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**No.IV-17017/13/06-Prov.I**
**Ministry of Home Affairs**
**Prov.I**
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**New Delhi the 7th August,2006**

To

**The DGs:Assam Rifles/BSF/CISF/CRPF/ITBP/NSG/SSB/BPR&D.**

**Subject: Finalization of QRs/Specifications for Weaponary/securityEquipments**

The Sub-Group constituted by MHA vide Memorandum No. IV.17017/18/2001-Prov.I dated 5-7-2002 for laying down QRs/specifications of various items/equipments has since submitted its recommendations in respect of following weaponary/security equipments:

(i) Light Support Weapon
(ii) Sniper Rifle Bolt Action
(iii) Sniper Rifle Semi Auto
(iv) Optical Fiber Scope
(v) Bomb Inhibitor
(vi) Door Buster
(vii) Bullet Proof Mobile Morcha(Small/Large)
(viii) Location for Miss and Hit Target System(LOMAH)
(ix) Forward Observer Simulator
(x) 81mm Mortar Simulator

2. These recommendations have been accepted by MHA. The QRs finalized by the Sub-Group and accepted by MHA in respect of the above equipments are enclosed herewith.

3. Henceforth, all the CPMFs should procure the above items required by them to meet their operational needs strictly as per the laid down QRs/specifications.

**Yours faithfully,**

**(Alok Mukhopadhyay )**
**Under Secretary(Prov.I)**
**Tele. No.23381278**

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1. PS to JS(PM), MHA
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# FORWARD OBSERVER SIMULATOR

| S/No. | Specification |
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| 1 | Forward Observer Simulator will be used by BSF Artillery Division for training of students on Forward Observer's duties |
| 2 | **Operational Characteristics** |
| | The system should be user friendly and menu driven. A detailed on screen context sensitive 'Help' in English & Hindi should be available. |
| 3 | **Selectable Parameters Required** |
| 3.1 | Different Types of Ammunition to be Fired from 105/37 mm LFG E-2. |
| | a) High Explosive (HE) with different type of fuzes viz air burst, DA percussion, cap on, cap off, ground burst, VT, Delay, Super quick, closed. |
| | b) Smoke with colour viz BE, Red, Blue & Orange/Yellow. |
| | c) Illumination (Ill) |
| 3.2 | Number of fire units to fire i.e, a troop/Battery/Regiment with Brigade Shoot facility |
| 3.3 | Battery Position and Observation Post (OP) Position. |
| 3.4 | Environment conditions like Visibility conditions, various time of day, Wind conditions, Temperature |
| 3.5 | Time of Flight (actual and standard). |
| 3.6 | Facility to simulate Night shoot. |
| 4 | **Target Generation.** |
| | (a) **Static Targets.** |
| | (i) Vulnerable Areas (VAs) & Vulnerable Points (VPs) |
| | (ii) Battalion Support Weapons : Mortors and MMG |
| | (iii) Observation Post (OP)/Sniper post. |
| | (iv) Defended localities |
| | (v) Huts/House and other important land marks. |
| | (vi) Stationed Tanks/A Vehicles |
| | (vii) Troops (Infantry) in open |
| | (b) **Moving Targets.** |
| | (i) B vehicle convoys |
| | (ii) Infantry in open-in assault formation/ single file formation during advance. |
| | (iii) Infantry patrol on the move. |
| | (iv) Moving Armoured coloumns/ Hard Hitting Mobile Teams(HHMTs) |

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| | (c) **Cultural Targets:** As generally observed on maps & used for reference during Arty shoots such as Samadhies, Temple, Mosque & Fort etc. |
| 5 | **Type of Geo- specific terrain and terrain views required to be included: -** |
| | (a) Plains with option of including topological variations viz. Undulating ground, riverine areas and thick forest features. |
| | (b) Desert and semi deserts with option of limiting landmarks. |
| | (c) Mountains/Semi mountainous zones of varying altitude viz upto 9000', 9000' to 11000', 11000' to 13000' & 13000' to above with representative flora & fauna of each zone. |
| 6 | **Capabilities of the Simulator** |
| | (a) The System should be compatible with 105/37 mm LFG E-2.The system should be able to cover an area of 25-30 Kms for planning & executing "Fire Plans". It should also provide for option of upgradation of caliber of Arty equipment in future. |
| | (b) Provision for engagement of targets by following shoots : |
| | i) Immediate neutralization shoot. |
| | ii) Registration shoot |
| | iii) Standard linear concentration |
| | iv) Neutralization with smoke |
| | v) Illumination shoots |
| | vi) Air observation post shoots |
| | vii) Ranging by ladder (Air OP) |
| | viii) Ladder ranging for engagements of target by ground OP. |
| | ix) Location & engagement of target by stop watch. |
| | x) Engagement of target by instrument cross observation. |
| | xi) Distribution of massed Arty fire on targets. |
| | xii) First salvo effectiveness |
| | xiii) Precision shoot. |
| | xiv) Indication shoot |
| | (c) The dispersion of fire should be as per actual beaten zone viewed on instructor Station |
| | (d) Realistic effect of fall of shot for various ammunition. |
| | (e) Effect of Fall of Bombs in Nallahs & Behind Crest Line and in dead ground. |
| | (f) Observer should be capable of passing corrections both using hand and the modified binoculars with graduated degree marking on its eye piece. |
| | (g) Engagement of Impromptu Targets |
| | (h) Engagement range should match the range of weapon system with different type of ammunition. |
| | (i) Simulate different methods of fire viz sweep & search, salvo including use of the orders "ENGAGE", TOT & "BOMBARD" for effective fire |
| | (j) Fire table for attack and defence to include facilities required for the following |
| | (i) Create a Fire table |

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| | (ii) | Execute a Fire Table |
| | (iii) | Modify existing Fire table |
| | (iv) | Adjustment during the execution of the Fire table |
| | (v) | Storing a Fire table. |
| | (vi) | Facility to create and execute Fire table for individual Battery and Brigade. |
| (k) | | Illumination – It should be capable of depicting the actual area of illumination and an adjustment in point of burst should be catered for. |
| (l) | | Simulator should be able to depict the fault effect of misfire, blind and shortfall. |
| (m) | | An Audio system to provide communication between the Instructor and Observer with the Hand set as in the Operational conditions like ANPRC sets, Hand held Radio Set, JWD cable linked telephone. |
| 7 | | **Miscellaneous Capabilities.** |
| (a) | | The software should be user friendly to enable Officers/Instructors with little knowledge of computers to operate it, with a provision of on screen help. |
| (b) | | The FOS should have inbuilt facility to enable instructor to |
| | (i) | Select, start, control, monitor and stop exercises. |
| | (ii) | Map view of the training area (20 km x 20 km) |
| | (iii) | Elevation detail of any place on the terrain w.r.t. sea level. |
| | (iv) | Enable sound, trajectory of the ammunition. |
| | (v) | Change beaten zone, Field of view, wind speed, wind direction, Observer elevation (Air Observer) |
| | (vi) | To position the Observer anywhere on the terrain. |
| | (vii) | To introduce faults/obstacles in the simulator to study the reaction of the trainee Observer. |
| | (viii) | View of the Observer display using repeat monitor |
| | (ix) | Inject on- line fault. |
| (c) | | All order and corrections be catered for as practiced on ground. |
| (d) | | Range table of all kinds of ammunition and for High Altitude Area should also be incorporated. |
| (e) | | The beaten zone of the all ammunitions at various charges should be catered for to give realistic training. |
| (f) | | Facility to record and replay students shoots should be made available. The simulator should be capable of evaluating. |
| | (i) | Individual performance |
| | (ii) | Group performance<br>There should be a facility to give print out of errors committed as per format attached at annexure –I.. |
| (g) | | Meteorological correction on the projectile in flight to be catered for. |
| (h) | | Simulator should be able to calculate and display the OT, BT and Apex angle at instructor panel. The distribution of the fall of bomb within the beaten zone should be available for the instructor to view. |
| (i) | | The effect of fall of shot on different types of terrain such as snow, sand, slush & jungle is different & therefore a realistic simulation of fall of shot for each such area should be included. In order to help the instructors to explain the faults to the trainees, provision for zooming in on to the desired section of the terrain should be included. |

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| | (j) | Should have inbuilt compass and Laser Range finder for finding out the bearing and range of a particular target/point. |
| | (k) | Should have the facility for dynamic OP, Facility for OP to select and use the operational equipments viz. Binocular, Compass and LRF. |
| | **Operation and Maintenance** | |
| 8 | **Working Specifications.** | |
| | (a) **Space.** | It should be possible to install Forward Observer Simulator in a room of minimum size 20' x 40'. |
| | (b) **Climate.** | The operating temperature range of Forward Observer Simulator should be between (5 to 40 C) in non-condensing humidity, operating in a dust free controlled environment. |
| | (c) **Lighting.** | It should be possible to operate Forward Observer Simulator in a controlled lighting conditions (except direct sunlight) without causing any adverse effect on the equipment. |
| | (d) **Power.** | The simulator should function at 230 volts +/- 10% 15 amperes with stabilizer and UPS backup for the system to operate for one & half hrs. |
| 9 | **Hardware** | |
| | (a) | CPU – Latest PENTIUM PROCESSOR |
| | (b) | Monitor 19" Colour |
| | (c) | C Drive – Sufficient storage Capacity |
| | (d) | Audio System – with 150 Watts o/p, 200 RMS |
| | (e) | Video Projection System |
| | (f) | Printer – Laser jet |
| | (g) | UPS one & half hrs backup to meet the exigencies of power failure during trg schedule of two periods. |
| | (h) | Stabilizer – 5 KVA with input range 180-260 V, output range 230 V |
| | (i) | Foldable High quality Screen |
| | (j) | Modified Artillery Binoculars with graduated degree markings. |
| | (k) | Graphics card with mixture daughter board, sound card pair holding data in EPROM & digital sound reproduction processor. |
| 10 | **Software.** | The software should be user friendly and operating Forward Observer Simulator should not need special computer handling skills. |
| 11 | **Maintenance.** | |
| | (a) | It should be possible to maintain/repair Forward Observer Simulator at unit/field station workshop level. The equipment, as far as possible should be modular in construction. |
| | (b) | Damaged/unserviceable components should be easily and quickly replaceable. |
| | (c) | User's and Instructor's Manual giving details of instruction, dismantling and packing. |
| | (d) | Instruction for maintenance and repair. |
| | (e) | Instruction for common & frequently observed faults and rectification there of. |
| 12 | **Training and its material.** | Instructors should be trained for its operation and maintenance. |

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| 13. | **Maintenance after sale.** | The firm should guarantee repair of the equipment in case of requirement by the user after expiry of warranty period on payment basis if required, for the next seven years from the date of installation. |
| 14. | **Warranty.** | Manufacturer should stand for 3 years warranty. |

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