

F.No. 27/7/QRs/Trg/BSF/2012/MHA Prov.II 378
Bharat Sarkar/Government of India
Grihas Mantralaya/Ministry of Home Affairs
PM Division/Prov.II

26, Man Singh Road, Jaisalmer House,
New Delhi. Dated : 13 Feb 2014

To

DsG : AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

Subject :- QRs and Trial Directives for AMFDC.

The QRs and Trial Directives formulated by Sub Group of Expert under Chairmanship of DG, BSF in respect of Automated Mortar Fire Direction Controller (AMFDC) (as per annexure) subject to condition that no deviation will be made from the proposed QRs and Trial Directives without prior permission of MHA.

2. The CAPFs concerned will be accountable for correctness of the QRs/Trial Directives.
3. Henceforth, all the CAPFs should procure the above items by them strictly as per the laid down Technical Specifications/QRs subject.

Encl: A/a

Yours Faithfully,


(P.K. Srivastava)

Under Secretary to the Govt of India
Tel No. 011 2338 1278

Copy forwarded for necessary action to:-

The Section Officer (IT), MHA: it is requested to host the QRs (soft copy attached) on the MHA website (under the page of Organisational set up- Police Modernisation Division- QRs)


(Ritesh Kumar)
Section Officer (Prov.II)
Tel No. 011 2338 6034

Copy to :- DDG (Procurement)/MHA



DIRECTOR GENERAL BORDER SECURITY FORCE
(TRAINING DIRECTORATE)
(AN IS/ISO 9001: 2008 CERTIFIED DIRECTORATE)

The Sub-group of Technical Experts on Weaponry Equipments constituted by MHA vide their letter No.IV-17017/18/2011-Prov-I dated 05 Jul 2002 and UO No.IV-24011/12/2011-Prov-I dated 31 Jan, 2013 held its meeting at BSF Headquarters on 12 Apr, 2013 to formulate the QRs of "AUTOMATED MORTAR FIRE DIRECTION CONTROLLER (AMFDC)".

After detailed deliberations the referred Sub-group has finalized the QRs of "AUTOMATED MORTAR FIRE DIRECTION CONTROLLER (AMFDC)".

QUALITATIVE REQUIREMENTS – AUTOMATED MORTAR FIRE DIRECTION CONTROLLER (AMFDC)

S/No.	Requirements.
01	<p><u>General</u></p> <p>(a) Physical:-</p> <p>Length - 200 mm \pm 10 %</p> <p>Width - 100 mm \pm 10 %</p> <p>Height - 46 mm \pm 10 %</p> <p>Weight - 690 gm \pm 10 % (with battery & Pouch)</p> <p>Weight - 350 gm \pm 10 % (without battery & Pouch)</p> <p>Display - Large enough to display the data which can be Visible in day light with provision of back light for use in night.</p> <p>(b) It should be able to compute 81 mm Mortar fire data as substitute of conventional plottér.</p> <p>(c) It can be carried in a pouch with option to fix on the belt/ sling.</p> <p>(d) It should be water proofed and rugged and operating temperature should be -30° C to +55° C.</p>
02.	<p><u>Feature</u></p> <p>(a) The battery used in AMFDC must be rechargeable (Lithium Ion Batteries) along with battery charger and should be commercially available in the market. One set of spare batteries be also provided with each eqpt.</p> <p>(b) The battery backup should be minimum 8 hours without back up light on.</p>

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(d) Registration of Target, Completion of time of flight correction with fresh OT, correction with old OT can view the GR after each correction and switching of ammunition.

06. **Data Entry**

- (a) **Entry (ENT)** - To enter GR & height.
- (b) **View** - To see the entered GR & height
- (c) **Initialize (INIT)** - To erase the entire data of Mortar Position/Target /Safety Zone /Crest Clearance
- (d) **Drop** - To hide (deactivate) data of a particular Mortar Position/Target /Safety Zone /Crest Clearance.
- (e) **Add** - To reactivate the dropped/hidden data
- (f) **Peruse (PER)** - To view entire data of Mortar Position/Target /Safety Zone /Crest Clearance one after the other.
- (g) **Glance (GLA)** - To see the identity of active data.

07. **Utilities**

- (a) **Time** - Facility viewing the time for use as in the back ground.
- (b) **Count** - It facilitates in using AMFDC for alarm.
- (c) **Crash** - If there is an imminent threat of AMFDC falling in the hands of enemy it should have facility to crash the entire data in one go by using single key.
- (d) **Diagnostics (DIAG)** - To check the function of AMFDC
- (e) **Audio setting** - Duration and frequency of audio alarm should be adjustable.

- 08. (a) **Low battery** Low battery indication should be provided with acoustic and visual.
- (b) **Warning** There should be a provision of warning with acoustic and visual for safe zone and crest clearance.

09. **MISC**

- (a) OEM to arrange training on operation and day to day maintenance of the system in India at a place decided by the Force concerned.
- (b) OEM to arrange repair level training for minimum two weeks.
- (c) OEM to provide circuit diagram as well as list of spare parts alongwith part number and their rates.
- (d) OEM to provide standard guaranty/ warranty of the system for three years at site.
- (e) OEM to certify availability of spares/ upgradation of software at least for ten years after delivery of the eqpt.

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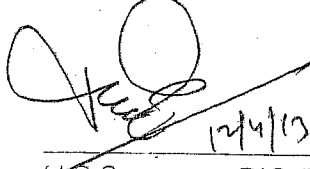
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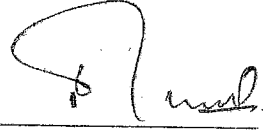
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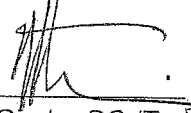
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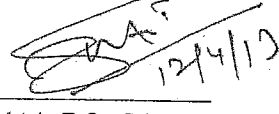
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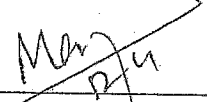
- (f) OEM to provide AMC after expiry of standard guaranty/warranty period, if so desired by the force concerned.
- (g) OEM to provide user manual (bilingual) and technical manual with each eqpt.
- (h) Turn around time (TAT) for repair should be maximum 30 days from consignee location.

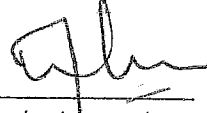

 (J B Sangwan, DIG (Trg)
 BSF)

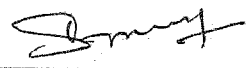

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 (SSB)

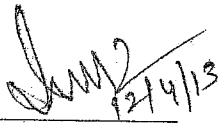

 (M K T Simte, DC (Trg)
 BSF)


 (S K Atri, DC, SIW BSF)
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 (Manoj Kumar, DC, TC&S
 BSF)


 (Capt Jackson Jose,
 NSG)


 (R S Maurya, SSA (E),
 BPR&D)


 (SI (T) I. Suresh, SIW BSF)

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 DIRECTOR GENERAL
 BORDER SECURITY FORCE

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TRIAL DIRECTIVE
FOR
AUTOMATED MORTAR FIRE
DIRECTION CONTROLLER (AMFDC)

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INTRODUCTION :-

Automated Mortar Fire Direction Controller (AMFDC) is designed in a manner to meet the operational requirements and ease of handling and to compute direction, charge, elevation, time of flight and fuse setting to 81 mm Mortar fire. It is a replacement of conventional plotter presently being used by the personnel of the Mortar Platoon for plotting data to fire 81 mm Mortar.

AIM :-

To frame Trial Directives to facilitate Board of Officers to carry out physical / technical evaluation of Tender sample of Automated Mortar Fire Direction Controller (AMFDC) at the time of procurement.

GENERAL INSTRUCTIONS :-

- 1 This Trial Directive is issued to assist and guide the evaluation committee. Nothing in this Trial Directive absolves the BOOs from their responsibility to ensure that the evaluation is carried out strictly as per the specifications in every respect.
- 2 The Evaluation Committee may carry out additional test which they consider necessary after seeking approval of Competent Authority, to verify the quality of the tender sample with the specifications.
- 3 The Evaluation Committee should ensure proper safety of men and equipment during evaluation to avoid any damage.
- 4 Trial / evaluation will be conducted in presence of firm representative only.

COMPOSITION OF THE BOARD :-

The physical evaluation of the tender samples of Automated Mortar Fire Direction Controller (AMFDC) will be carried out by the Board of Officers detailed by the Competent Authority.

GENERAL REQUIREMENT:-

Following test instruments should be available during the trial / evaluation:-

- 1 Plotter 81 mm Mortar
- 2 Range Table 81 mm Mortar
- 3 Topographical Map sheet
- 4 Weighing machine
- 5 Measuring tape 3 mtrs
- 6 Stop watch.

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TRIAL DIRECTIVE FOR AUTOMATED MORTAR FIRE DIRECTION CONTROLLERS (AMFDC)

S/ No.	QRs/Specification	Procedure suggested for Trial for Board of Officers	Result expected / desired	Complied / Not complied
01	<p><u>General</u></p> <p>(a) Physical:- Length - 200 mm ± 10 % Width - 100 mm ± 10 % Height - 46 mm ± 10 % Weight - 690 gm ± 10 % (with battery & Pouch) Weight - 350 gm ± 10 % (without battery & Pouch) Display - Large enough to display the data which can be visible in day light with provision of back light for use in night.</p> <p>(b) It should be able to compute 81 mm Mortar fire data as substitute of conventional plotter.</p> <p>(c) It can be carried in a pouch with option to fix on the belt/sling.</p> <p>(d) It should be water proofed and rugged and operating temperature should be -30° C to +55° C.</p>	<p>Procedure suggested for Trial for Board of Officers</p> <p>AMFDC shall be subjected to visual inspection and checked physically.</p> <p>Check the ability of computation of AMFDC. Check if AMFDC is capable to find data for all type of ammunition fired from 81 mm Mortar.</p> <p>AMFDC shall be checked physically that it can be fixed on the belt/sling of the shoulder.</p> <p>The firm should submit National/ International accredited Lab test report for this aspect.</p>	<p>The AMFDC should be as per the requirement mentioned in the QR's</p> <p>The AMFDC should be able to compute firing data i.e. Direction, Charge, Elevation, Time of flight of a target in respect to Mortar position and fuse setting for illumination bomb.</p> <p>The AMFDC should be as per the requirement mentioned in the QR's</p> <p>Check the National/ International accredited lab test report for the same. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.</p> <p>The AMFDC should be as per the requirement mentioned in the QR's.</p>	<p>Complied</p> <p>Not complied</p>
02	<p><u>Feature</u></p> <p>(a) The battery used in AMFDC must be rechargeable (Lithium Ion Batteries) along with battery charger and should be commercially available in the market. One</p>	<p>AMFDC should be checked for battery backup. The firm should submit test report/ certificate for this</p>	<p>The AMFDC should be as per the requirement mentioned in the QR's.</p>	<p>Complied</p> <p>Not complied</p>

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<p>03. <u>Tech</u> The computation times should be less than 5 seconds.</p>	<p>Check AMFDC, that it can compute data in given time.</p>	<p>The computation times should be as per the requirement mentioned in the QR's.</p>
<p>04. <u>Capabilities:</u> (a) <u>Accuracy</u> (i) Angle - 5 minute or less (ii) Distance - One mtr or less (iii) GR - 5 mtr or less (b) <u>Inbuilt Memory Capacity</u> (i) Mortar Position - Min. 30 or more (ii) Targets - Min. 99 or more (iii) Safety Zone - Min. 40 or more (iv) Crest Clearance - Min. 20 or more (v) Should have provision of external memory card (c) <u>Ammunition:</u> - Compatibility with HE, Smoke, Illumination and Sabot.</p>	<p>Check the given data with the help of any target.</p> <p>AMFDC shall be subjected to check physically for inbuilt memory capacity.</p> <p>Check if AMFDC is compatible with all type of ammunition.</p>	<p>The Inbuilt memory capacity should be as per the requirement mentioned in the QR's.</p> <p>The AMFDC should be able to compute firing data i.e. Direction, Charge, Elevation, Time of flight of a target in respect to Mortar position and fuse setting for illumination bomb.</p>
<p>05. <u>Facilities</u> - The facilities provided in AMFDC, should be on the basis of its: (a) <u>Types of shoots</u> (i) Normal</p>	<p>AMFDC shall be subjected to check if it compute the data for normal shoot and fresh data after applying correction with old OT. For Impromptu shoot, it should be able to compute fire data with reference</p>	<p>The firing data for all types of shoots should be as per Trial Directive.</p>

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Mr. S. Ramesh Babu

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- (ii) Impromptu
- (iii) Repeat

(b) Factors considered:- Following factors while making a shoot from 81mm Mortar be considered and all these factors should be corrected by AMFDC in finding datas of target.

- (i) Altitude
- (ii) Temperature
- (iii) Height difference of Mortar Position and target
- (iv) Safe Zone
- (v) Crest Clearance
- (vi) Wind Velocity

to a registered target after applying correction, with fresh OT. For repeat shoot, firing data for a registered target.

- Check if AMFDC can make a correction to range in respect of given factors.
- It should be done automatically while finding data of target.

The AMFDC should be as per the requirement mentioned in the OR's.

(c)

Shoot data

- (i) Disha (Direction)
- (ii) Charge
- (iii) Elevation
- (iii) Time of Flight
- (iv) Fuze Setting

AMFDC shall be visually examined if it can display all data i.e. direction (disha), charge, elevation and time of flight in a single display in case of HE, Smoke, and sabot. Fuze setting of Illumination bomb should also be displayed.

As per Trial Directive.

(d) Registration of Target, Completion of time of flight correction with fresh OT, correction with old OT can view the GR after each correction and switching of ammunition.

- Check if AMFDC can register the received data.
- It should give the data of every correction after entering OT bearing and it should also give GR of target after applying each correction and data on switching of ammunition for same target.

As per Trial Directive.

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06 Data Entry

- (a) Entry (ENT) - To enter GR & height.
- (b) View - To see the entered GR & height
- (c) Initialize (INIT) - To erase the entire data of Mortar Position/Target /Safety Zone /Crest Clearance
- (d) Drop - To hide (deactivate) data of a particular Mortar Position/Target /Safety Zone /Crest Clearance.
- (e) Add - To reactivate the dropped/hidden data
- (f) Peruse (PER) - To view entire data of Mortar Position/Target /Safety Zone /Crest Clearance one after the other.
- (g) Glance (GLA) - To see the identity of active data.

Functional keys of data entry shall be subjected to check physically for processing and display of correct data.

It should be as per the requirement mentioned in the QR's.

07 Utilities

- (a) Time - Facility viewing the time for use as in the back ground.
- (b) Count - It facilitates in using AMFDC for alarm.
- (c) Crash - If there is an imminent threat of AMFDC falling in the hands of enemy it should have facility to crash the entire data in one go by using single key.
- (d) Diagnostics (DIAG) - To check the function of AMFDC.
- (e) Audio setting - Duration and frequency of audio alarm should be adjustable.

Functional keys of utilities shall be subjected to check physically for processing and display of correct data.

It should be as per the requirement mentioned in the QR's.

08.

- (a) Low battery Low battery indication should be provided with acoustic and visual.
- (b) Warning There should be a provision of warning with acoustic and visual for safe zone and crest clearance.

Subjected to check physically.

The AMFDC should be as per the requirement mentioned in the QR's.


09. MISC


- (a) OEM to arrange training on operation and day to day maintenance of the system in India at a place decided by the Force concerned.


Commercial terminology. Cannot be checked at time of physical evaluation.


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(h)	OEM to arrange repair level training for minimum two weeks.	
(c)	OEM to provide circuit diagram as well as list of spare parts alongwith part number and their rates.	
(d)	OEM to provide standard guaranty/ warranty of the system for three years at site.	
(e)	OEM to certify availability of spares/ upgradation of software at least for ten years after delivery of the eqpt.	
(f)	OEM to provide AMC after expiry of standard guaranty/warranty period, if so desired by the force concerned.	
(g)	OEM to provide user manual (bilingual) and technical manual with each eqpt.	
(h)	Turn around time (TAT) for repair should be maximum 30 days from consignee location	


 (J.P. Sangwan, DIG (Trg) BSF)



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 (S.I. T. Suresh, SIM BSF)

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(SUBHASH IPS)
 DIRECTOR GENERAL
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