage	Manufacturer to provide details of for packing handling/transportation/ storage.
(h)	Cleaning kit tools required for Bomb Suit.	To be physically checked by BOO and the manufacturer must submit list of cleaning kit tools required for Bomb Suit.
16.	Validity and authenticity of lab test reports and certificates:	BOOs to check
17.	The OEM should also confirm that no product changes related to ballistic rating/ testing or material have taken place since the last test.	To be checked physically by BOO.

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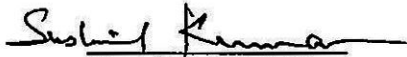
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Ser No	QRs	Trial directives
18.	All the test reports and certificates must invariably have the name, address, web site, e-mail address and contact Numbers of the testing agencies/lab.	To be checked physically by BOO.
19	<u>Warranty</u> -All covered warranty for three years from acceptance of goods.	OEM to provide undertaking for the same. BOO to check the certificates.
20	Shelf Life – Min 05 years.	OEM to provide undertaking for the same. BOO to check the certificates.


 (Sushil Kumar), PSO
 BPR&D



 (Rajat Jain), Comdt
 CRPF

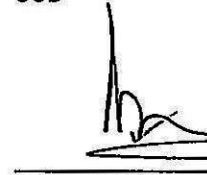

 (Vijay Kumar Kaswa), DC
 SSB

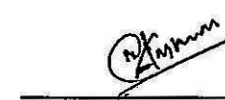

 (Ravinder Kumar), AC
 ITBP


 (Insp BC Roy Choudhary)
 BSF



 (Sub Balwan Singh)
 LOAR


 (Major Satya Godara)
 SC (WE), HQ NSG


 (Major Adil Khan)
 OC, BD Unit


 (SI Neeraj Kumar)
 CISF

APPROVED / NOT APPROVED


 (MA Ganapathy, IPS)
 DG, NSG