Afghan National Security Forces

Tactical Communications Smartbook

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Introduction

The term Afghan National Security Forces (ANSF) is an umbrella term encompassing several military pillars or police agencies. In RC-S, the four main pillars are the Afghan Uniformed Police (AUP), the Afghan Border Police (ABP), the Afghan Civil Order Police (ANCOP), the Afghan National Army (ANA). There are several sub-pillars under each that have their own responsibilities.

Within the AUP, there is a sub-organization known as the Afghan Local Police (ALP). Their task is to provide village security. They receive their communications equipment from the AUP.

Within the ABP, there is a sub-organization known as the Afghan Customs Police (ACP). Although they work with/for the border police, the ACP falls under the Ministry of Finance (MoF). The ACP receives its equipment independently from the ABP.

The Army has a rigid military structure similar to British and Canadian forces with standard combat enablers. Within the ANA, there is one unit of interest, the Corps Signal Coy. Although not fielded at the time of this publication, the Signal Coy's will work for the Corps and be responsible for short duration missions in support of no more than 2 BDEs at any time. They are also responsible for C2 during natural disasters. They have a Data and Radio Rebroadcast capability, but to what extent is still uncertain.

MOI 14

CJTF Phoenix J4 ANSF Logistics Cell *As of 19 June 2009*

MoI Form 14 – Request for Material

The sustainment process begins when materiel needs of a supported organization or unit are identified to its logistics support activity and the supply system by completely describing the materiel needed as a request/ demand. The unit identification of the description and quantity of materiel needed, the urgency of need (Priority), and the date it is required (RDD = Required Delivery Date) is communicated to the supply system using MoI Form 14 Materiel Request. This form is used to provide the needed information to all levels above the supported unit, including contracting / purchasing, if necessary. All information is significant and critical for correctly and timely satisfaction of the requesting unit. The materiel request Form 14 is normally completed in four (4) copies and can be used to identify multiple individual requests for materiel.

Priority Explanation

1. High Urgency of Need. Unit in Combat or in receipt of Orders to enter Combat
2. Moderate. Needed to restore inoperative mission significant equipment, restore unit or mission preparedness, remove impediments limiting training, unit less than assigned readiness level due to materiel readiness
3. Routine. For Stockage, does not impact on mission preparedness, nor unit readiness, facilitates current military activities, enhances unit capability

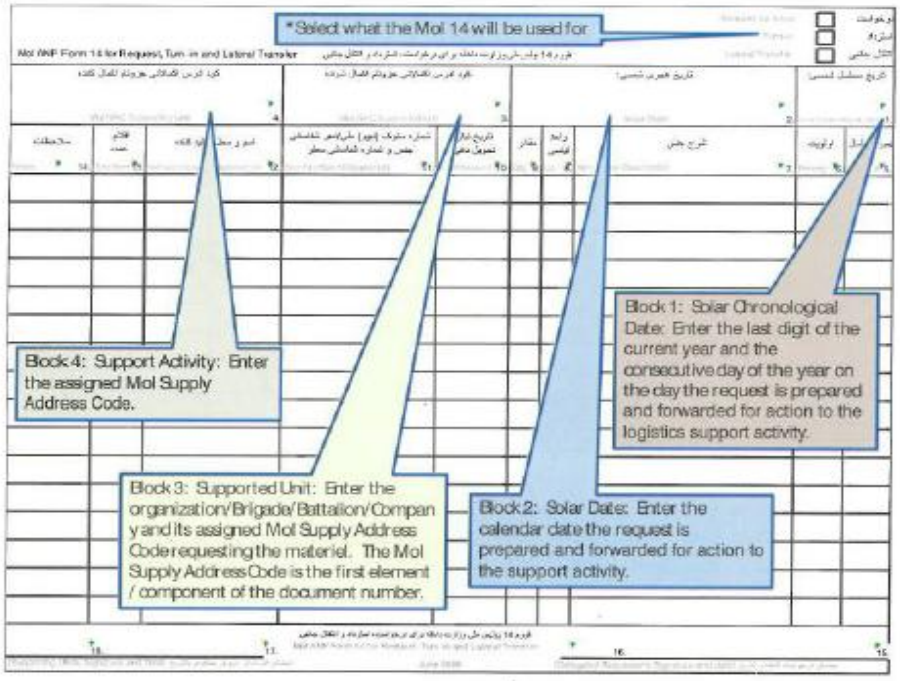

Figure 12-31 MoI Form 14, Request for Material

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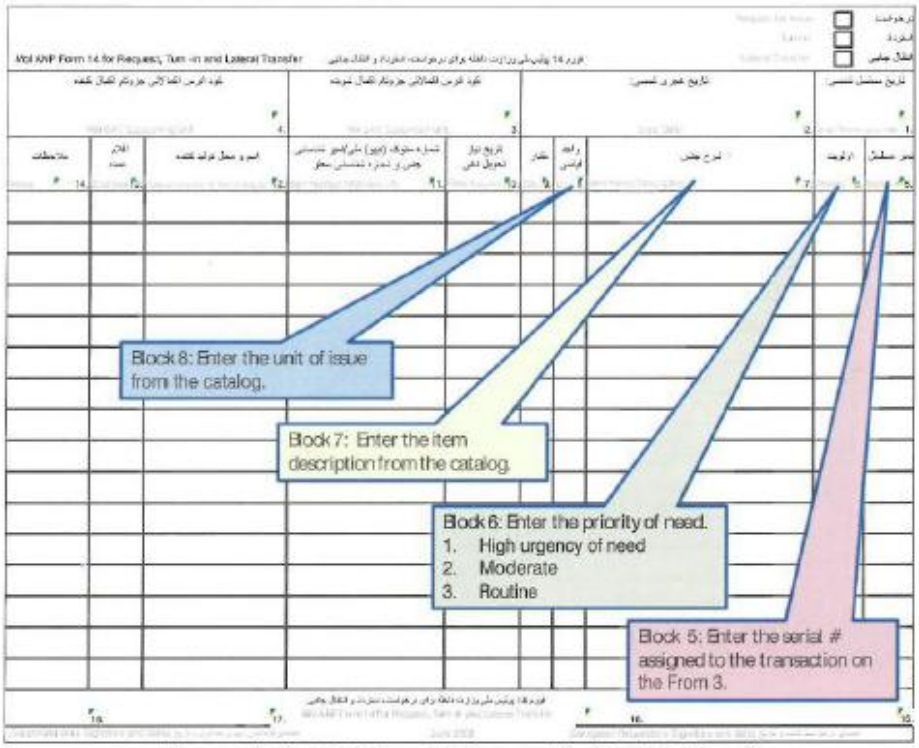


Figure 12-32 MoI Form 14, Request for Material (cont)

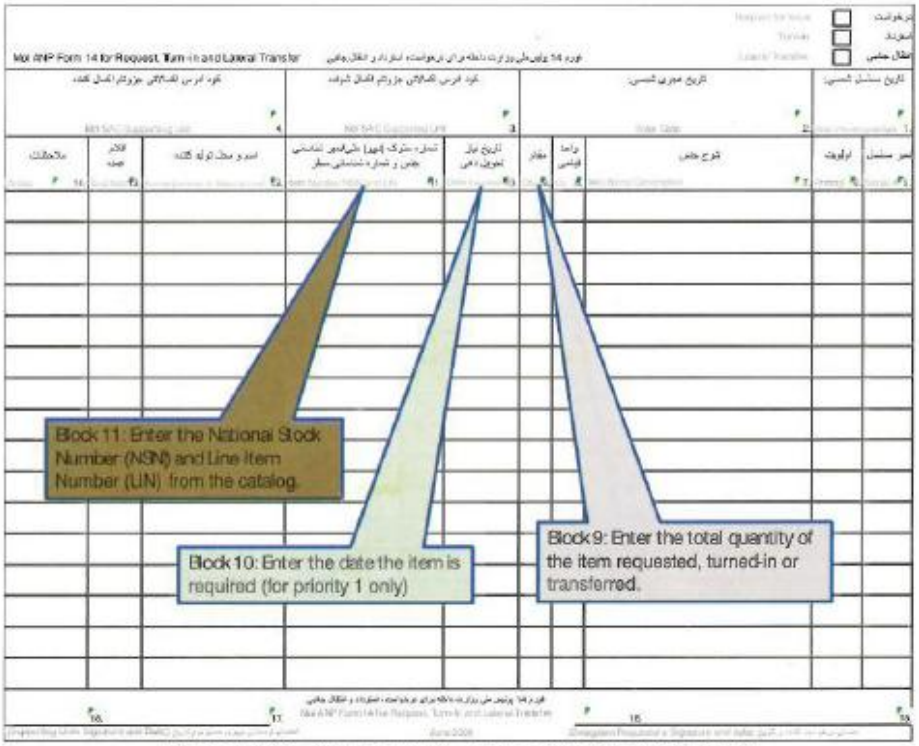


Figure 12-33 MoI Form 14, Request for Material (cont)

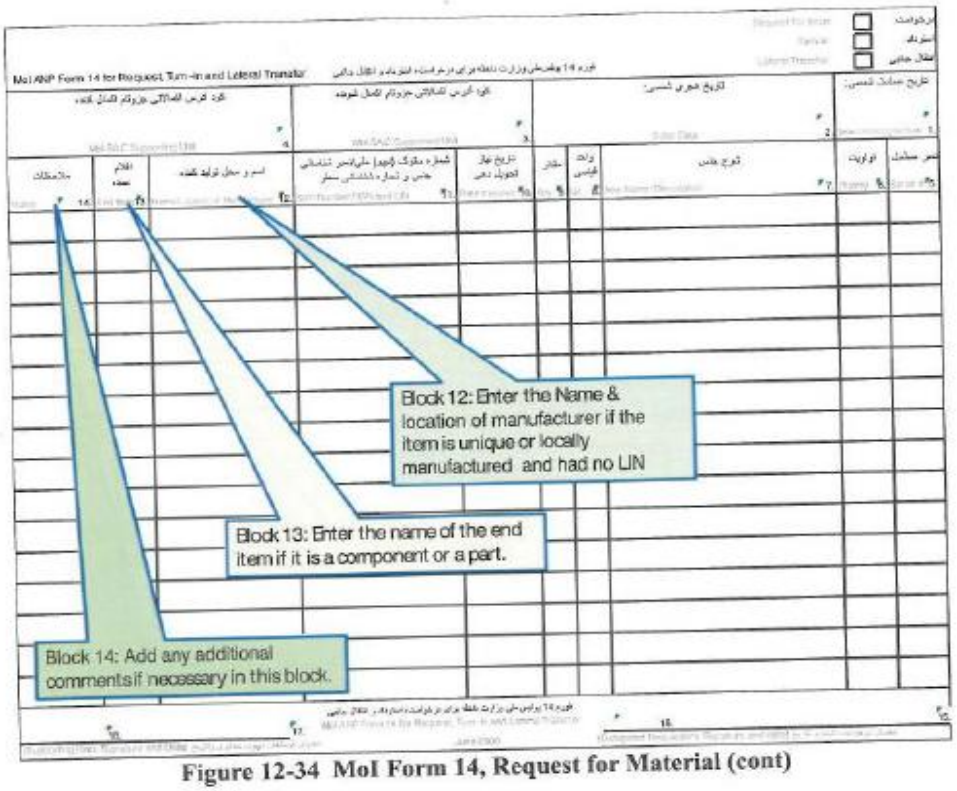


Figure 12-34 MoI Form 14, Request for Material (cont)

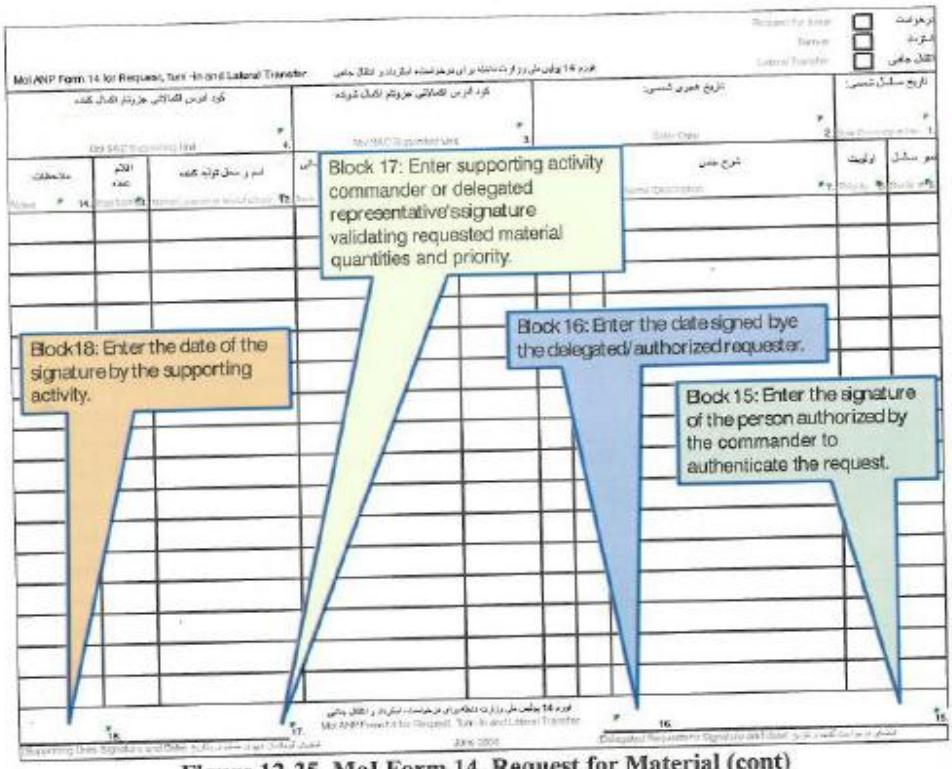


Figure 12-35 MoI Form 14, Request for Material (cont)

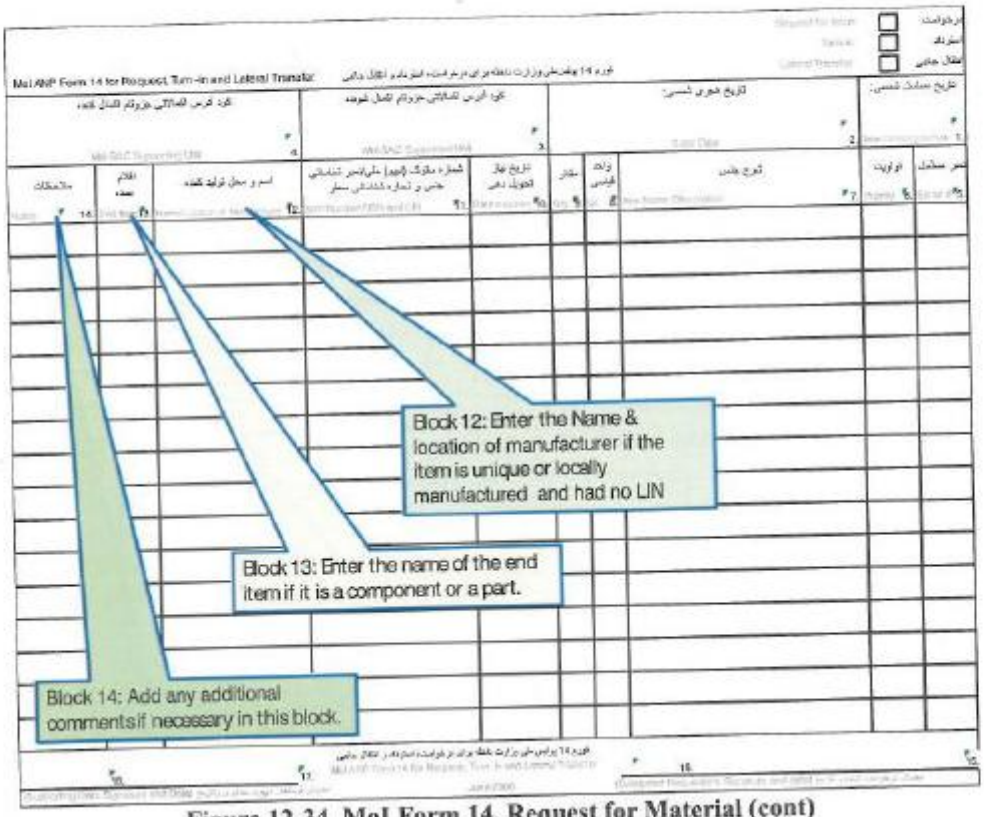


Figure 12-34 MoI Form 14, Request for Material (cont)

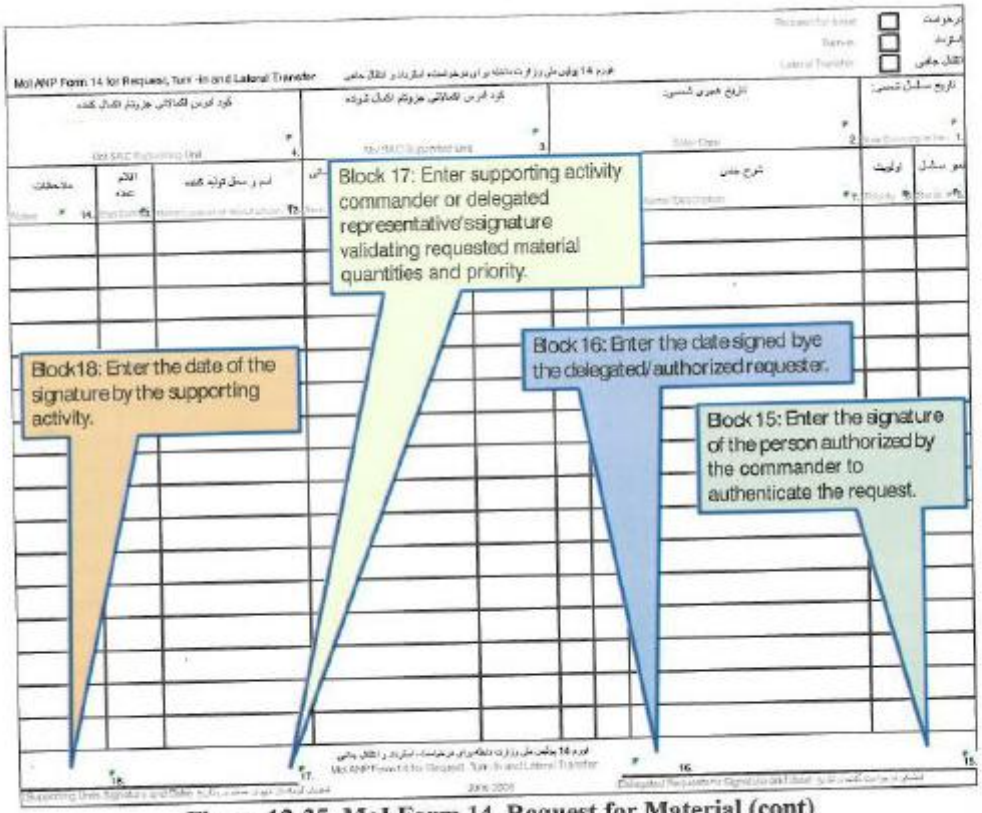


Figure 12-35 MoI Form 14, Request for Material (cont)

MOI FORM 63

MoI Form 63 - Work Order Form

The MoI Form 63 is the work form request for a repair or service on any piece of equipment serviced by the ANP maintenance facilities to include contracted services such as No Lemon and HEB. The MoI Form 63 helps maintenance offices approve, track and analyze maintenance and repair data.

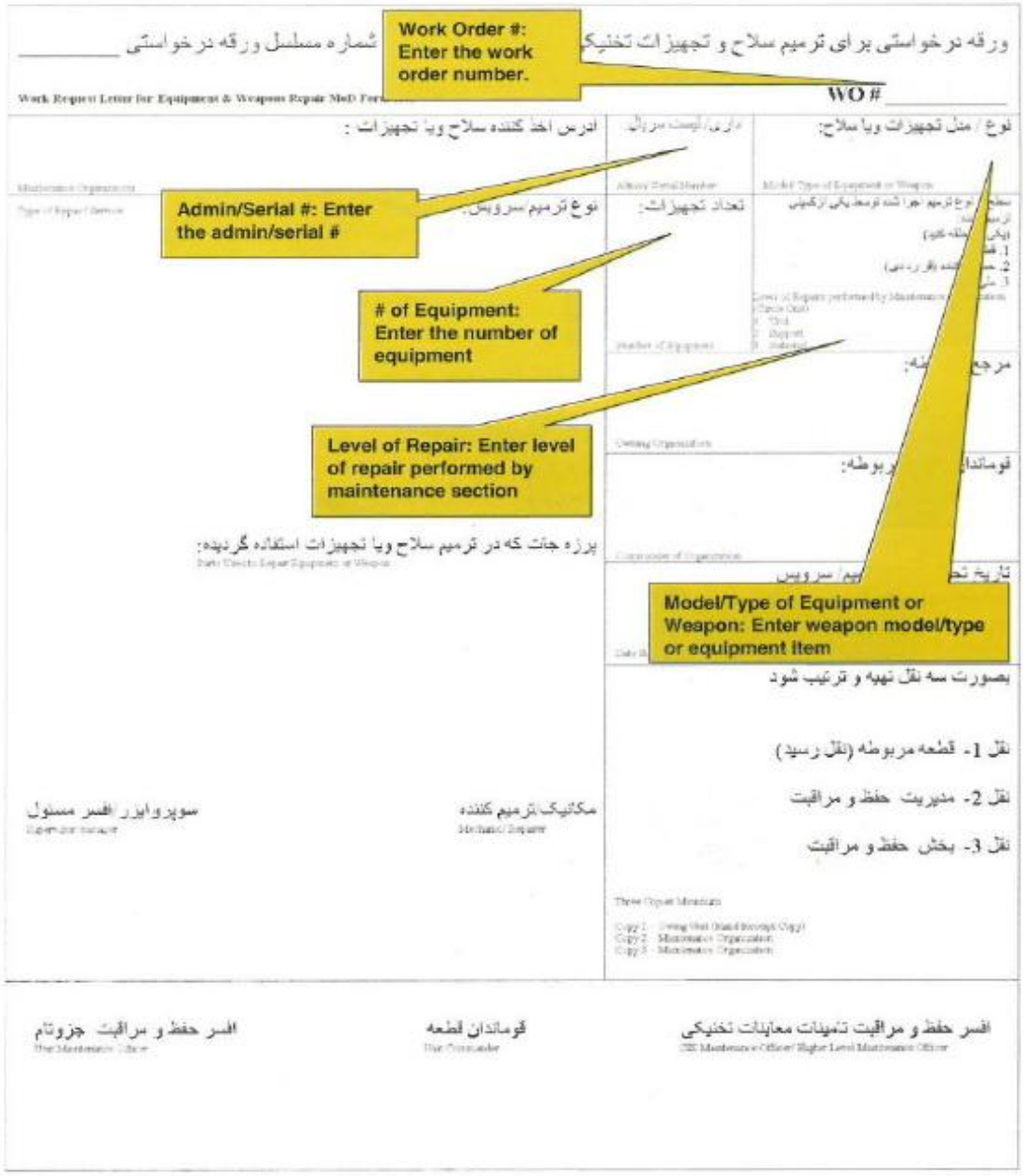


Figure 12-36 MoI Form 63, Work Order Form

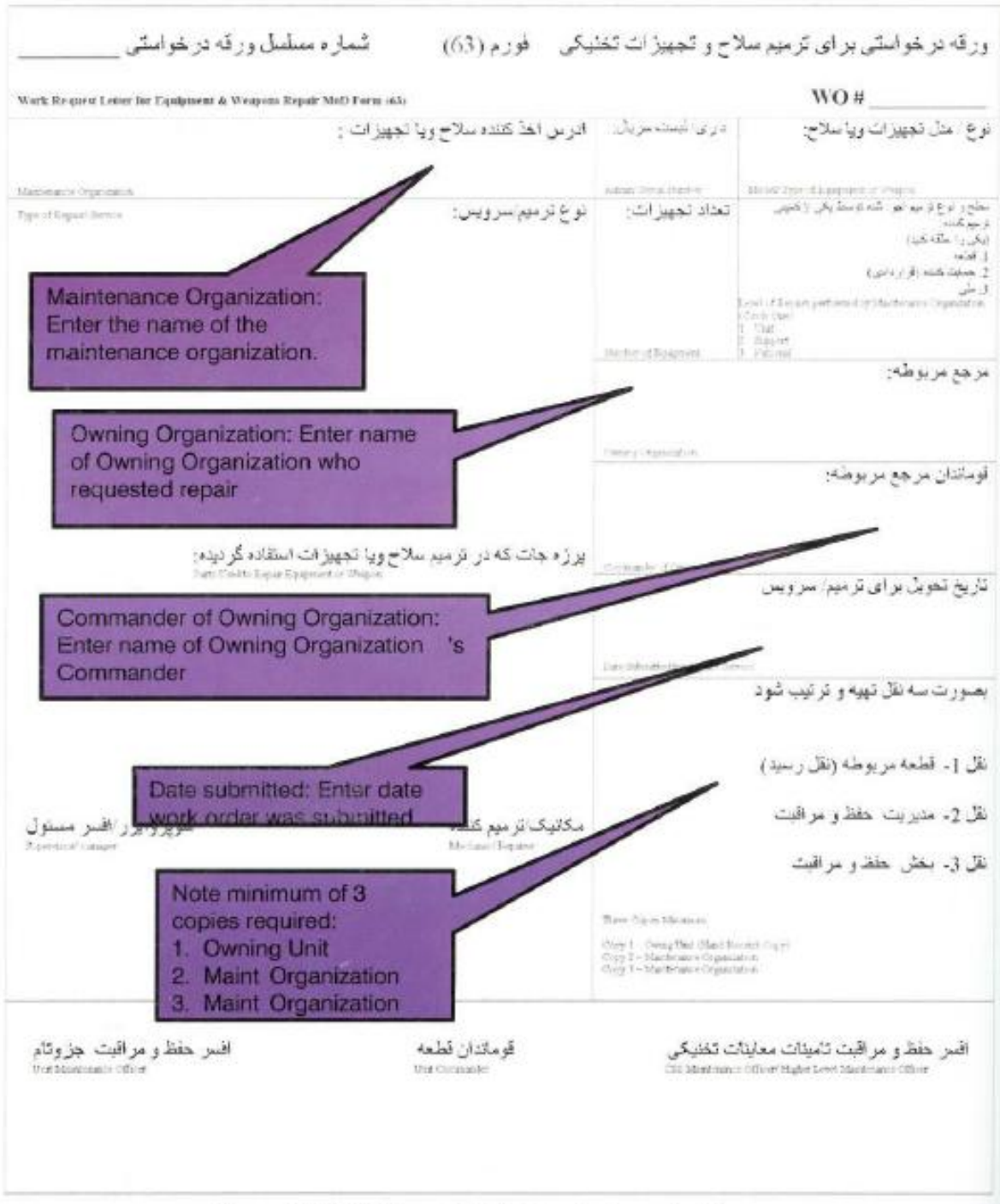


Figure 12-37 MoI Form 63, Work Order Form (cont)

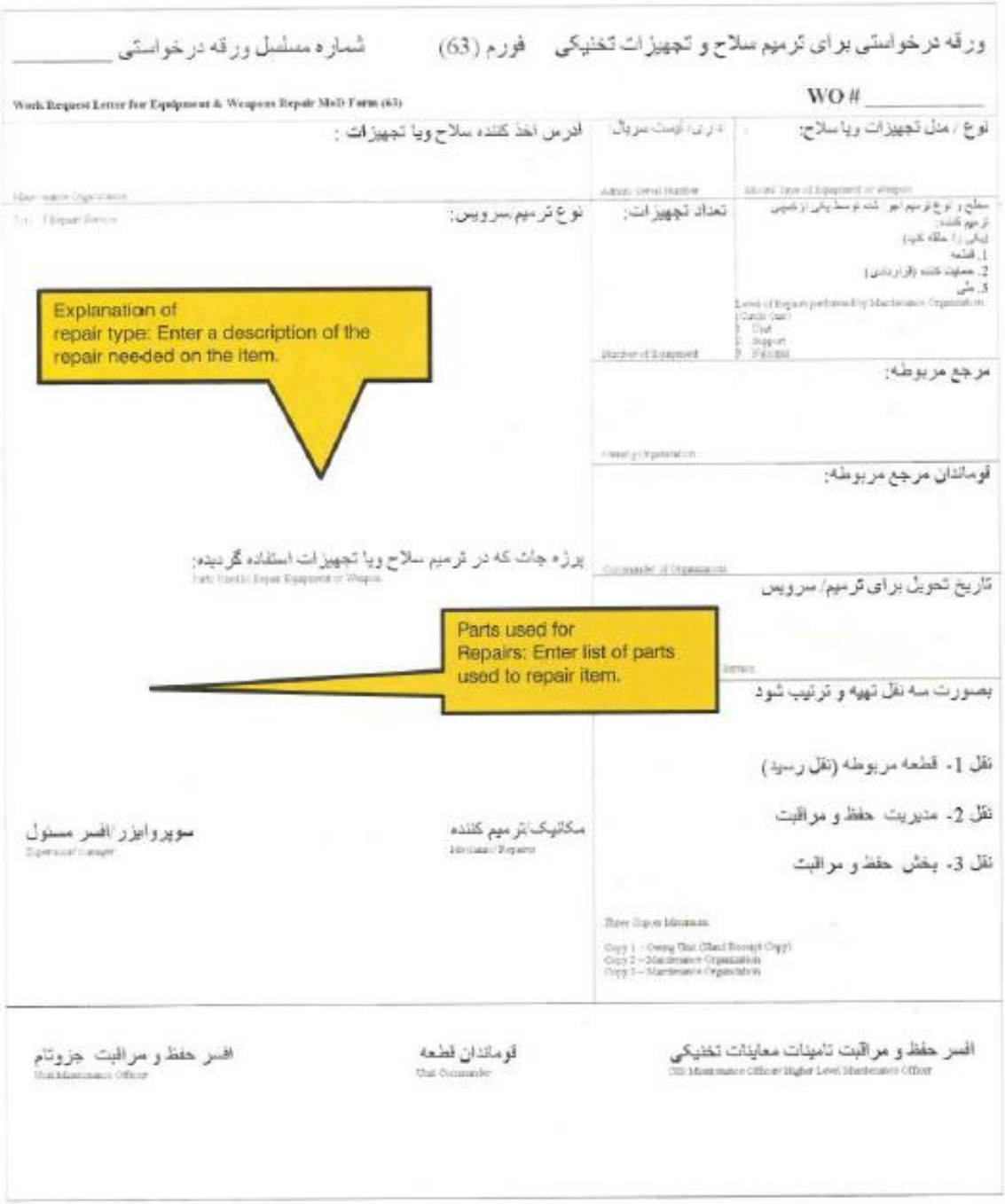


Figure 12-37 MoI Form 63, Work Order Form (cont)

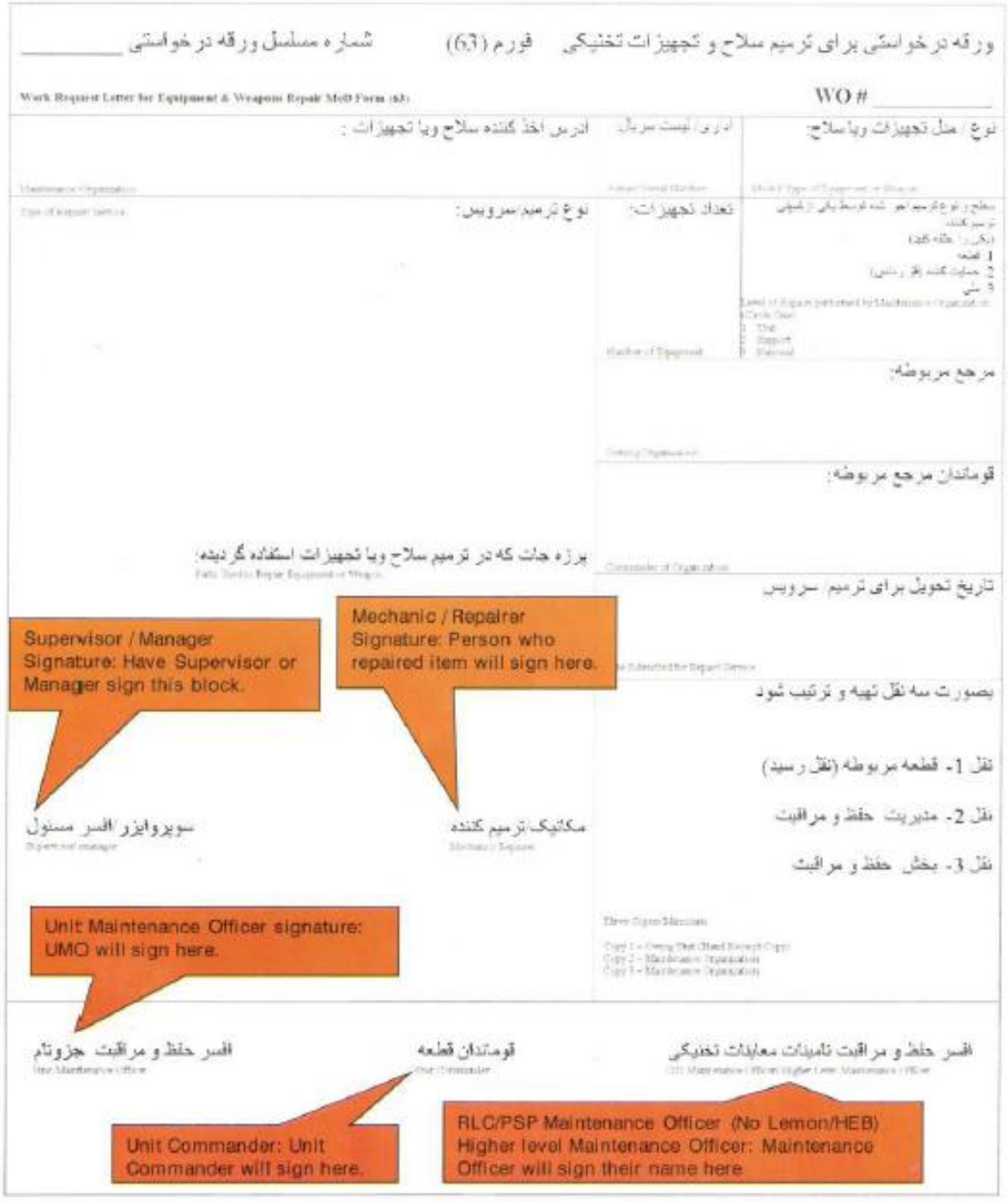
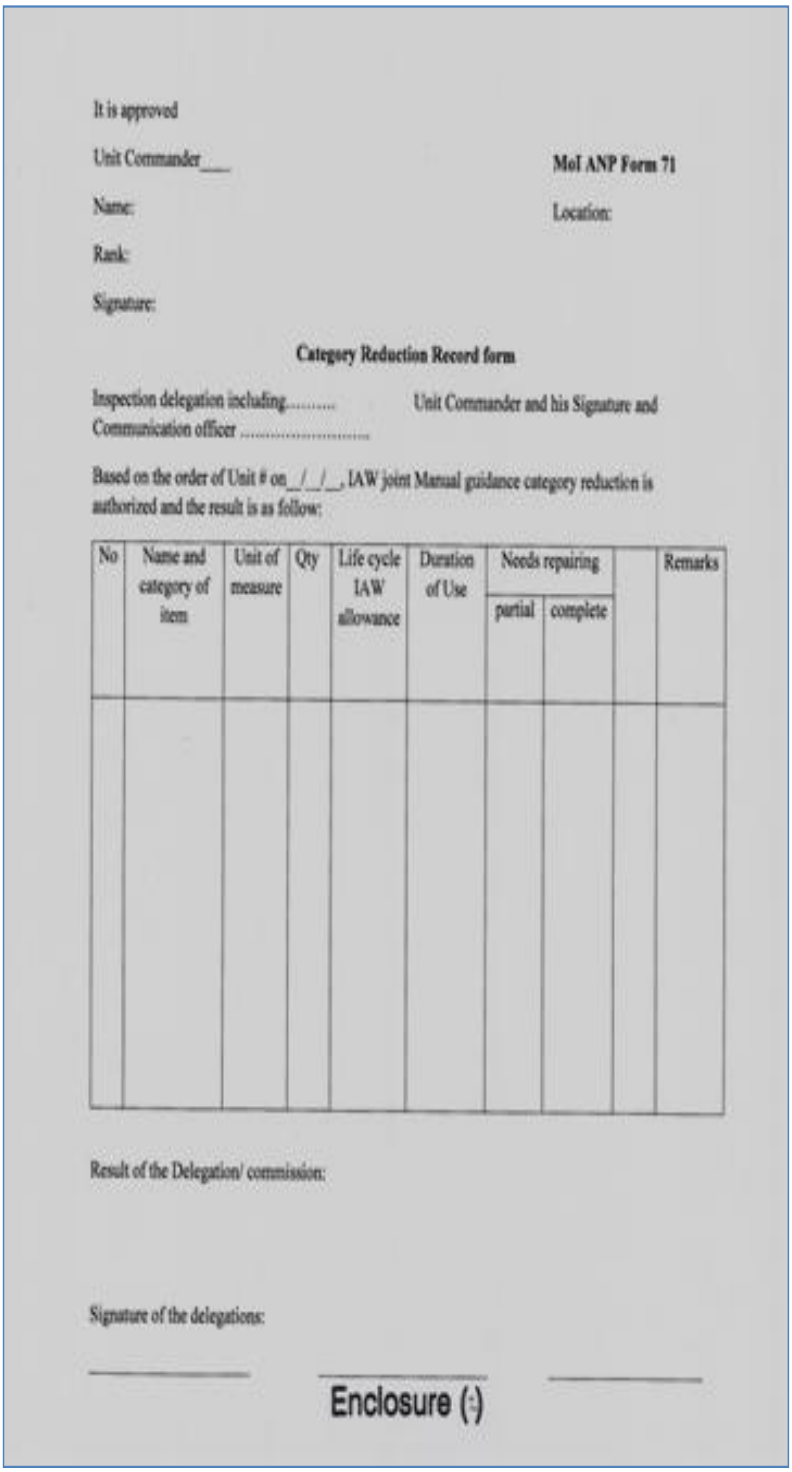


Figure 12-38 MoI Form 63, Work Order Form (cont)

MOI Form 71



It is approved

Unit Commander___ MoI ANP Form 71

Name: Location:

Rank:

Signature:

Category Reduction Record form

Inspection delegation including..... Unit Commander and his Signature and Communication officer .....

Based on the order of Unit # on__/__/__, IAW joint Manual guidance category reduction is authorized and the result is as follow:

No	Name and category of item	Unit of measure	Qty	Life cycle IAW allowance	Duration of Use	Needs repairing			Remarks
						partial	complete		

Result of the Delegation/ commission:

Signature of the delegations:

Enclosure (-)

MoI Form 71:

Category Reduction Records Form, will be used to investigate losses. This form will determine circumstances for the loss and if the government will be reimbursed.

MOI Form 71

Enclosure ()

وزارت داخله فرم 71 : فرم سوابق رده کاهش، استفاده خواهد شد به بررسی زیان. این فرم به شما این شرایط را برای از دست دادن را تعیین و در صورتی که دولت بازپرداخت شود.

MOI Form 72

MoI Form 72:

Permission Letter for Records Clearing,

initiated by unit to allow the property to be dropped and a replacement to be ordered.

Permission Letter for records

Form 72 اجازه نامه تصفیه قید فورم 72

Permission Letter for records No_____

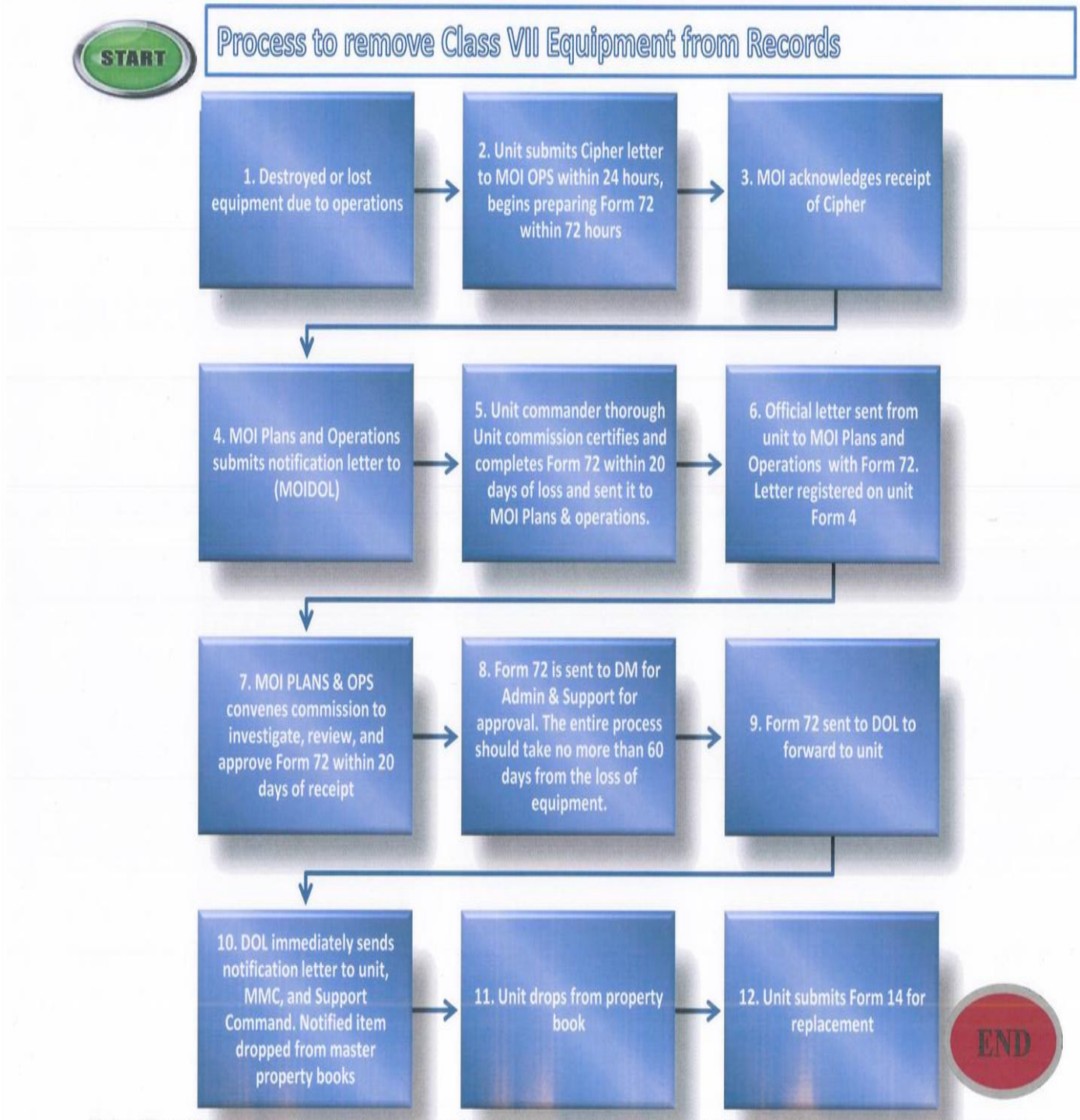
اجازه نامه تصفیه قید نمبر _____

Number شماره	Material Name اسم عینیات	Measurement Unit واحد قیاسی	Category کتگوری	Quantity تعداد	Units فیات	Cost قیمت	Tools, shortage اسباب موجوبه کمبود
							Details : تفصیلات

Enclosure (۱)

وزارت داخله فرم 72 : نامه اجازه نقل و انتقال سوابق، آغاز شده توسط این واحد اجازه می دهد اموال را به کنار گذاشته شود و جایگزینی برای دستور داده شود.

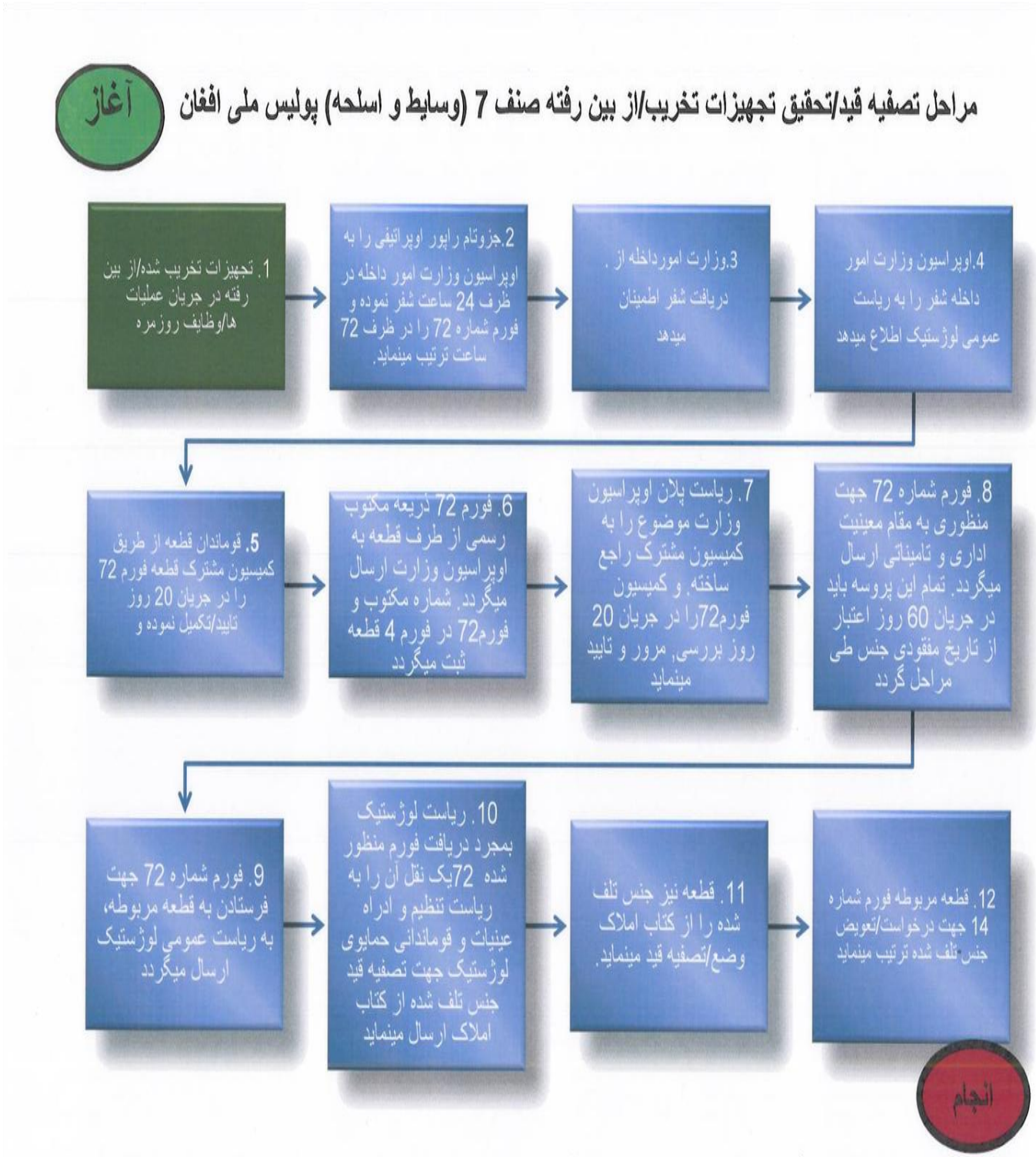
Process to remove Class VII Equipment from records



Note: If equipment is partially damaged and some components can be reasonably reused, the unit prepares Form 71 to accompany the Form 72.

Enclosure (1)

Process to remove Class VII Equipment from records DARI



یادداشت: اگر تجهیزات قسماً تخریب گردیده باشند و بعضی از پرزه جات آن قابل استفاده دوباره باشد, در اینصورت قطعه مربوطه فورم شماره 71 ترتیب داده و همراه با فورم شماره 72 آنرا ضمیمه مینماید.

Enclosure (I)

Radios

Interoperability

Highly Fielded Radios

ANP

Unencrypted		Vendor	Codan	Codan	Codan	ICOM	ICOM	ICOM	Motorola	Motorola	EF Johnson	EF Johnson	Harris	Harris	Harris
Compatible	Not Compatible	Model	2110 Base HF	2110 B Man-pack HF	VRM HF	F-70DS Hand-held VHF	IC-F521 Mobile VHF	Base Station VHF	GP 360 Hand-held VHF	GM 360 Mobile/ Base VHF	5100 Portable radio UHF	5300 Mobile Radio UHF	RF-5800H HF	RF-5800V VHF	5800M/ 310M Multi-band
Vendor	Model	Range	1.6 - 30 MHz	1.6 - 30 MHz	1.6 - 30 MHz	136 - 174 MHz	136 - 174 MHz	136 - 174 MHz	136 - 174 MHz	136 - 174 MHz	380 – 470 MHz	380 – 470 MHz	1.6 – 60 MHz	30 – 108 MHz	30 – 512 MHz
Datron	PRC-1099 HF	1.6 - 30 MHz													
Datron	RT-7000 HF	3 - 30 MHz													
Datron	PRC-1077 VHF	30 - 88 MHz													
Datron	PRC-1070 VHF	30 - 88 MHz													
Datron	HH-7700 VHF	30-80 Mhz													
Harris	5800M / 310M Multi-band	30 - 512 MHz									emission bandwidth difference	emission bandwidth difference			
Harris	RF-5800H HF/VHF	1.6 - 60 MHz													
Harris	RF-5800V VHF	30 - 108 MHz													
ICOM	IC-V82 VHF	144 - 148 MHz													

ANA

Radio, HF Transceiver RT7000

$15,137.28

Datron's RT7000-series are rugged, tactical 1.6 to 30MHz radios designed to provide long distance voice and data communications in hostile environments, either in vehicular or fixed station configurations. Separate receivers, transmitters, and remote-control models are also available. Accessories include amplifiers up to 5kW, automatic antenna tuners, antennas, power supplies, and audio equipment.

Frequency range 1.6 to 30 MHz (Tx); 100 Hz to 30 MHz (Rx); 10 Hz channel spacing

RF Power output 125W, PEP; 100W, average
Duty cycle Continuous service, all modes; programmable - 3 levels
Sensitivity 10 dB SINAD for 0.5uV input (2-30 MHz)
Audio 5W into 4 ohms; 0 dBm into 600 ohms.
Preset channels 256, standard; 1000, optional
Modes USB, LSB, CW, AME; simplex or half-duplex
Input power requirements 11 - 16 Vdc (+12Vdc models); 20-32Vdc (+28Vdc models)
Size 6" x 14" x 18" (H x W x D)
Weight 35 lbs.
Antenna port 50 ohms, type N connector
Interface Control: two COM ports - RS232; compatible with EIA
RS422/423/485 with option.
Audio: 600 ohms, balanced and isolated.
Remote Control (up to 50 ft. from RT7201E) (2 - 4 km from RT7201I)
Scanning multiple scan groups, operator-selectable scan rates
High-level embedded voice encryption
B.I.T.E. Capability
FED-STD-1045A ALE
MIL-STD-810 tested

Antenna, Tuner (RAT700B)

$1,301

For those users that require narrowband antenna systems, Datron offers both professional and military automatic antenna tuners in models of 125W and 1kW. These tuners transform the complex impedance of a narrow-band tuner into 50 ohms to match the output of the transceiver of companion amplifier. Each tuner that Datron offers is rugged, waterproof, and can be used in either mobile or fixed station configurations.

RF Power handling capability 125W and 1000W, PEP or average

Frequency range 1.6 to 30 MHz

Tuning range - whips and 10 foot whip: 2.5 - 30 MHz

wires with minimum 16 foot whip: 2 - 30 MHz

specified length 32-foot whip: 1.6 - 30 MHz

75 to 150 foot long wires: 1.6 - 30 MHz

NOTE: effective tuning depends on setting up a good ground system in conjunction with the antenna

RF tune power 10W

Tune time 3 - 5 secs, initial tune (typical)

10 msecs, memory tune (typical)

Input impedance 50 Ohms

Power requirements 12Vdc, 1.8A, max

100 Channel Memory for rapid tuning – ALE and silent tuning

Tuning accuracy 1.5:1 VSWR (typical)

Continuous duty operation (FSK) The minimum antenna lengths stated here must be adhered to:

75ft (2-30 MHz)

32ft (3-30 MHz)

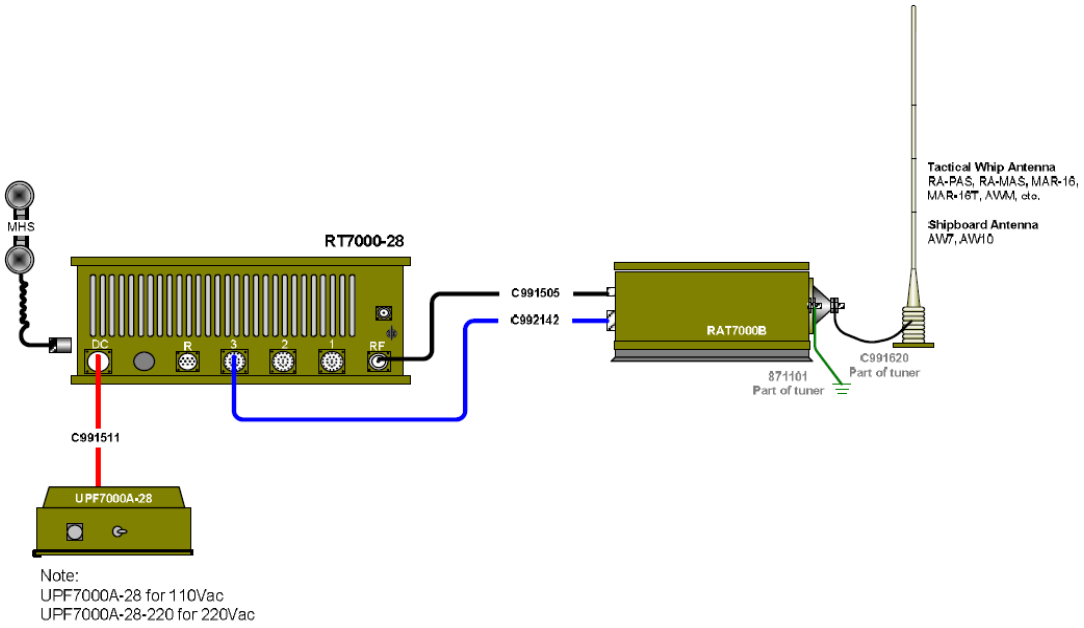
16ft (5-30 MHz)

10ft (7-30 MHz)

• Rugged and immersible

Standard Configuration

Components	Description	Depot NSN
RT7000-12 w/ ALE	Transceiver	(5830-01-A00-0680)
UPF7000-12	220V Power supply w/ plug	(7050-01-A00-0533)
RAT7000	Antenna tuner	(5820-01-A00-0575)
MHS 189/GR	Handset	(5965-00-069-8886)
C991511	Cable from power supply to RT7000.	(5830-01-A00-0576)
C991505	RF cable between tuner and transceiver.	(5830-01-A00-0579)
C992142	Control cable between tuner and transceiver.	(5830-01-A00-0433)



Radio, HF Transceiver PRC1099A Manpack

$7,446

The PRC1099A is a HF tactical man pack radio covering the 1.6 to 30 MHz range. It is rugged, lightweight, easy-to-use, and can be configured with a variety of add-on accessories to create systems up to 400W for vehicular usage. The PRC1099A is a completely sealed radio, a proven performer in the field in many different countries, and fulfills the requirement for both functionality and reliability in a tactical environment.

RF power output 5/20W, PEP or average, manpack; 5/20/100/400W in mobile configuration

Frequency range 1.6 to 30 MHz;

Available channels 2,840,000 in 10 Hz steps

Duty cycle Continuous duty service at 5W

Receiver Sensitivity 10 dB SINAD for 0.5uV input

Audio 500mW into 16 ohms; 50mW @ 150 ohms; 0 dBm into 600 ohms.

Antenna Tuning fully automatic antenna tuning; 100 channel memory.

Tune time 1-3 seconds initial tune (typical); 20ms, memory mode for preset channels (no RF output in memory tune mode)

Antenna switching Tuner bypassed and 50 ohm port automatically engaged when whip (or long-wire) antenna removed

Antenna port BNC for 50 ohm broadband antennas or for connection to external amplifier; whip antenna port.

Preset channels 100 Programmable memory channels

Scanning ALE scan modes

Modes USB, LSB, CW, AME; simplex or half-duplex

Input power requirements 11 - 15 Vdc;

Battery pack BB-LA6 sealed lead calcium; BA5598/U Lithium (case holds spare battery)

Size 11.1” x 4.1” x 9.25” (28.2cm x 10.5cm x 23.5cm); W x H x D, including

Weight 9.7 lbs (4.4 kg), w/o battery pack; BB-LA6 pack is 2 lbs (0.9kg).

Temperature -30 to +60 degrees C, operating

- B.I.T.E. Capability

Radio, VHF Transceiver PRC1077

Tactical Man pack $3,796
Base Station $8,271
Vehicle Mount $8,271
Retransmit $11,319

The PRC1077 radio has earned the reputation of being the radio of choice for defense organizations around the world when replacing and upgrading their existing tactical VHF network. It is the modern man pack radio with advanced features proving long mission life that retains the same form, fit, and function of older manpacks still in operation. IT also has provision for an internal encryption module to allow secure communications when required. Datron's PRC1077 is also available in a 50W mobile system suitable for vehicular use, and it can use its own mount or the existing MT-1029/OE3633 US Military mounting configuration.

Frequency range 30 - 88 MHz
RF power output 0.3W, 2W or 5W, selectable
Available channels 2320 in 25 kHz steps
9 Preset channels 10 programmable memory channels
Modes FM; simplex, semi-duplex
Duty cycle Continuous service
Receiver Sensitivity 10 dB SINAD for 0.3uV
Antenna port BNC for 50 ohm broadband antennas or for connection to external amplifier; whip antenna port.
Input power requirements 11 - 15 Vdc;
Battery pack BB-LA6 sealed lead calcium; BA5598/U Lithium (case holds spare battery)
Battery life 30 hrs @ 9:1 duty cycle (5W Tx) using BB-LA6
Antennas 3 ft tape and 10 ft whip; 50 ohm antenna
Size 11.1” x 4.1” x 9.25” (28.2cm x 10.5cm x 23.5cm); W x H x D, including battery pack.
Weight 9.7 lbs (4.4 kg), w/o battery pack; BB-LA6 pack is 2 lbs (0.9kg).

Radio, VHF Transceiver PRC 1070 Squad Radio

General

Complete 30 to 88 MHz coverage
2,320 Available channels (25kHz steps) - 9 Presets
Internal B.I.T.E.
Channel programming Front panel or remotely via keyfill device
Modes: FM, FF clear voice
Input power requirements 7.5 Vdc;
Battery pack H4595 1.8AH, rechargeable NiCd
Frequency stability 15 ppm
Antenna 12” rubber duck or 3 ft. tape (AT892BB-ADPT)
Antenna port BNC for 50 ohm broadband antennas or for connection to external
amplifier; whip antenna port.
Display Backlit,multi-function custom LED

Mechanical, Environmental

Size (H x W x D) 254.0 x 89 x 44 mm (10 x 3.5 x 1.75 inches)
Weight 1.7 lbs (0.8 kg) w/o battery; 2.4 lbs (1.2 kg) w/battery

Transmitter

RF power output 100mW or 2W, operator selectable
Duty cycle Continuous service, all modes
Harmonics -46 dB, 2nds; -50 dB, others
Modulation Narrowband voice, +/- 7 kHz
150 Hz tone deviation 3 kHz +/- 500 Hz

Receiver

Sensitivity 12 dB SINAD for 0.5uV input
Squelch 150 Hz tone
Audio 400mW into 8 ohms; 12mW into 1000 ohms

Accessories

H2200 “Stealth” headset (fits underneath standard MIL headset)
MT1060DS Vehicle docking station
MT1060MM Mobile 30W RF booster amplifier
AT892BB-ADPT 3 ft. tape antenna (broadband)
CMS2100 Programming kit (software & manual)
KF1088B, C992303, 1080ADPT Programming hardware accessories

Radio, VHF Transceiver HH-7700 Handheld

The HH7700 is 5W VHF handheld transceiver that provides communications capability in the 30 to 88 MHz band. It offers up to 2320 channels at 25 kHz spacing, or 4640 channels at 12.5 kHz spacing. The HH7700 provides in the standard configuration, up to sixteen programmable memory channels with 100 additional channels available through the keypad. It is interoperable in FM clear-voice mode with our Squad Radio family (PRC1060/70/80), the Spectre-V series (PRC2100/2150), the PRC7700V and most other single-channel 30-88 MHz

VHF/FM radios using a 150 Hz tone-squelch or CTCSS squelch system. Datron offers two battery pack options, a standard capacity battery permitting up to 10 hours of autonomy and a high capacity battery offering up to 18 hours of autonomy

GENERAL
- FREQUENCY RANGE: 30 MHz to 87.9875 MHz
- CCIR EMISSION TYPE: 16K0F3E (Wide), 11K0F3E (Narrow)
- MODE: SIMPLEX
- CHANNEL SPACING: 25 kHz (Wide), optional 12.5 kHz (Narrow)
- TOTAL PRESET CHANNELS: 16
- MODULATION: FM, (300 Hz to 3000 Hz)
- DISPLAY: Alphanumeric LCD, 14 segments, 6 digits plus icons
- PROGRAMMING: Computer Programmable
- COMSEC: Optional Voice Scrambler *
- CURRENT CONSUMPTION:
    - o TRANSMIT MODE: Less than 2.0 A
    - o RECEIVE MODE: Less than 0.6 A (excluding scrambler)
- BATTERY LIFE: 4400 mAH Li-Ion: Approx. 18 hours (5-5-90, high power)
  2200 mAH Ni-MH: Approx. 10 hours (5-5-90, high power)

ENVIRONMENTAL
- TEMPERATURE: -30°C to +60°C
- HUMIDITY: 90%
- WATER RESISTANCE: Splash Proof

RECEIVER
- RECEIVER TYPE: Dual Conversion, Super Heterodyne
- SENSITIVITY: Better than 0.35µV for 12 dB SINAD
- SQUELCH: 150-Hz Tone, CTCSS (38 tones)
- AUDIO DISTORTION: ≤ 3%
- AUDIO OUTPUT: 400mW (≤ 5% distortion), 500mW max.
- OUTPUT IMPEDANCE: 8Ω

TRANSMITTER
- OUTPUT POWER: Hi: 5W, Mid: 1W, Low: 500mW (nominal)
- ANTENNA IMPEDANCE: 50Ω
- FREQUENCY STABILITY: ± 2.5 ppm (-30°C to +60°C)
- MODULATION: Direct frequency modulation

Radio, Amplifier RA500D

Description: RF Power output 500 W, PEP or Average, ± 1 dB

Frequency range 1.6 to 30 MHz

Harmonics -50 dB (2 to 30 MHz)

Intermodulation distortion -30 dB

Duty cycle Continuous service, all modes

RF drive level 50W, nominal

Input/output Impedance 50 Ohms

VSWR ≤ 2:1 with power rollback and bypass protection

Power requirements 110Vac or 220Vac

R/T switching 15 ms

Mechanical

Size 22.3cm x 48.3 cm x 38.9 cm (8.8” x 19” x 15.3”)

Rack height 5U

Weight 23.6 kg

Cooling Forced air

Color Gray, (TW-series); OD, (RA-series)

Environmental

Temperature -20°C to +50°C operational, -40°C to +70°C storage

Humidity 95% @ +50°C

Controls and Indicators

Controls Amplifier ON/OFF

Metering Forward RF power, Reflected RF power

Connectors RF input, RF output, Control, Fault, Tuner

Indicators (LED's) AC present, DC present, PTT, high VSWR, high DC current, high temperature, fault (bypass mode)

Radio, Amplifier RA1000D

Description: RF Power output 1000 W, PEP or Average, ± 1 dB

Frequency range 1.6 to 30 MHz

Harmonics -50 dB (2 to 30 MHz)

Intermodulation distortion -30 dB

Duty cycle Continuous service, all modes

RF drive level 50W, nominal

Input/output Impedance 50 Ohms

VSWR ≤ 2:1 with power rollback and bypass protection

Power requirements 220Vac, 20A, and (180-264V)

R/T switching 15 ms

Mechanical

Size 26.7 cm x 48.3 cm x 38.9 cm (H x W x D)

Rack height 7U

Weight 31.5 kg

Cooling Forced air

Color Gray, (TW-series); OD, (RA-series)

Environmental

Temperature -20°C to +50°C operational, -40°C to +70°C storage

Humidity 95% @ +50°C

Controls and Indicators

Controls Amplifier ON/OFF

Metering Forward RF power, Reflected RF power

Connectors RF input, RF output, Control, Fault, Tuner

Indicators (LED's) AC present, DC present, PTT, high VSWR, high DC current, high temperature, fault (bypass mode)

Radio, Amplifier AM-1077 $2,063

Radio, Amplifier AM-1077ATU **with internal auto-tuner for 3m whip $2,063**

Antenna, ABB100

- Fixed Station, Mobile, Tactical
- Broadband or Narrowband
- Power Handling to 5kW
- MIL Construction
- NVIS Applications
- Rapid Deployment in the Field
- Applicable to any HF Transceiver

	Length	Rated RF Power
ABB100A	142 ft.	125 W
ABB100B	112 ft.	125 W
ABB1000A	142 ft.	1000 W
ABB1000B	112 ft.	1000 W

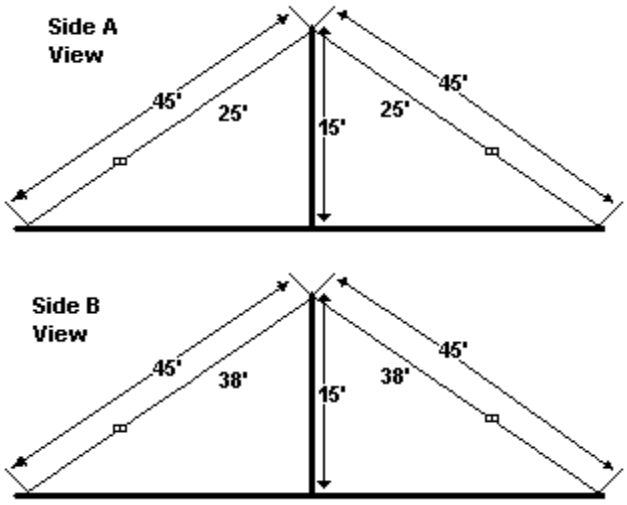
Antenna, AT-271A/U

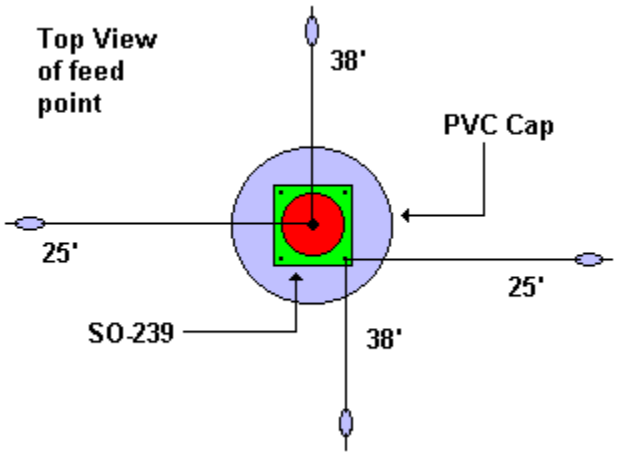
10 ft. collapsible, sectional, Tactical Whip

Antenna, AT-892/U

Description: Standard MIL 1m blade antenna for tactical use in man pack mode.
OVERALL LENGTH 36.900 INCHES NOMINAL
1 ANTENNA AND 1 BASE
BROADBAND 30 TO 87.9 MHZ; STEEL; FOLDABLE; WHIP ANTENNA

Antenna, AS-2259/GR Near Vertical Incident Skywave (NVIS)





NVIS, or Near Vertical Incidence Skywave, refers to a radio propagation mode which involves the use of antennas with a very high radiation angle, approaching or reaching 90 degrees (straight up), along with selection of an appropriate frequency below the critical frequency, to establish reliable communications over a radius of 0-200 miles or so, give or take 100 miles. Deliberate exploitation of NVIS is best achieved using antenna installations which achieve some balance between minimizing groundwave (low takeoff angle) radiation, and maximizing near vertical incidence skywave (very high takeoff angle) radiation.

Not just any old frequency will work for NVIS. Successful NVIS work depends on being able to select, or find (through trial and error), a frequency which will be reflected from the ionosphere even when the angle of radiation is nearly vertical. These frequencies usually are in the range of 2-10 MHz, though sometimes the limit is higher. The trick is to select a frequency which is below the

current critical frequency (the highest frequency which the F layer will reflect at a maximum--90 degree--angle of incidence) but not so far below the critical frequency that the D and/or E layers mess things up too much.

NVIS techniques concentrate on the areas which are often in the skip zone. The idea is to radiate a signal at a frequency which is below the critical frequency, at a nearly vertical angle, and have that signal reflected from the ionosphere at a very high angle of incidence, returning to the earth at a relatively nearby location. Of course, no antenna radiates all its signal at exactly one angle, so the best we can get is a range of angles, ranging from perfectly vertical, to nearly vertical. The portion of the signal which is radiated at a vertical, or nearly vertical, angle reflects back to earth over some radius, which is determined by the lowest angle at which the antenna radiates much signal. Absorption by the D layer, and other factors, determine some minimum frequency below which the signal will no longer be usable, and usually some distance beyond which signals will no longer be usable.

Leading Particulars:
Size:
Weight:
Frequency: 2 - 12 MHz
Polarization: Circular
Radiation Pattern: omni directional
Power Rating:
Gain:
Impedance: 50.0 OHMS

Antenna, Log-periodic

Description: Broadband, multi-element, unidirectional, narrow-beam antenna that has impedance and radiation characteristics that are regularly repetitive as a logarithmic function of the excitation frequency. The individual components are often dipoles, as in a log-periodic dipole array (LPDA).

Log periodic antennas are arrays that are designed to be self-similar and thus are fractal antenna arrays.

It is normal to drive alternating elements with a circa 180^{o} (π radian) phase shift from the last element. This is normally done by wiring the elements alternatingly to the two wires in a balanced transmission line. The length and spacing of the elements of a log-periodic antenna

increase logarithmically from one end to the other.

Overall Height: 100FT Voltage Required 115 or 230 volts 50/60HZ 3. Installation area required: 0.31 acres 4. Anchor bars spread out 80 ft from mast

Antenna, MAR-16T

Length	Rated RF Power
16 ft.	1000W

Flexible Spring Base with sidemount bracket, feed-thru design

Vehicular; long-range in vertical attitude or NVIS when tied down in semi-horizontal plane.

Antenna, OE-254/GRC

Description: 50 ohm omni-directional biconical antenna designed for broadband operation without field adjustment from 30-88mhz, up to 350 watts. The antenna group is produced to Military Specification MIL-A-49204 and can withstand 90 mph winds without ice coating and 60 mph winds with 0.5 in of radial ice coating the entire antenna and remain erect and operational.

Application:	Ground-Based Communications
Frequency:	30 to 88 MHz
Impedance:	50 Ohms Nominal
VSWR:	3.0 to 1 Maximum
Polarization:	N/A
Pattern:	Omni-Directional
Connector:	Type "N" Female
Max Weight:	47 lb Maximum
Max Height:	41.75 ft Approx.
RF Power Capacity:	350 Watts Continuous

Radio, Repeater Motorola CRD500

Frequency Rang Radio Dependant
Dimensions (H x W x D) 7.5” x 17.5” x 13.5” (191mm x 445mm x 343mm)
Weight: 47 lbs. (21.3 Kg)
Duty Cycle: Continuous Low Power 25W (to duplexer)
Intermittent High Power 40/45W (to duplexer)

Mounting Accessories - 19”rack mountable

Controllers - offer you a range of options. A unidirectional configuration provides added range for radios on widespread worksites. A bidirectional configuration can temporarily join two separate groups during critical situations. Unidirectional cross band provides the capability to monitor frequencies such as weather or road condition channels, and bidirectional cross band can temporarily join two groups that normally operate on different frequency bands.

Duplexers - let you use just one antenna for both transmitting and receiving signals. The use of a duplexer is more cost effective than two antennas and feed lines, and can better equalize the transmit and receive ranges to improve radio communications.

Radio, Transceiver Motorola GP328

403-470 MHz 12.5/20/25 KHz 16Ch UHF

Motorola GP328 UHF 1/4/6Watts
CGISS Asia Pacific Product

Standard Features:

-Companding On/Off per Channel
-Switchable Channel Spacing (12.5/20/25KHz)
-Low Level Expansion
-Repeater Talkaround
-Emergency Siren /Alarm
-Time Out Timer
-Tone Tagging
-Tight/Normal Squelch
-Tri-colour LED Battery Strength Indicator
-Monitor
-Option Boards :
Voice Storage Board (PMLN4283)
DTMF Decoder - Busy Channel Lockout
-Nuisance Channel Delete
-Priority Scan
-Internal VOX
-Radio to Radio Cloning (By PMKN4001)
-PL/DPL
-High/Low Power
-MDC Signaling:
-PTT-ID encode
-Call Alert decode
-Voice Selective Call decode
-Selective Radio Inhibit
-Radio Check
-Emergency Encode

-Quick Call II Signaling :
-Call Alert decode
-Voice Selective Call decode

-DTMF Signaling :
-PTT-ID encode
-Encode (requires retrofit kit PMLN4273)
Voice Selective Call
Group Call

standard package include:

-Standard Battery (VHF/UHF: NIMH 1450mAH Med Cap Battery(HNN9008) &
Low band : NiCd 1300mAH High Cap Battery(HNN9012)
-230V Rapid Charger (Euro Plug) - PMTN4025
-Spring Belt Clip (For 1.5" Belt Width) - HLN9844
-User Manual - 6804110J54
-Antenna : (UHF: Standard Whip Antenna : PMAE4016)

Radio, Transceiver Motorola GP340

403-470 MHz 12.5/20/25 KHz 16 Ch UHF

The GP340 Features

Signaling

The radio software encompasses Private Line™ and 5-tone selective signaling.

Channel Scan allows activity on different communications channels to be monitored and answered.

X-Pand™ Voice Compression and Low Level Expansion

Crisp, clear and strong audio quality in virtually any noisy environment. Low-level expansion allows further improvements in audio quality by reducing noise usually heard during pauses in conversation.

Voice Operated Transmit (VOX)
Adjustable Power Levels
Emergency Signaling
Programmable Channel Spacing (12.5/20/25 KHz)

Option Board Expandability

You can expand the existing capabilities by adding one of the following option boards. Encryption for message security, SmarTrunk II for low cost trunking, or Voice Storage option board provides voice recorder features allowing you to store and retrieve messages.

Radio, Transceiver Motorola GP344

Dimensions only - H x W x D (mm) 101.5 x 55.5 x 30.5
Frequency range: VHF 136 -174 MHz UHF: 403 - 470
Power out put VHF: 1- 5W - UHF 1 - 4W

- 16 channels - offering excellent flexibility
- Signaling Private line and 5-tone selective signaling
- Channel Scan Monitors activity on different channels
- Voice Compression Clear and strong audio quality
- Low Level Expansion Reduces noise during pauses in transmissions
- Emergency Signaling Sends help signal to pre-defined person
- Lone Worker Radio enters emergency mode if user does not respond
- Talkaround Communicate via dispatcher or unit to unit.
- Adjustable Power Levels High and low power settings extend battery life
- Voice Operated Transmit (VOX) Hands free operation with headset
- Whisper Allows user to speak quietly
- Programmable Channel Spacing Flexible channel spacing (12.5/20/25 KHz)
- Channel scan - Monitor several channels at once

VOX

Radio, Transceiver Motorola GP380

339-403-470 MHz 12.5/20/25 KHz 16Ch LCD Display / Full Keypad UHF
The essential tool for growing organizations, the GP380 offers a unique versatility allowing the radio to reflect the changing way that individuals need to communicate when working over a large area.

In addition to the features of the GP340, the GP380 has a full keypad and an alphanumeric display including battery gauge and caller identity. The simple intuitive menu and contact list makes one-to-one or one-to-many calls easy, putting the power of the GP380 at the user's fingertips. And for occasions when voice communication is inappropriate, pre-defined text messages can be sent between users.

Overview

- Signaling - PL & 5–Tone
- Voice Operated Transmit (VOX)
- Channels - 255
- Option Board
- Full Keypad
- 14-character Alpha Numeric Display
- Emergency Button
- Battery Life - Up to 14 Hours
- MilSpec - 810 C,D,E

xX-PandT Voice Compression and Low Level Expansion
Crisp, clear and strong audio quality in virtually any noisy environment. Low-level expansion allows further improvements in audio quality by reducing noise usually heard during pauses in conversation.

Option Board Expandability
You can expand the existing capabilities by adding one of the following option boards; Encryption for message security, and SmarTrunk II for low cost trunking. Voice Storage option board provides voice recorder features allowing you to store and retrieve messages.

Radio, Transceiver Motorola GP388

403-470 MHz 12.5/20/25KHz 225 Ch LCD Display / Full Keypad UHF

The small and smart GP388 offers all the functionality of the popular GP380 but one third smaller and lighter. In addition to the features of the GP344, the GP388 has a full keypad and an alphanumeric display including battery gauge and caller identity. The GP388 is not option board capable.

The GP388 is essential for growing organizations because of its unique versatility. When necessary, the radio can easily be programmed in the field to add or delete features.

Overview

- Signaling - PL & 5–Tone
- Voice Operated Transmit (VOX)
- Channels - 255
- Full Keypad
- 14 Alpha Numeric Display
- Emergency Button
- Battery Life - Up to 13 Hours
- MilSpec - 810 C,D,E
- Small & Light

X-PandT Voice Compression and Low Level Expansion

Crisp, clear and strong audio quality in virtually any noisy environment. Low-level expansion allows further improvements in audio quality by reducing noise usually heard during pauses in conversation.

Radio, Transceiver Motorola GP2000

Frequency Range **VHF** 136 – 174 MHz
UHF 403 – 440 MHz 435 –480 MHz
Memory Channels 99
Dimensions: **H x W x D**
115.5mm x 56mm x 35mm (38mm top)
Weight: 350g
Average Battery Life @ 5 - 5 - 90 Duty Cycle

Transmitter VHF UHF
Channel Spacing 12.5 / 25 kHz switchable
RF Output

High Power	Low Power	High Power	Low Power
5W	1W	4W	1W

Radio, Transceiver Motorola GP3188

The GP3188 is Motorola's latest portable Two-Way Radio, featuring extended talktime of 19 hours on low power and 14 hours on high power for high productivity. The lightweight and ergonomically designed radio comes with new Battery Latch Lock Features that keeps the power source firmly fastened to the radio, allowing continuous communication. It also offers crystal clear audio to users in security, hospitality, manufacturing and construction industries.

Features Overview

Frequency - 146-174MHz 403-438MHz, 438-470MHz, 465-495MHz

Power Output - 1-4W (UHF), 1-5W (VHF)

Channels - 16

Signalling - DTMF

Option Board - No

Keypad - No

Display - No

Emergency Button - No

Battery Life - 10 hours (High Power), 13 hours (Low Power)- Wth Standard NiMH battery

MilSpec - MIL-STD 810C, D & E

Weight (gm/kg) - 421gms (With Standard NiMH battery)

Dimension (H X W X D) - 126.5mm x 61.5mm x 43mm (With Standard NiMH battery)

Radio can be programmed quickly and easily through the user-friendly Microsoft Windows® based Customer Programming software

Sticky Permanent monitor allows user to stay on monitor without consistently pressing the programmable button

Radio, Transceiver Icom Handheld

Specifications
16 DTMF dial memory
PC cloning capability
Freq Range: Guaranteed 144-148MHz,
Mode: F3E, F2D
Channels: 207 (incl. 6 scan edges and 1 call)
Freq stability: ±2.5 ppm (-10°C to 60°C)
Power supply requirement: 7.2V DC
Antenna impedance: 50Ω (BNC)
Dimensions (W×H×D): 54 × 139 × 37.5 mm;
$2\ ^{1}/_{8} \times 5^{15}/_{32} \times 1^{7}/_{16}$ in
Weight (approx.): 390g; 13.8oz
Output power: 7.0/4.0/0.5W (High/mid/low)
Receive system: Double conversion superheterodyne
Intermediate freq.: 46.35MHz/450kHz (1st/2nd)
Sensitivity: 0.16µV (typ.; at 12dB SINAD)
Squelch sensitivity: 0.11µV (typ.; threshold)
Selectivity: More than 55/50dB (wide/narrow)
Audio output power: 300mW with an 8Ω load
Ext. speaker connector: 3-connector 3.5(d) mm ($^{1}/_{8}$") / 8Ω
Ext. Data connector: 3-connector 2.5(d) mm ($^{1}/_{10}$")

TA-312 Field Phone

Description: The TA-312/PT (and the earlier, similar TA-43/PT) may be used in a point-to-point wire system or in any two-wire ring-down subscriber position of a telephone communications system. The Handset H-60 contains a push-to-talk switch which connects power for talking. The TA-312/PT has a built-in Receptacle Connector U-79/U for use with the headset and an associated EXT-INT switch.

Range wet:	Approximately 22.5 km (14 mi) on WD-1/TT (36 dB working limit)
Range dry:	Approximately 36.4 km (22 mi) on WD-1/TT (36 dB working limit)
Common Battery Operation	Voice transmission and signaling power supplied by switchboard
Local Battery Operation	Voice transmission power supplied by two BA-30s, signaling power supplied by a hand-crank generator
Common-Battery Signaling Operation	Signaling power supplied by switchboard, voice transmission provided by two BA-30s
Signaling (Outgoing)	Hand generated, 90 to 100 V AC, 20 Hz
Signaling (Incoming)	Audible tone, adjustable volume

Switchboard, Telephone, Manual
Model SB-22A/PT

The SB-22A/PT is a tactical manual switchboard that can be rapidly installed to provide field facilities for interconnecting 12 local-battery telephone circuits, remote controlled radio circuits, or voice frequency (VF) teletypewriter circuits. Technical Characteristics

Type of Operation: Manual with local battery

Line Capacity: 12

Signaling (Outgoing): 90 to 100 V AC, 20 Hz

Signaling (Outgoing) w/Adapter: DTMF

Signaling (Incoming): 90 V AC, 20 Hz

Type of Signal: Audible or visual alarm

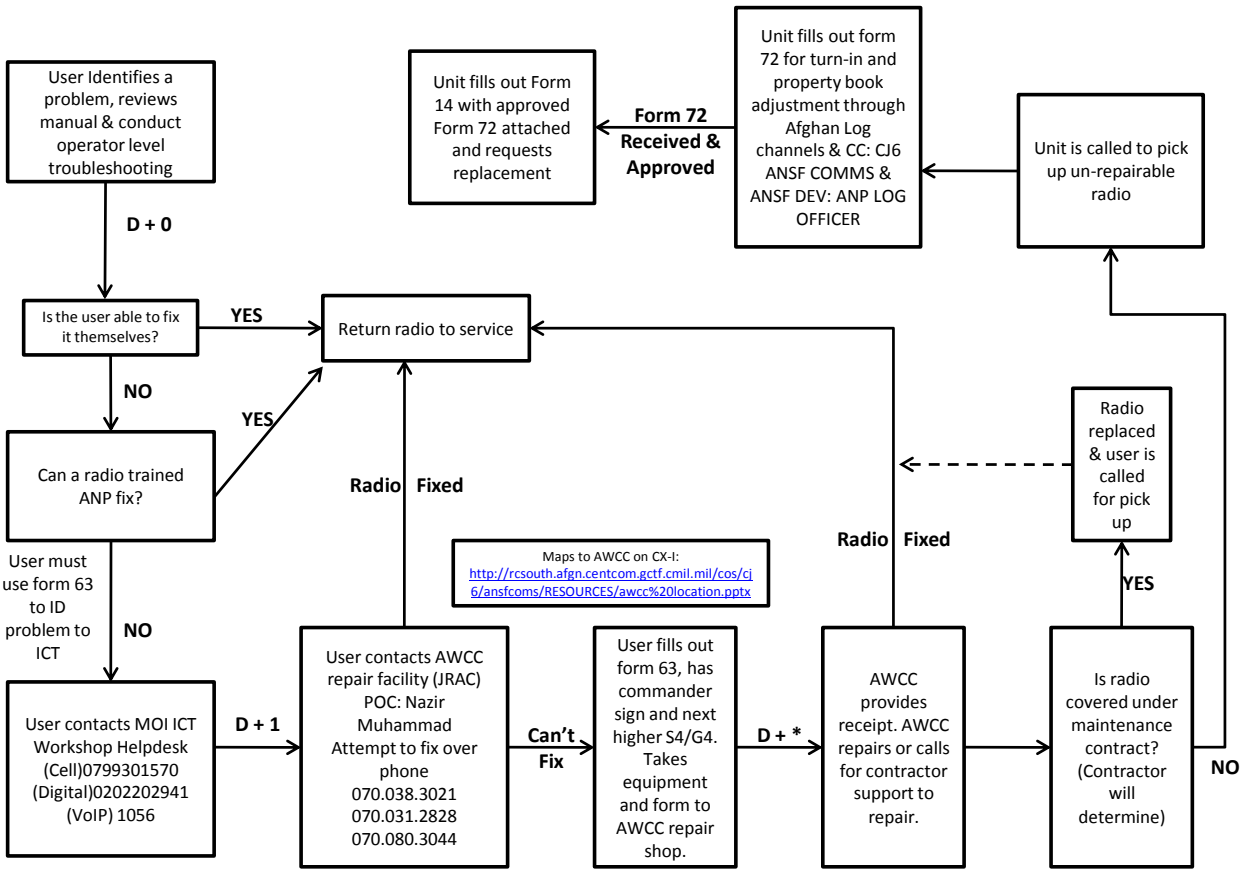
Power Requirement

Operator's Talking Circuit: 3 V DC (two BA-30s 'D' cell)

GRA-39 Radio Set

The AN/GRA-39 is a transistorized, battery-operated remote control system. It enables an operator to transmit and receive voice communication through a radio set from a distance up to 3.2 km (2 mi). A push-to-talk circuit permits the radio in the system to be operated by a local battery switchboard and the telephones connected to a local battery switchboard which permits NRI
Includes Canvas bag, does not include 9 v battery pack

RADIO TROUBLESHOOTING GUIDE



HOW TO CHECK A REPEATER

- Ensure the repeater is powered on
- Take two Hand Held programmed with the 21 or 73 AUP/ANCOP channel code plug
- Set both HH's to 'Talk-around OFF'
- Switch both HH's to the channel for your repeater:
- Transmit: if you can hear yourself talking on the other HH, it works
- If you can't figure out the channel, Take a Hand Held to the M2000 Motorola Repeater set the radio to Talk Around Off and start at channel one. Cycle through the channels keying each time until the lights on the repeater light up. That is the channel the repeater is on.

Codan (HF)

- Provides secure medium to long range communications
- Employed in NPCC, KCPC, OCCs, RHQs, PHQs, ANCOP, ABP, AACP, AUP, CNPA

Harris (HF)

- Provides high-grade secure long range, reliable communications primarily for Afghan-Pakistan Cross Border
- Interoperable between ABP, US military, ANSF, and PAKMIL
    - Enables communication for multi-national command, control and coordination to stop insurgent and smuggling activity along the border
- Employed in NPCC, ABP Zones 1 and 2 BCPs; projected install to select BCPs in Zone 3

Motorola (VHF)

- Provides low-grade secure short-distance communication; restricted to local area
- Employed in NPCC, KCPC, OCCs, RHQs, PHQs, DHQs, ANCOP, ABP, AACP, AUP, CNPA

EF Johnson (UHF)

- Provides digital high-grade secure, reliable, powerful software-controlled communications primarily for first responders
- Employed in NPCC, KCPC, ANCOP, Fire, and Medical units in Kabul; projected expansion in Kabul to all units

Codan (HF)

- Provides long range mobile, man pack, and base tactical radios (supplemental solar solution for HF base stations)
- Approximate range: 300 – 1500 km
- Secure w/ 4-digit programmable code voice encoder; integrated voice COMSEC (128-bit)
- Advanced automatic link establishment (ALE) simplifies HF operation by quickly and automatically selecting an acceptable channel

- Provides Afghan Border Police interoperability of communication between US Military, ANSF and PAKMIL
- Approximate range: 300 – 1500 km
- Embedded digital voice security, ensuring high-grade security for voice communications and critical command and control message traffic
- Advanced ALE

Motorola (VHF)

- Provides short-range portable, mobile, and base tactical radios
- Approximate range: 2-5 km (handhelds); 5-15 km (mobile/base station); 15+ km (repeaters)
- Supplemental solar solution for VHF base stations and radio repeaters
- Radios use a voice scrambler chip for added security
- “Channel Scan” allows activity on different channels to be monitored and answered

EF Johnson (UHF)

- Provides interoperability of communication between agencies through a computer-controlled system
- Uses low-speed data on system's repeaters to control the subscriber units instead of using a dedicated control channel to pass data to the subscribers
- Approximate range: 12 km
- High-grade security w/ DES encryption
- “Radio Kill” to disable a misplaced/stolen radio
- Over the Air Re-keying (OTAR)
- Over the Air Programming (OTAP)

Mobile C2 Communications Center

- **Mobile NPCC** - Mobile on-scene and fast response C2 for maintaining civil order and emergency response
- Sentinel (urban) and MXT-MV (patrol)
  - Employed in NPCC and KCPC
- Capabilities
  - Reach-back via satellite video teleconferencing
  - Communications device that uses software to temporarily band normally incompatible radio frequencies
  - Network/VoIP communications
  - HF radios (Datron and Codan)
  - VHF radio (Motorola)
  - UHF radio (EF Johnson)

Afghanistan National Tracking System (ANTS)

Program Overview:

Basic Blue Force Tracker (BFT) capability for ANA & ANP

Commercially available satellite based system using GPS and Iridium technology.

Provides location and identification data

Coalition battlefield tracking system network feeds and enduring stand alone ANSF capability.

Program Goals: Reduce friendly fire incidents, Improve ANSF leadership ability to track subordinate forces,Improve ISAF leadership ability to track Afghan forces

Command Centers:

BFT-like displays in operations centers or other locations, Simple Google Earth technology used for tracking devices

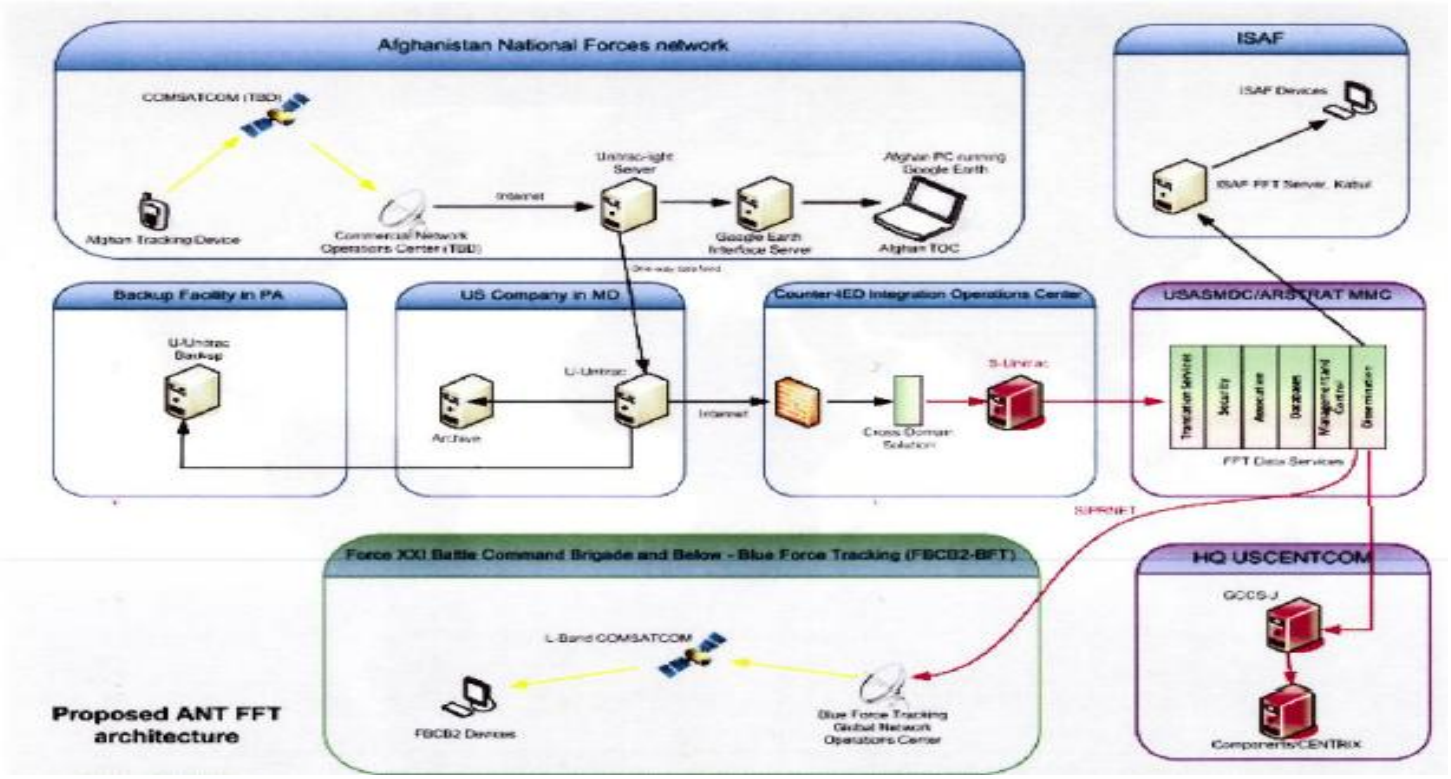
Tracking Devices:

Shout Nano (hand held device): carried by key ANSF personnel

9602 Device (vehicle mounted device): installed in vehicles, rotary wing & fixed wing aircraft

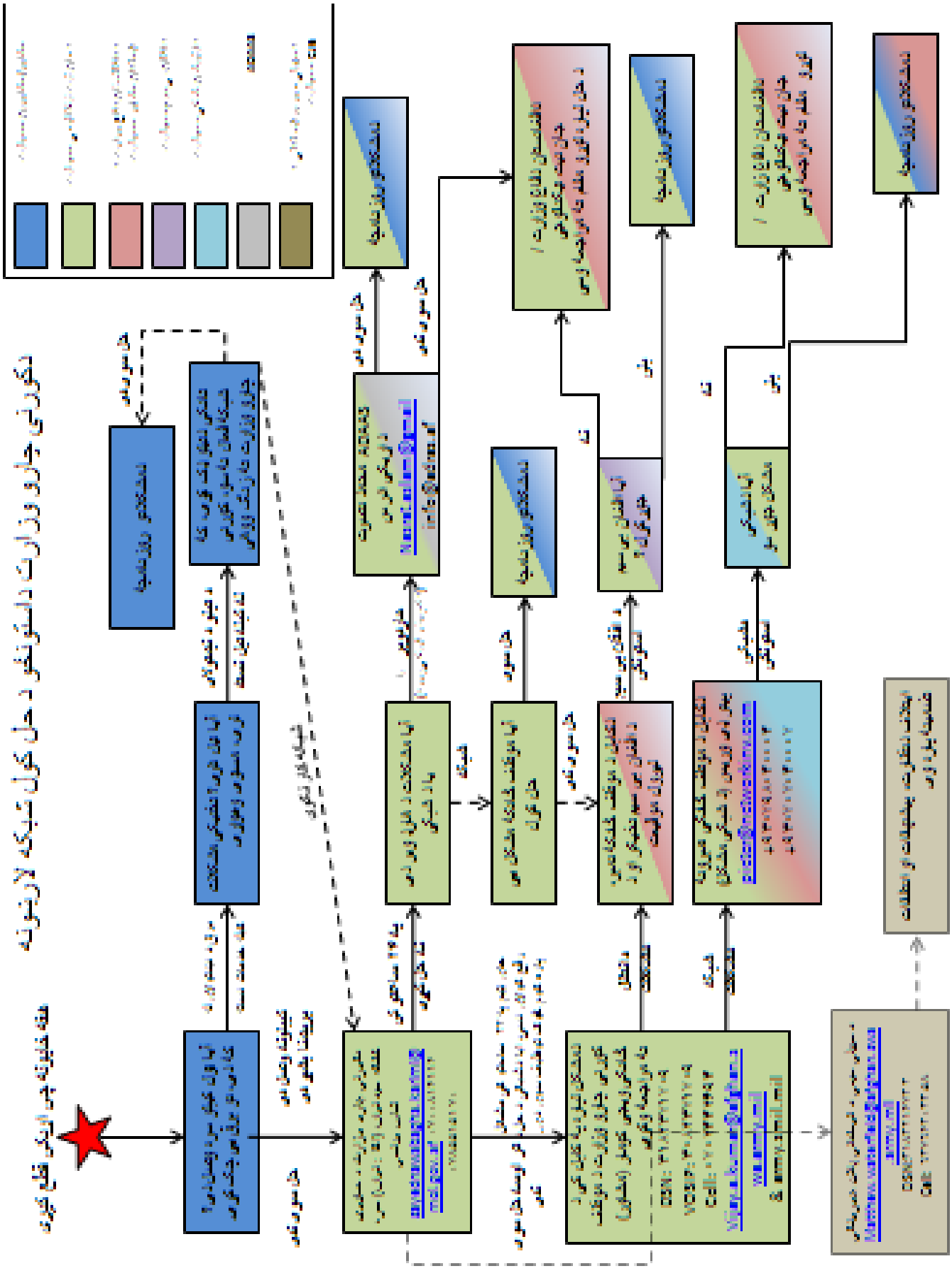
SHOUT NANO

9602

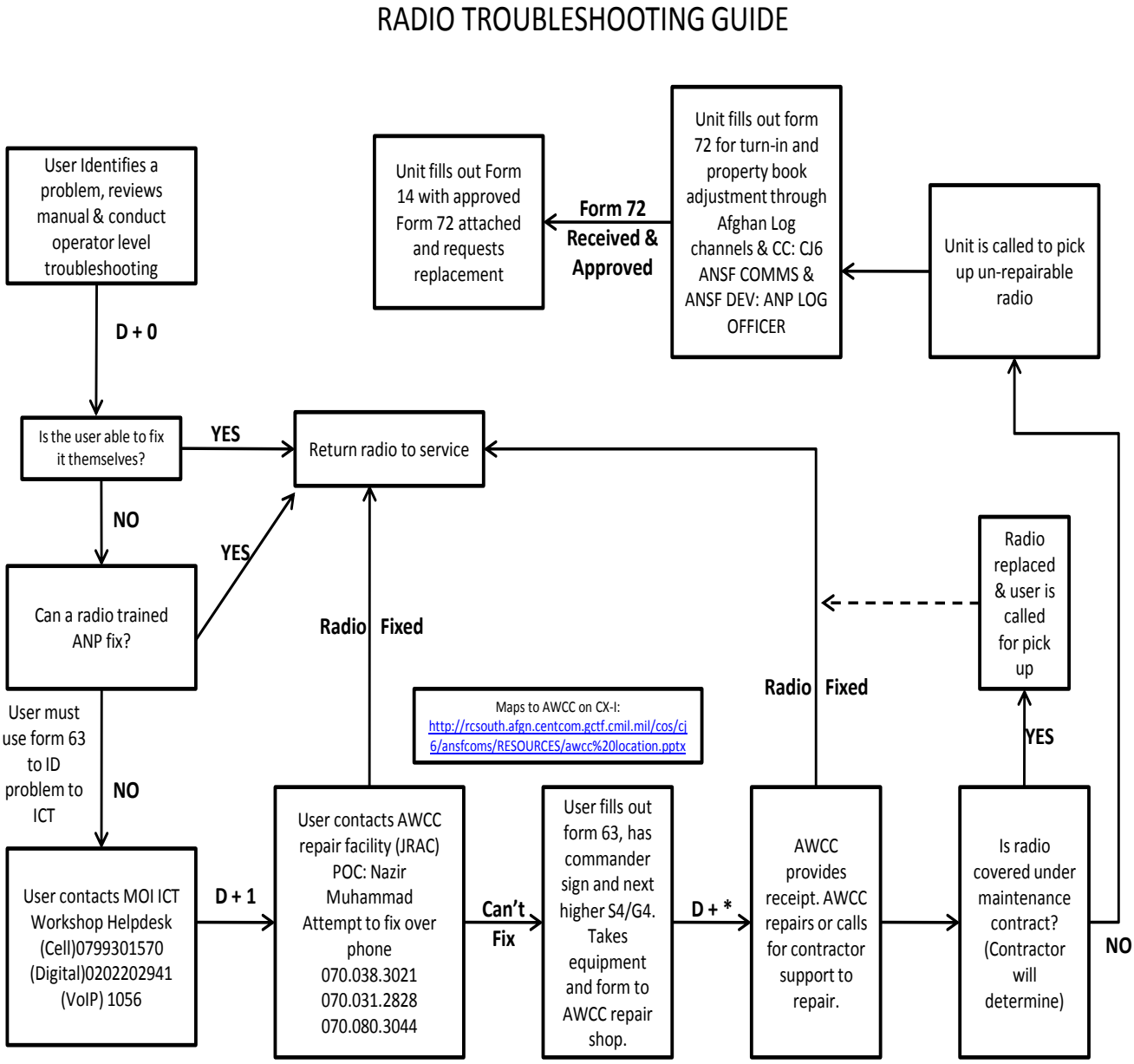

Afghanistan National Forces network
COMSATCOM (TBD)
Afghan Tracking Device
Commercial Network Operations Center (TBD)
Internet
Unimac-light Server
Google Earth Interface Server
Afghan PC running Google Earth
Afghan TOC
ISAF
ISAF Devices
ISAF FFT Server, Kabul
Backup Facility in PA
U-Unimac Backup
US Company in MD
U-Unimac
Archive
Internet
Counter-IED Integration Operations Center
Cross Domain Solution
S-Unimac
USASMDC/ARSTRAT MMC
FFT Data Services
SIPRNET
HQ USCENTCOM
GCCS-J
Components/CENTRIX
Force XXI Battle Command Brigade and Below - Blue Force Tracking (FBCB2-BFT)
L-Band COMSATCOM
FBCB2 Devices
Blue Force Tracking Global Network Operations Center
Proposed ANT FFT architecture

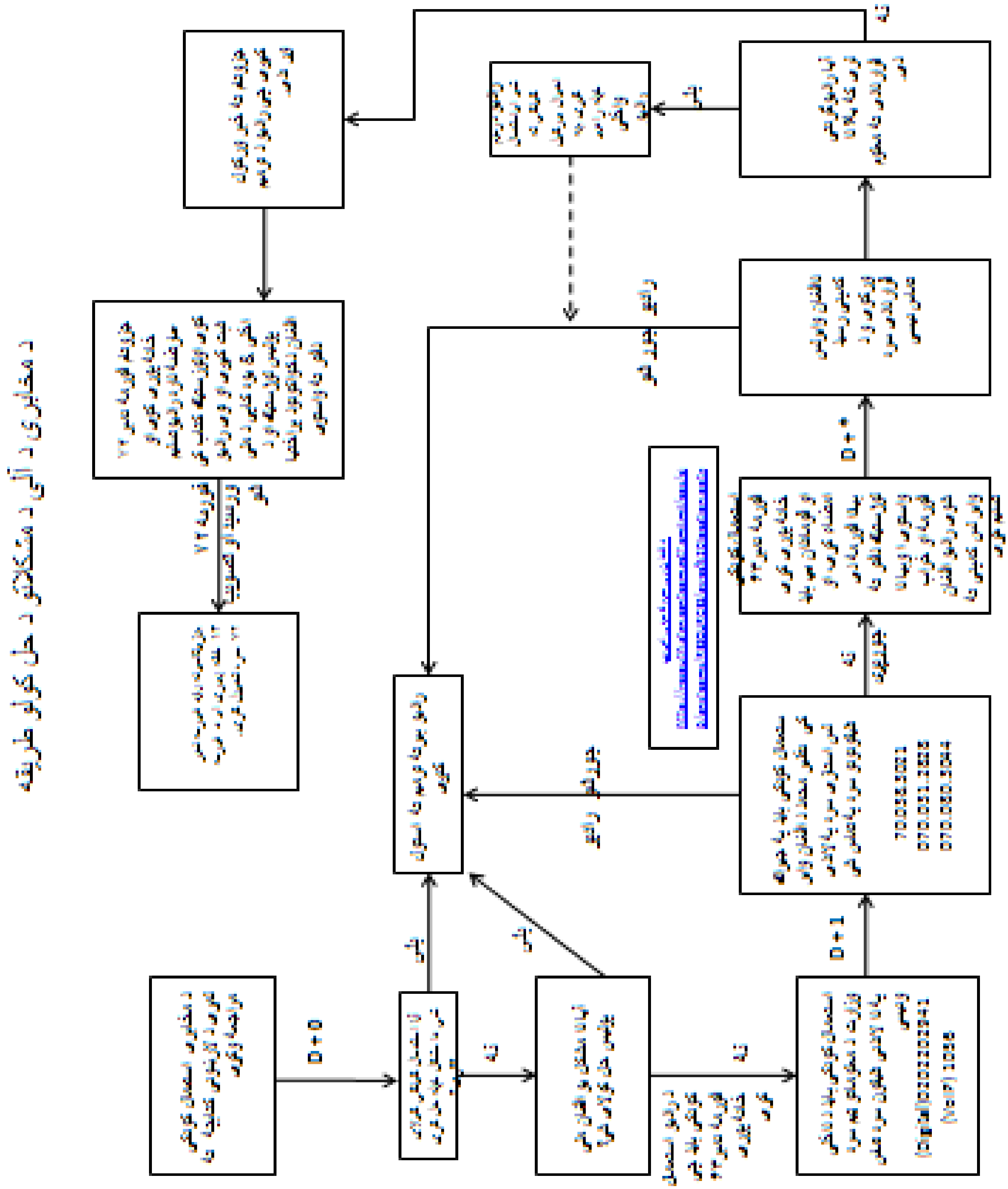
MOI/MOD Networks

- MOI/MOD Net are leased to MOI/MOD by Afghan Wireless Communications Company
- The two networks combine to make ANSF net
- Contract is created by NTM-A, executed by AWCC, and facilitated/coordinated by the RC(S) ANSF COMMS Planner.
- MOI Net = Commercial Internet with some additional applications available to ANSF forces
  - It does not:
    - Employ secure tunnels
    - Utilize TED (trunk encryption device) or TEKs (trunk encryption keys)
    - Provide a secure VPN (virtual private network)
- MOD net is exactly the same and has a few different protocols but again, it is essentially plain unsecure internet.



RADIO TROUBLESHOOTING GUIDE

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MOI-MOD NETWORK