

**मुख्यालय राष्ट्रीय सुरक्षा गारद**  
(संभरण शाखा : ऑर्डनेंस अनुभाग)

**बम्ब सुट के परिशोधित गुणात्मक आवश्यकता (क्यूआर) और परीक्षण निर्देशों (टीडी) के मसौदे को गृह मंत्रालय की वेबसाइट पर डालना**

1. कृपया गृह मंत्रालय, पीएम डिविजन के पत्र सं. IV-24011/12/2011-Prov.I दिनांक 05 अक्टूबर 2016, पत्र सं. IV-24011/12/2011-Prov.I दिनांक 13 जून, 2012 और पत्र सं. 11012/02/2009-Fin-I/Prov-I-17 दिनांक 02 जनवरी, 2018 का संदर्भ लें।
2. बम्ब सुट के परिशोधित गुणात्मक आवश्यकता (क्यूआर) और परीक्षण निर्देशों (टीडी) में संशोधन के लिए तकनीकी विशेषज्ञों के उप समूह की बैठक मुख्यालय राष्ट्रीय सुरक्षा गारद में दिनांक 07 अगस्त 2024 को 1100 बजे आयोजित हुई।
3. बैठक के दौरान उप समूह ने कहा कि विक्रेताओं की टिप्पणियों/सुझावों को आमंत्रित करने के लिए बम्ब सुट के परिशोधित गुणात्मक आवश्यकता (क्यूआर) और परीक्षण निर्देशों (टीडी) के मसौदे को 15 दिनों के लिए राष्ट्रीय सुरक्षा गारद के साथ-साथ गृह मंत्रालय की वेबसाइट पर डाला जाए।
4. पीएम डिविजन के उपर्युक्त संदर्भित पत्रों के अनुसार बम्ब सुट के परिशोधित गुणात्मक आवश्यकता (क्यूआर) और परीक्षण निर्देशों (टीडी) का मसौदा संलग्न परिशिष्ट के अनुसार गृह मंत्रालय की वेबसाइट पर डालने हेतु प्रिंटेड कॉपी तथा सॉफ्ट कॉपी में भेजा जा रहा है।

*प्रीप*  
*13/08/2024*  
(पी.सी. शर्मा)  
ग्रुप कमांडर  
Tele: 011-25671640  
Email: gcproc@nsg.gov.in

संलग्नक : उपर्युक्त

**अनुभाग अधिकारी, (IT Cell), एनआईसी, नार्थ ब्लॉक, नई दिल्ली**  
Email : [soit@nic.in](mailto:soit@nic.in)

संख्या: पी/604/389/24/Bomb Suit/संभरण(ऑर्डनेंस)/एनएसजी/ E-141217/ दिनांक: 13 अगस्त 24  
1955

**बम्ब सुट के परिशोधित गुणात्मक आवश्यकता (क्यूआर)/परीक्षण निर्देशों (टीडी) के मसौदे पर विक्रेताओं की टिप्पणियों का आमंत्रण**

1. आपको सूचित किया जाता है कि बम्ब सुट के परिशोधित गुणात्मक आवश्यकता (क्यूआर) और परीक्षण निर्देशों (टीडी) के मसौदे पर फर्मों/विक्रेताओं की टिप्पणियां आमंत्रित है। सभी फर्मों से निवेदन है कि नीचे दिए गए प्रारूप में वे अपनी टिप्पणियां भरकर **OEM certificate** सहित ई-मेल पता **scord@nsg.gov.in** या **gcproc@nsg.gov.in** पर भेजें।

गुणात्मक आवश्यकता (क्यूआर)	परीक्षण निर्देश (टीडी)	फर्म द्वारा टिप्पणियां

2. आपसे अनुरोध है कि वेबसाइट पर प्रदर्शित होने की तारीख से 15 दिनों के भीतर अपनी टिप्पणियां भेजें। उप समूह कमेटी की बैठक में उपर्युक्त उपकरण/हथियार के गुणात्मक आवश्यकताओं/परीक्षण निर्देशों को अंतिम रूप देने पर विचार किया जा रहा है।

*प्रदीप*  
*13/08/2024*

(पी.सी. शर्मा)

ग्रुप कमांडर

Tele: 011-25671640

Email:gcproc@nsg.gov.in

दिनांक : 13 अगस्त 2024

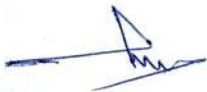


**REVISED DRAFT QR AND TRIAL DIRECTIVES FOR BOMB SUIT : 07 AUG 2024**

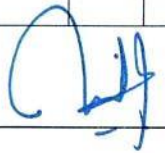
Sr. No.	QR's	Trial directives
1)	<p>Bomb Disposal Suit is used to protect the operator/technician from blast/heat &amp; fragmentation effect of bomb/ IED (Improvised Explosive Device) during handling of bomb/ IED.</p> <p>The Bomb suit to be NIJ 0117.01 or NATO STANAG 2920 or Mil standard 662F or NATO APE 2920 compliant.</p> <p>With regard to para 2 of this QR &amp; TD or higher value of the parameter will be accepted.</p>	<p>OEM to furnish NIJ 0117.01 or NATO STANAG 2920 or MIL Standard 662F or NATO APE 2920 test certificate.</p> <p>To be checked physically by BOO by relevant test certificate 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><u>Protection against Threats:</u> The Bomb Suit should offer protection against following effects of bomb/IED explosion.</p> <ul style="list-style-type: none"> <li>· Fragmentation.</li> <li>· Impact.</li> <li>· Blast Over pressure.</li> <li>· Thermal effect.</li> </ul>	<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>



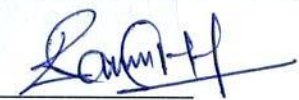



Sr. No.	QR's	Trial directives
1.3)	<p><u>Body Protection:</u> Following parts of the body should be protected from the explosion effect of bomb/ IEDs:-</p> <ul style="list-style-type: none"> <li>· Arms.</li> <li>· Feet, Lower leg, Knees &amp; Thighs.</li> <li>· Chest, Groin &amp; Collar.</li> <li>· Spinal cord.</li> <li>· Face (with helmet &amp; visor).</li> <li>· Head, Thorax, Abdomen and pelvis</li> </ul>	OEM to furnish live test reports from NABL/ international lab for protection standards offered by the Bomb Suit.
1.4)	<p>The suit should consist of the following items, which collectively make a complete garment:-</p> <p>(a) Jacket with attached collar &amp; patch chord, with additional plate for enhanced protection of chest, neck and groin</p> <p>(b) Trouser adjustable</p> <p>(c) Foot protection with the help of boot over shoes or similar arrangement.</p>	<p>The subject (Bomb Technician) will be made to wear the suit after warming up. The subject should be able to perform the BDD 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.</p> <p>The subject (Bomb technician) will be made to wear the suit after warming up. The technician should be able to adjust the trouser as per his fitting and capable of performing the EOD task.</p> <p>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.</p>











Sr. No.	QR's	Trial directives
	<p>(d) Helmet consisting of following : -</p> <p>(i) Visor (Replaceable when damaged). * 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. For Storage – for protection during storage. 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>(ix) Minimum one front facing live video camera.</p> <p>(x) Minimum one front facing search light.</p> <p>(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.</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 bend 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 certificate from NABL accredited lab/ Indian Govt lab/ International accredited lab.</p>
	<p>(e) Flame resistant non-static hand gloves (detachable).</p>	<p>OEM certificate to be provided. Certificate to be checked by the BOO.</p>





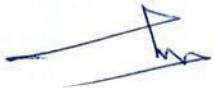
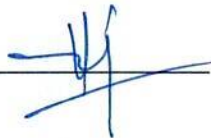




Sr. No.	QR's	Trial directives
	(f) Transit bag :- (i) Soft Carrying Bag(s) for bomb suit, helmet and cooling suit. (ii) Hard Cases for bomb suit, helmet & cooling suit.	Bomb suit will be placed in the transit bag and checked for handling during transportation.
	(g) Groin protection	The subject (Bomb 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.
	(j) 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.
















Sr. No.	QR's	Trial directives
	(k) Communication system. (Both wired and wireless) (i) Wireless hands-free (VOX) Communication without use of PTT (ii) Wireless range of 200 mtrs (Min) (iii) Hard Wire Spool 100 mtrs (Min) for wired communication. (iv) Control Module cum amplifier for communication system. (v) Recording facility for recording live communication. (vi) Head set (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.	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 :-  (a) with wire – 100 mtrs (b) wireless communication – 200
	(l) At least three different size (small, medium & large) to be made available by the Firm. (User requirement specified at tendering stage.)	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.
	(m) Back protection with easy adjustment/ custom fitted as per best fit for bomb technician comfort.	The subject (bomb technician) will be made to wear back protectors and physically BOO to check the same.
2)	The suit protection performance should be as per NIJ 0117.01/ NATO STANAG 2920/MIL 662F/ NATO APE 2920 for below mentioned parameters:	OEM to furnish test reports from NABL/ international lab for protection standards offered by the Bomb Suit.
	(i) Front Chest for - 17 grain V50 simulator – 1100 M/sec or better	To be checked physically by BOO by relevant test certificates.
	(ii) Front Groin for- 17 grain V50 simulator - 1100 m/Sec or better	To be checked physically by BOO by relevant test certificates.

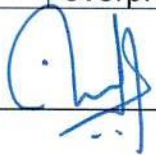

  


  







Sr. No.	QR's	Trial directives				
2.1)	The suit protection performance figures should be NIJ 0117.01/ STANAG 2920/ MIL Standard 662F/ NATO APE 2920 compliant and fragment simulator V50 protection levels to be as under-	OEM to furnish min two test reports from NABL/ international lab for protection standards offered by the Bomb Suit.				
	<b>Projectile Mass</b>	<b>Protection Area Description</b>	<b>Velocity</b>	<b>Body Landmarks Medial/Lateral</b>	<b>V50 Ballistic UML</b>	
	2.9g (44gr)	Thorax/Abdomen-front medial	1100 mtr/ sec	Front throax/abdomen between bust points	1,100 m/s (3,609ft/s)	To be checked by BOO
		Pelvis – Front Medial	1100 mtr/ sec	Front pelvis between bust points		
		Neck –Front Medial	1100 mtr/ sec	Front neck between bust points		
	1.18(17 gr)	Face	700 mtr/ sec	Front head (note 1)	775m/s (2,542ft/s)	
	1.1g(17 gr)	Head	625 mtr/ sec	Entire head without face area	625m/s (2,050ft/s)	
	1.1 g(17gr)	Thorax/Abdomen -front lateral	550 mtr/ sec	Front Thorax/abdomen lateral to the bust points	550m/s (1,804ft/s)	
		Neck-front lateral	550 mtr/ sec	Front neck lateral to the bust points		
		Pelvis –front medial	550 mtr/ sec	Front pelvis lateral to the bust points		
	1.1g(17gr)	Thorax/Abdomen - rear	525 mtr/ sec	Rear Thorax/abdomen	525m/s (1,722ft/s)	
		Neck-rear	525 mtr/ sec	Rear neck		
		Legs - lower front	525 mtr/ sec	Front lower legs		
		Arms	525 mtr/ sec	Front & rear arms		
2.2)	The Bomb Suit should offer protection against shock wave and blast overpressure.	OEM to furnish reports from NABL/ international lab for protection standards offered by the Bomb Suit against shock wave and blast overpressure.				











Sr. No.	QR's	Trial directives
3.	<b>Cooling Suit</b>	
3.1	<p>The Cooling Suit kit should include-</p> <ul style="list-style-type: none"> <li>(a) Long sleeve shirt with cooling tubes sewn into trunk and arms.</li> <li>(b) Long legged pants with cooling tubes sewn into legs.</li> <li>(c) A closed fitted open faced hood for head.</li> <li>(d) Cooling unit and pouch. Pouch should be on/ over the bomb suit.</li> <li>(e) Two water bottles</li> <li>(f) Battery pack and charger.</li> <li>(g) Carrying bag.</li> <li>(h) Water Pump.</li> </ul>	<p>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 to perform EOD tasks. The cooling suit should provide effective cooling for at least 30 mins before the next bottle is replaced.</p>
3.2	<p>(a) <b>Material:</b> Manufactured from a suitable flame retardant knitted fabric. Should have negligible pilling, flexible &amp; very soft &amp; comfortable to wear and can be worn under virtually any outer clothing without encumbrance. It should be available as detachable shirt, pant &amp; hood. The fabric should be washable.</p> <p>(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.</p> <p>(c) The cooling suit should provide effective cooling or minimum 30 minutes with ambient temperature at 35°C or less.</p>	<p>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 functionally will be checked as integrated suit along with bomb suit to perform EOD tasks.</p> <p>The tubes will be checked physically. But the functionally will be checked as an integrated suit along with bomb suit to perform EOD tasks.</p> <p>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.</p>

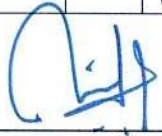


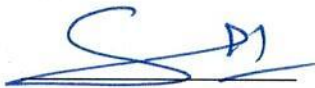






Sr. No.	QR's	Trial directives
(d)	A powerful battery pack (Rechargeable and Dry battery) may be provided with the minimum operation capacity of 2.5 hrs.	The subject (Bomb technician) with complete bomb suit worn and perform EOD tasks the capacity of battery pack will be tested from the starting of EOD 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.	To be checked physically by BOO.
(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.
(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..
(j)	The cooling suit pump should be operable on Dry and rechargeable batteries.	To be checked physically by BOO.
(k)	A second compatible water/Ice bottle should be the supplied with the cooling suit	To be checked physically 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.










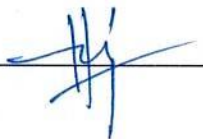


S No	QRs	Trial Directives
4.	<b>Helmet</b>	
4.1	<p><u>Helmet components:</u> Should include following items: -</p> <ul style="list-style-type: none"> <li>(a) Visor.</li> <li>(b) Adjustable helmet size.</li> <li>(c) Visor cover.</li> <li>(d) Balaclava.</li> <li>(e) Ear protection.</li> <li>(f) Ventilation system with Blower.</li> <li>(g) Communication system.</li> <li>(h) Power supply.</li> <li>(j) Minimum one front facing live video camera.</li> <li>(k) Minimum one front facing search light.</li> <li>(l) Built in microphones and headphones /integral radio</li> </ul> <p>Communication in helmet facilitating clear communication between bomb technician and commander without comprising the comfort of the bomb technician.</p>	<p>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.</p>
4.2	<p><b>Helmet :- 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: -</b></p>	
	(a) Weight with visor not more than 6 Kgs	To be checked physically by BOO.
	(b) The system should have an arrangement for breathing in a hazardous gas environment.	To be checked physically by BOO.










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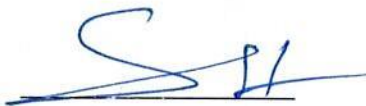
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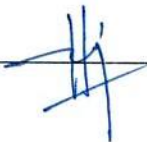


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S No	QRs	Trial Directives
(c)	<b>Ventilation and Demisting.</b> A helmet mount fan should provide effective ventilation with control unit within easy reach and vicinity of the bomb technician. Should be provided with an effective demisting arrangement.	To be checked physically by BOO.
(d)	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 NABL/ international accredited lab for protection standards offered. BOO to be check the certificate.
(e)	<b>Two way Communication</b> 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 / integrate 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.
(f)	<b>Search Light.</b> The helmet must be fitted with min one front facing search light for working in dark condition.	To be checked physically by BOO.
(g)	<b>Live Video Camera</b> Helmet must have min one front facing video camera of min 2 mega pixel configurations 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.





S No	QRs	Trial Directives
	(h) The system must have hand operatable arrangement for user 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.
	(j) Provision for water intake facility to be provided.	To be checked physically by BOO.
	(k) Provided with suitable padding arrangement/ other custom fit and chin strap arrangement for the comfort of the wearer.	To be checked physically by BOO.
	(l) Quick release arrangement/ mechanism to open and close the visor.	To be checked physically by BOO.
	(m) 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.	<b>Jacket</b>	
	(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 labs.












S No	QRs	Trial Directives
(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 certificate 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.
(g)	<p>The Jacket should have ballistics inserts made from light weight multilayered, water repellent, Aramid, Kevlar blend static reducing fiber or better.</p> <p>(i) <u>Outer cover</u>: Kevlar blend fabric, with Kevlar thread.</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 &amp; Velcro, Hook &amp; 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 Polyethelene)</p>	To be checked physically by BOO by relevant test certificates from NABL/ International accredited lab.
6.	<b>Trousers</b>	
(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.


















S No	QRs	Trial Directives
(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 adjustment added with waistband.	To be checked physically by BOO.
(d)	The trousers may be designed for thigh protection, leg protection, boot protection, shoulder strap with buckle and Velcro tape adjustments added with waistband.	To be checked physically by BOO.
(e)	<p>The Trousers 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 8 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 &amp; Shin Guard cover:</u> Silicon filled aramid/Kevlar blended fabric.</p> <p>(vi) <u>Attached system:</u> Nylon webbing&amp; Velcro, Hook &amp;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 Polyethelene or better material).</p>	To be checked physically by BOO by relevant test certificate from NABL/International accredited lab.
7.	<b>Power Pack</b>	
7.1	<p>Suitable power pack should be provided with the suit which can provide min 2.5 hrs 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 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) Dedicated to helmet ventilation.</p> <p>(b) For all accessories.</p> <p>(c) Recharging: - A charger should be provided. Also, a compatible charger for plugging into a 12V-DC source such as a cigarette lighter.</p>	<p>To be checked physically by BOO.</p> <p>To be checked physically by BOO.</p> <p>To be checked physically by BOO.</p>

  
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S 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.	<b>Back Bone Protection</b> 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.	<b>Operational Time.</b> 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.	<b>Static Discharge</b> The bomb suit should have protection against static charge	OEM to furnish test reports from NABL/ international accredited lab to this effect.
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	<b>Drag Rescue feature</b> 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.











S No	QRs	Trial Directives
14	<p><b>Comfort and fitting.</b> 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 :- 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 sizing chart.</p>
		<p>(c) An armies 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 and 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>(j) 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 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>










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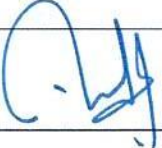


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S No	QRs	Trial Directives
		<p>(k) After completely donning the bomb suit, the bomb suit shall cue the test administrator.</p> <p>(l) Timing shall cease at the cue from the subject. The BOO shall record the donning time.</p> <p>(m) The quick doffing test shall begin with the subject wearing the properly donned bomb suit and sitting in an armless chair.</p> <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 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 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>















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S No	QRs	Trial Directives
		<p><b><u>Coin Recovery Test :-</u></b></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 at 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, spelling 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>




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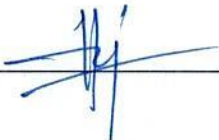

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S No	QRs	Trial Directives
		<p><b>Mobility Test :-</b></p> <p>(a) One sample of the size recommended by BOO of bomb suit offered by the supplier shall be submitted for testing.</p> <p>(b) Bomb suit shall be submitted for testing with all required accessories 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, Velcro's, 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, spelling 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, Velcro's, 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, spelling 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>










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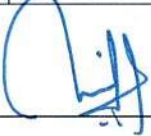
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S No	QRs	Trial Directives
		(j) Incapacitated doffing : The subject should wear the complete bomb suit with all its accessories and lie in face up position. One trained assistant shall remove the bomb suit (excluding cooling suit) in less than 3 minutes without injuring the subject. The same test to be conducted in face down position also.
15	<p><b>Miscellaneous.</b> The firm should be able to provide the following as applicable, along with the equipment: -</p> <p>(a) Spare Sets of all kinds of rechargeable batteries used in suit including all accessories</p> <p>(b) All operator level maintenance tools</p> <p>(c) Training aids – charts, slides, training brochure, training work model, blow up diagram, video films etc, if any</p> <p>(d) Physical training in India</p> <p>(e) Proof schedule to include details of testing and acceptance criteria by the supplier and manufacturer.</p> <p>(f) Technical Manual and user handbook in English giving shelf life and full description of the item</p> <p>(g) Specification for packing handling/transportation/ storage</p> <p>(h) Cleaning kit tools required for bomb suit.</p>	<p>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.</p> <p>To be checked physically by BOO, The manufacturer must submit list of special maintenance tools required for Bomb Suit.</p> <p>To be checked physically by BOO, manufacturer to submit training aid list available with them for Bomb Suit.</p> <p>Firm to provide as per Acceptance of Tender.</p> <p>To be physically checked by BOO</p> <p>To be checked physically by BOO during technical bid evaluation, manufacturer to give options of providing technical manual in local language. (Hindi, English)</p> <p>Manufacturer to provide details of for packing handling/ transportation/ storage.</p> <p>To be physically checked by BOO and the manufacture must submit list of cleaning kit tools required for bomb suit.</p>
16.	Validity and authenticity of lab test reports and certificates:	BOOs to check










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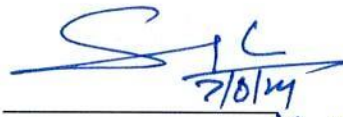



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S NO	QRs	Trial Directives
17.	The OEM should also confirm that no product changes related to ballistic rating/ testing or material have taken place since the last test.	To be checked physically by BOO.
18.	All the test reports and certificates must 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.	Warranty – All covered warranty for three years from acceptance of goods.	OEM to provide undertaking for the same, BOO to check the certificate.
20.	Shelf Life- Min 05 years.	OEM to provide undertaking for the same, BOO to check the certificates.

  
 Maj Himanshu  
 NSG, BD Unit

  
 INSP Maharashtra  
 ITBP

  
 INSP SUNIL KR.  
 (BSF)

  
 INSP/Agony  
 Govt. Security  
 (SSB)

  
 S.I.E. - LADU RAM PATEL

  
 Lt Col / Army  
 Lt Col Ram Beda Singh  
 Assam Rifles

  
 Maj T. H. Kulkarni  
 HQ NSG, WE BR