INVITATION OF VENDOR COMMENTS ON REVISED QR/ TDs OF BLASTING MACHINE/POGAL SET

1. It is intimated that firms/ vendors' comments are invited on the revised QR/ TDs of Blasting Machine/Pogal Set. All firms are requested to offer their comments along with OEM certificate on e-mail address scord@nsg.gov.in or gcproc@nsg.gov.in as per under mentioned format.

QRs	TDs	Comments by the firm

2. You are requested to offer comments within 15 days from the date of uploading on the website. The QR/ TDs of above mentioned equipment/ weapon are being considered by sub group committee meeting for finalization.

Dated : 21 Nov 2023

(Ankit Chaudhary)
Major
SC (Ord)

DRAFT REVISED QRs/TDs OF BLASTING MACHINE/POGAL SET

Sl.No	Parameters	Qualitative Requirements (QRs)	Trial Directives (TDs)
1.	General	The blasting machine is a handheld device which is used for firing of electric detonators, electric igniters (such as IFS electric) and electric cartridges, with maximum safety.	-
2.	Design	(a) Size of Blasting machine (without carrying case) should be compact and not weighing more than 500gms including the rechargeable battery.	To be physically checked by BOO using digital scale
		(b) Size of the machine should not exceed in dimensions by 10cm x 5 cm x 20 cm.	A box with inner dimensions of 20cm x 10cm x 5cm to be made. The blasting machine should completely fit inside this box.
		(c) The machine enclosure conducting medium (such as metal body) or non conducting medium (incase of conducting medium, the internal side of the enclosure should be duly electrically insulated by a non conducting medium and the equipment should be capable of operation (firing, continuity test and resistance test) in rainy conditions).	(a) OEM to furnish self declaration certificate for the same mentioning the material of the enclosure and whether it is conducting/non conducting (at rated voltage and current). (b) In case of metal body, BOO to check by spraying water and firing a single No 33 detonator/ISF electric using a maximum of 50m (50m is for the pair of cable- Total length being 100m) firing cable/ telephone cable/1 sqmm (minimum) electric cable, while water is being sprayed.
		(d) The machine (and resistance checking unit, if supplied separately) should be water resistant and machine should have IP 65 rating (except the external electrical terminals).	Suitable National & International Lab (accredited lab of NABL/ILAC) Cert to verify the IP rating needs to be produced by firm.
		(e) It should have weather proof carrying case and the same should come with attached web belt for outdoor/long operation application. The carrying case should have IP 66 rating.	Suitable National & International Lab (accredited lab of NABL/ILAC) Cert to verify the IP rating needs to be produced by firm.

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3.	Firing Ability	(a) The device should be able to provide: (i) A min of 10 J of firing energy (ii) A min potential difference of 300 VDC (iii) Fire across a min of 150 Ω	OEM to provide test certificate by National/ International(NABL/ILAC accredited) lab/ by MSHA. (Current flowing out of the terminals shall be measured for the purposes of certificate)
		(b) It should be able to fire atleast 65 Nos of No 33 electric detonator (Indian ordnance pattern) at a time.	
		(c) It should provide average current of atleast 2 amps of firing current during first 5 milliseconds of energy discharge (when operated within 150 Ω resistance).	
4.	Operability	(a) A single unit should be able to do the following:- (i) Check continuity of circuit. (ii) Fire the detonators as above	To BOO to physically check the continuity of the circuits & resistance with detonators/ ISF electric and electric cable. The same to be cross checked by using digital ohmmeter/multimeter (having continuity test function) on the detonators/ ISF electric.
		(b) The same unit or a separate unit supplied as accessory should be able to check the resistance of the firing circuit. In case a different unit is supplied for resistance check, the maximum weight of the equipment should be inclusive of the resistance checking unit and the dimensions for resistance checking unit shall not be more than 7.5cm x 5cm x 3cm. A separate carrying case with web belt attachment to be provided for the separate resistance check unit.	
		(c) It should be capable of firing electric detonators in both series & parallel circuits. The equipment should be capable of firing electric detonators in a circuit having detonators in both series and parallel also.	OEM to furnish self-declaration certificate for the same.
		(d) It should be able to carry out an operational test using a separate external tester/test set piece prior to brining the blasting machine into the blast area. In case a consumable test set is given, consumables for atleast 1000 tests are to be provided.	The BOO to physically check the operational test of the machine with the provided tester.

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		(e) The equipment should be capable of operation in temperatures from -15°C to 60°C and in relative humidity upto 95%.	A National/International (NABL/ILAC) accredited) lab certificate to be provided for the operational temperature range and storage temperature range.
		(f) The equipment should be capable of being stored in temperatures from -20°C to 65°C.	
		(g) The equipment should be capable of being operated in a rugged environment as expected out of military/ paramilitary operations.	BOO to conduct a drop test of the equipment from 1m height, such that a random part of the equipment will hit the ground. This test should be carried out before other tests are carried out.
5.	Safety	(a) During continuity test maximum current that can pass the 5mA. A 50mA (maximum) fuse is to be available in the testing circuit within the equipment. The same (3mA maximum current and 50mA (maximum) fuse) parameters are also applicable for the separate resistance check unit.	A National/International (NABL/ILAC accredited) lab certificate to be provided certifying that (a) the max current during testing is not more than 5mA (b) a 50mA (max) fuse is present in the circuit.
		(b) It should have facility of separate lights/display each for indicating the continuity of firing circuit and ready to fire indicator, when the capacitor reaches the design voltage. There should be low battery indicator also.	To be physically verified by the BOO.
		(c) The voltage between firing line terminals (firing and test terminals- can be same or different) should be zero after 1 second of the firing operations.	A National/International (NABL/ILAC) accredited) lab certificate to be provided for the same.
		(d) It should have separate switches for testing the continuity of circuit, priming and firing of charges.	To be physically verified by the BOO
		(e) The firing button should become effective only when accompanied by another button (can be priming button) and when the voltage has reached atleast 300V.	A National/International (NABL/ILAC) accredited) lab certificate to be provided for the same.

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6.	Battery	(a) The blasting machine should be operational on commercially available off the shelf rechargeable battery. Examples of commercially available off the shelf batteries include AAA size, AA sixe, C type, 18650, etc.. There shall be no dependence on the OEM/vendor for the battery.	Physically checked by BOO. OEM to furnish self-declaration certificate for the same.
		(b) It should not take more than 8 seconds to prime with a freshly charged battery/set of batteries.	Physically checked by BOO while firing a single detonator/ISF electric.
		(c) A standard, freshly charged battery should provide a minimum of 200 blasting cycles (and additional 400 continuity testing cycles), without further requirement for recharge.	Physically checked by BOO by connecting a resistor (of rating between 1.5Ω to 50Ω) between the terminals. If the resistor is damaged, the same may be replaced with a fresh resistor/s (5watt/10watt resistors are recommended to avoid damage to resistors)
		(d) The device should have a low battery indicator/ battery level indicator	Physically checked by BOO
7.	Training	(a) OEM to provide detailed operational training to min 05 Bomb technicians/individuals	OEM to furnish undertaking for the same
		(b) OEM to provide user level maintenance training to 05 bomb technicians/individual	OEM to furnish undertaking for the same
8.	Manual	OEM to provide detailed user manual and maintenance manual in English/Hindi.	BOO to physically check the same. OEM/vendor undertaking/warranty certificate to be provided for the same.
9.	Warranty	The equipment should be provided with an all covered warranty of a period as specified in the tender. All parts of the equipment to be covered by warranty.	

10.	Accessories	The tester/ test set as mentioned above should be provided with the equipment. A battery charger for charging the rechargeable battery to be provided.	BOO to check the availability of the same.
11.	Clarification	All mentions of detonators/ISF in QR/TD are electric detonators and electrics Igniters respectively. The detonators/ ISF/ electric cartridges mentioned in the QR/TD has a firing/triggering current of not more than 1.5A for a time not more than 5 milliseconds.	All tests on detonators are to be conducted on No. 33 electric detonators (ordnance patter), all tests on

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