

RECOMMENDED STATUS SAR CAPABILITY MATRIX

***PAKISTAN CIVIL AVIATION AUTHORITY
(UPDATED ON 21-01-2015)***

- **Efforts made for updating status**
- **Resultant / Recommended up-gradation**

❖ **Basic Search & Rescue Course (Duration 02 Weeks)**

- **SAR organization**
- **SAR Communication**
- **Sequence of SAR Events**
- **Search & Rescue Planning and Evaluation**
- **SAR Unit Allocation**
- **Area of Responsibility**
- **Plotting Procedures**
- **Latest SAR Trends / Development**
- **Cyprus & Other international JRCC's Operations**
- **Case Studies**
- **SAR Equipments Capabilities**
- **Joint SAR Operation**
- **Table Top / Live Exercises**
- **Courses Conducted (BSC-1 July 2013, BSC-2 Jan 2014 & BSC-3 Aug 2014)**

TRAINING

- ❖ **SAR Induction Course (Duration 04 Days)**
 - **Condensed Refresher for SAR Qualified Staff (conducted as required)**
- ❖ **SAR Familiarization Course (Duration 01 Day)**
 - **To Familiarize Senior Staff with main SAR System Features (conducted as required)**
- ❖ **COSPAS-SARSAT Hands on Training (Duration 04 Days)**
 - **At COSPAS-SARSAT Lab (SUPARCO HQs) (3 Courses conducted)**
 - **At RCC JIAP (2 Courses conducted)**
- ❖ **Award of Certificates to SAR coordinator, SAR Mission Coordinator (SMC), On Scene coordinator and potential RCC staff and SAR Stakeholders reps.**

Deduction: Recommended up-gradation from category 'C' to 'A' (LoA / MoU be signed for formal commitment in terms of visits etc).

ALERTING

- ❖ Distress Alerts passed by SAR Units to RCC / RSC through fast & reliable means
 - PTCL Lines
 - NTC Lines
 - DEFCOM
- ❖ Enables RCCs / RSCs to act quickly and effectively when emergency occurs.
- ❖ Regular checking of communication means.

Deduction: Recommended up-gradation from category 'C' to 'B' (Communication means need improvement).

LEGISLATIVE

- ❖ Cooperation between states.
- ❖ Cooperation with other services.
- ❖ PLANS of operation Pakistan (PLN-001-DRAN-4.0).
- ❖ PLANS of operation RCCs (PLN-002-KCAT-1.1).
- ❖ PLAN to conduct SAR operations.
- ❖ Air Navigation Order (ANO-005-DRAN-1.0) dated 15-10-2009.
- ❖ Provide specific requirement for establishment of SAR Services over Pakistan of high seas.
- ❖ Maintenance & operation policy.
- ❖ Pakistan Civil Aviation Rules 1994.
- ❖ Annex 12 to ICAO convention.
- ❖ PCAA ordinance 1984.
- ❖ Establish SAR Region (SRRs) RCCs and RSCs.
- ❖ Designation of SAR Units & Resources.
- ❖ Training & Manning (24/7).

Deduction: Recommended up-gradation from category 'B' to 'A'.

SAR COMMITTEE

❖ **National Coordination Committee on SAR & COSPAS-SARSAT Established by Govt. of Pakistan. (Meetings being held regularly Jan 1993, Feb 1994, May 2010, Sep, 2013)**

❖ **Composition.**

- | | |
|---|--------------------|
| 1. Chairman, SUPARCO (Space & Upper Atmosphere Research Commission) | Chairman |
| 2. Rep. Aviation Division (Govt. Of Pakistan) | Member |
| 3. Rep. Dte of Army Aviation, GHQ (Army HQs) | Member |
| 4. Dte of Naval Aviation, NHQ (Navy HQs) | Member |
| 5. Dte of Operation Facilities AHQ | Member |
| 6. Rep. Civil Aviation Authority Karachi | Member |
| 7. Rep. Pakistan Maritime Security Agency Karachi | Member |
| 8. Rep. Pakistan Coast Guards, Karachi | Member |
| 9. Rep. Dte of Flight Operations PIAC, Karachi | Member |
| 10. Rep. Pakistan National Shipping Corporation | Member |
| 11. Rep. Ministry of Communication Islamabad | Member |
| 12. Rep. Port Qasim Authority | Member |
| 13. Rep. Pakistan Tourism Development Corporation | Member |
| 14. Member (Space Electronics), SUPARCO | Member / Secretary |

SAR COMMITTEE

- ❖ **Role & Task.**
- ❖ **Reviewing the Search & Rescue organization in the country and formulating its recommendations on:**
 - **Satellite aided Search & Rescue operations / plans ensuring its consistency with the national plan**
 - **The maintainability of compatibility with the on-going COSPAS-SARSAT Programme.**
 - **The drafting of legislation concerning emergency distress services with the overall requirements of IMO, ICAO and ITU.**
 - **The maintenance of a national database on SAR and its access to the National Users.**
 - **Four meetings of NCC have already been held. It is also worth mentioning that National SAR plan has been jointly prepared by CAA, MSA and SUPARCO.**
- ❖ **Regular meetings are being held.**

Deduction: Recommended up-gradation from category 'B' to 'A'.

SAR AGREEMENTS

- ❖ **MoU Signed for Collaboration in:**
 - Training , Exercises & Visits
 - Share SAR facilities / equipments
 - Respond for emergency / exercise
- ❖ **MoU Signed with nine (09) SAR Stakeholders**
 - Sindh Police
 - Punjab Police
 - KPK Police
 - Balochistan Police
 - Princely Jet (Pvt) Ltd
 - Pakistan Maritime Security Agency
 - Pakistan Disaster Management Authority (Sindh)
 - SUPARCO HQs
 - Pakistan Coast Guard
- ❖ **Negotiation in Progress with others (especially Armed / Civil Armed Forces)**
- ❖ **Negotiation in Progress with neighboring States (Iran & Oman)**

Deduction: Recommended up-gradation from category 'E' to 'C'.

RELATIONSHIPS

- ❖ **Close Cooperation with:-**
 - **Pakistan Army**
 - **Pakistan Air Force**
 - **Pakistan Navy**
 - **Pakistan Rangers**
 - **Pakistan Coast Guard & other Civil Armed Forces of Pakistan**
 - **Pakistan Maritime Security Agency (PMSA)**
 - **FOCUS Humanitarian (NGO)**
 - **BHP Petroleum (Pvt) Ltd. (Multi Nationals)**
 - **OMV (Multi Nationals)**
 - **SARVAC Washington, UK RCC & Cyprus RCC**
 - **Other Govt. / Private Organizations.**
- ❖ **For Improvement of:- (Visits , coordination meetings & joint exercise: average 5-8 / annum are being held regularly)**
 - **Operations**
 - **Planning**
 - **Training**
 - **Exercise**
 - **Research & Development**

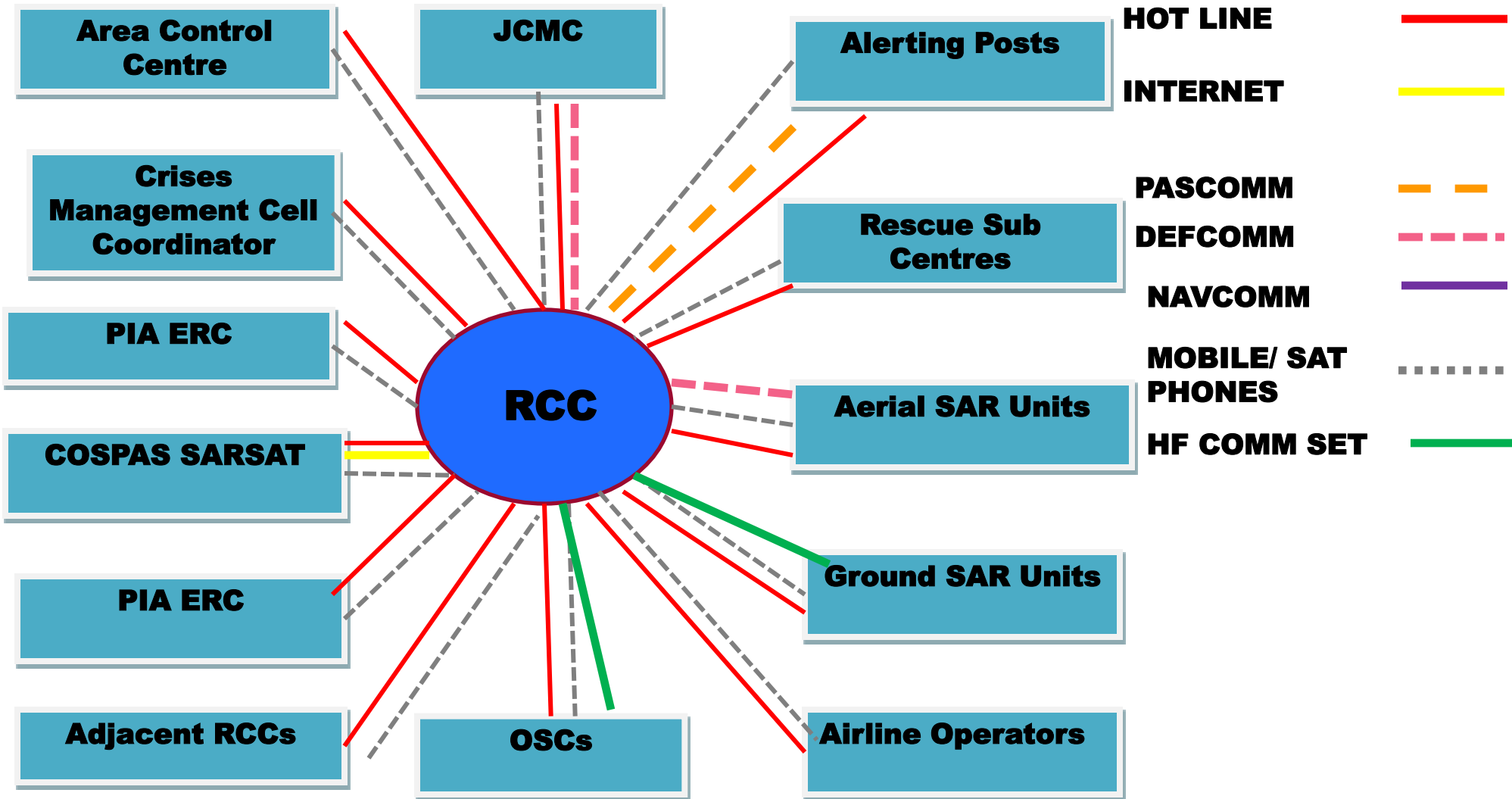
Deduction: Recommended up-gradation from category 'B' to 'A' (Dependent of signing of LoA / MoU).

COMMUNICATIONS

- ❖ Two way Communication.
- ❖ Convey distress alerts.
- ❖ Conduct SAR operation.
- ❖ Use of International distress frequencies.
- ❖ Use telephone, HF, Satellite & Mobile phones.
- ❖ SOP, Ops Plan, Publications.
- ❖ For distress alerting, coordination & locating functions.

Deduction: Category remains 'B' & need to add Communication like, PASCOM, SATCOM, Satellite Phones and HF/VHF/UHF monitoring (indirectly dependent of signing of LoA / MoU with Armed Forces).

COMMUNICATION PLAN (PROPOSED)



QUALITY CONTROL

- ❖ **Quality Control to:-**
 - **Improve results.**
 - **Reduce costs.**
 - **Make fewer mistakes.**
- ❖ **Performance improvement.**
 - **ICAO's Universal oversight audit programme (USOAP) audit team visits to monitor PCAA SAR System.**
 - **Follow ICAO's safety related standards & recommended practices (SARPs).**
- ❖ **Regular Audit Inspection by:-**
 - **SQMS (Safety & Quality Management System) Teams to implement Integrated Management System standards.**
- ❖ **Regular Audit Inspection by:-**
 - **DAAR (Dte. of Airspace & Aerodrome Regulation) Team to monitor proper functioning of SAR System in PCAA.**

Deduction: Recommended up-gradation from category 'C' to 'A'.

CIVIL MILITARY

❖ Close Cooperation with:-

- Pakistan Army
- Pakistan Air Force
- Pakistan Navy
- Pakistan Rangers
- Pakistan Coast Guard & other Civil Armed Forces of Pakistan
- Pakistan Maritime Security Agency (PMSA)
- FOCUS Humanitarian (NGO)
- BHP Petroleum (Pvt) Ltd. (Multi Nationals)
- OMV (Multi Nationals)
- SARVAC Washington, UK RCC & Cyprus RCC
- Other Govt. / Private Organizations.

❖ For Improvement of:- (Visits , coordination meetings & joint exercise: average 5-8 / annum are being held regularly)

- Operations
- Planning
- Training
- Exercise
- Research & Development

Deduction: Recommended up-gradation from category 'B' to 'A'.

RESOURCES

- ❖ **Operation SAR facilities available to PCAA SAR System by various authorities subject to:**
 - **Availability at time of emergency.**
 - **Admin control under respective authorities.**
 - **SAR operations are coordinated & guided by SMC. (SAR Mission Coordinator).**

- ❖ **PAF**
 - **Rotor Running Refuel**
 - **Alt III ROA (90 NM)**
 - **MI 171 (Sling operations, Hoist) R.A (200 NM)**
 - **UAV (FLIR, high probability detection) Long Range**
 - **C-130 FLIR (Top cover Aircraft) Long Range**
 - **Mushak etc (Light Transport / Communication Aircraft)**
 - **For Day SAR only**

RESOURCES

❖ PN

- **Ships**
- **Hover craft (operates sea / land) best for marshy area**
- **FLIR, MMIS (to enhance search)**
- **Life Rafts, Live Jackets**
- **H/C (can be refueled from ships)**
- **Ships with H/C**
- **Winch operations**
- **H/C Sea King**
- **Z9EC Douphin**

DAY	H/C SEA KING	P3C	F-27
Work Hrs	1 HR	2 HR	1.30 HR
Off Work Hrs	1.30 HR	3 HR	2.30 HR

RESOURCES

❖ PMSA

- Defender Aircraft
- Hover Craft

❖ ARMY

- Mountain Rescue Team (self sufficient for initial 36 x Hrs)
- Desert Rescue Team
- Mushak
- LAMA
- ALT III
- MI Series MI17 / MI 172
- Ecureuil B3 (French)
- Snow Ops by H/C (use Ski for landing)

Deduction: Recommended up-gradation from category 'C' to 'A' (but commitment / cooperation be formalized through LoAs / MoUs category improvement depends on signing of LoA / MoU with Armed Forces).

SAREX

❖ Exercise Objectives

- To provide training under simulated operational conditions.
- To reveal potential short comings in plans of operations, co-operation and Co-ordination between participating elements.
- To allow time for the improvement of unsatisfactory techniques before they are used in actual operations.

❖ Number of Exercise dates

- Vigilance I January, 2012
- Vigilance II March, 2013
- Vigilance III April, 2013
- Vigilance IV July, 2013
- Vigilance V January, 2014
- Vigilance VI September, 2014

❖ SAREX Demo

- January, 2014

❖ Participants

- SAR Stakeholders from Armed / Civil Armed Forces, Govt. / Private Organization, Airlines & NGOs

Deduction: Recommended up-gradation from category 'E' to 'A' (formal commitment required through LoA / MoU).

- ❖ Quick access to relevant SAR publications
- ❖ Providing standards, policy, procedures & guidance
- ❖ The SAR convention and Chicago convention provides guidance alongwith following documents the basis for implementation of this agreement:
- ❖ Rule 76, 77 and 78 Civil Aviation Rules(CAR) 1994.
- ❖ Air Navigation Order(ANO)-002-DRAN Air Traffic Services (ICAO Annex-11).
- ❖ ANO-003-DRAN Rules of the Air (ICAO Annex-2).
- ❖ ANO-004-DRAN Interception of Civil Aircraft (ICAO Annex-2)
- ❖ ANO-005-Air Navigation Order.
- ❖ ANO-002-DRAN Search and Rescue (ICAO Annex-12).
- ❖ IAMSAR(International Aeronautical and Maritime Search and Rescue Manual ICAO Doc 9731.
- ❖ ICAO DOC-7333 (Part-II) Search & Rescue Procedures.
- ❖ ICAO DOC-7030 (Regional Supplementary Procedure for alerting SAR Services).
- ❖ ICAO DOC-4444, PANS-ATM/501 (Procedure for Air Navigation Services – Air Traffic Management).

LIBRARY

- ❖ ICAO Annex-13 (Aircraft Accident & Incident Investigation).
- ❖ National Marine Disaster Contingency Plan.
- ❖ Air Force Manual No. 55-3: Operations Search and Rescue.
- ❖ SAR Plan of Pakistan(PLAN-001-DRAN-4.0)
- ❖ SAR Matrix Element description
- ❖ SAR Ops Plans (USA , Cyprus, UK & Australia)

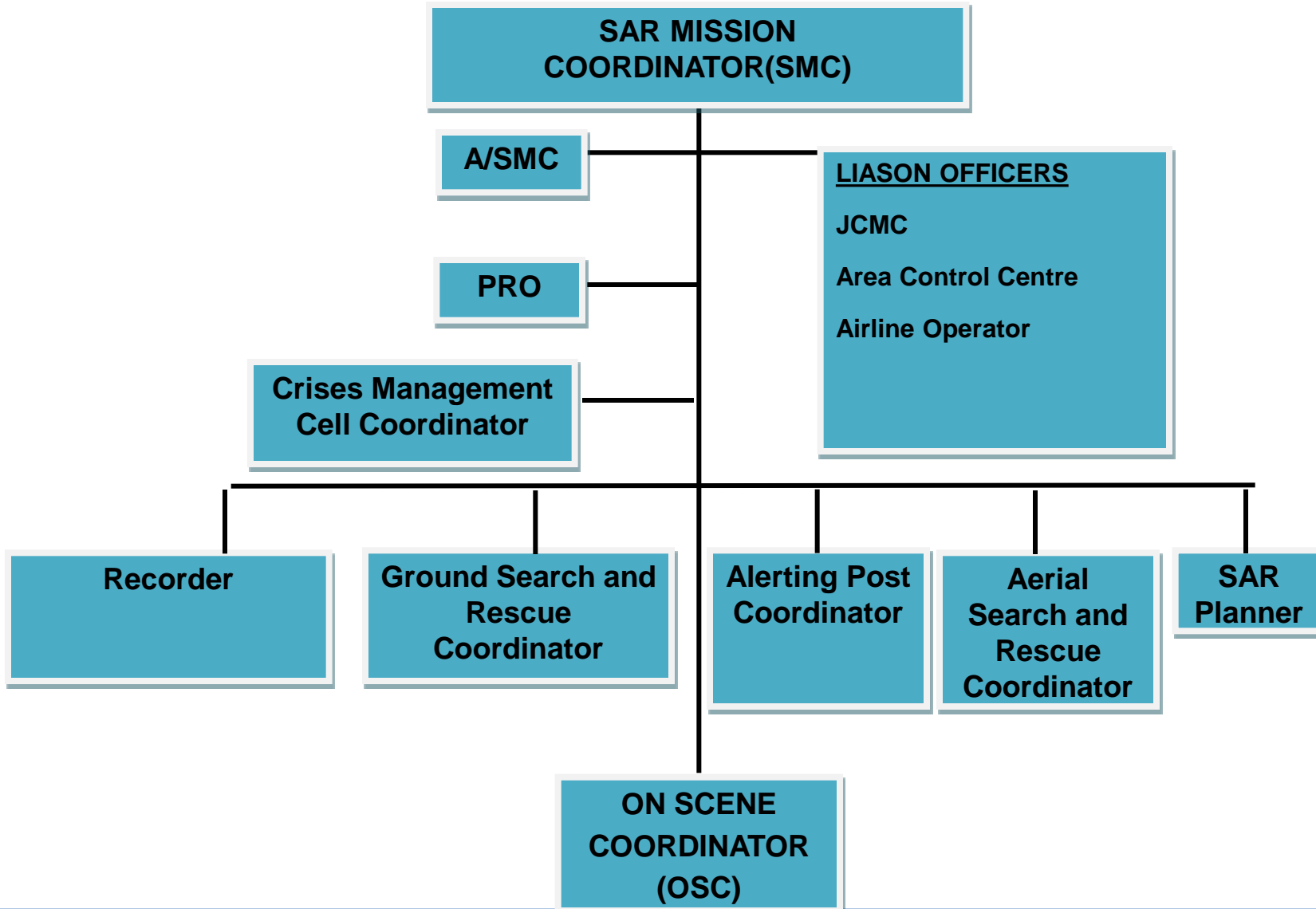
Deduction: Recommended up-gradation from category 'E' to 'A'.

COMPUTERIZATION

- ❖ PC being used for daily RCC Operational / administrative functions
- ❖ Forms
 - saving time for the writer by having all standard information already on the form and requiring that only variable items need to be entered; and
 - Saving time for the reader by having all information presented in a standard, predictable format.
 - Examples of forms which may be useful include:
 - Initial Report
 - Situation reports
 - Checklists Brief / de brief forms
 - Various other forms
- ❖ Software being developed for management of SAR System data and Search Planning and Communication

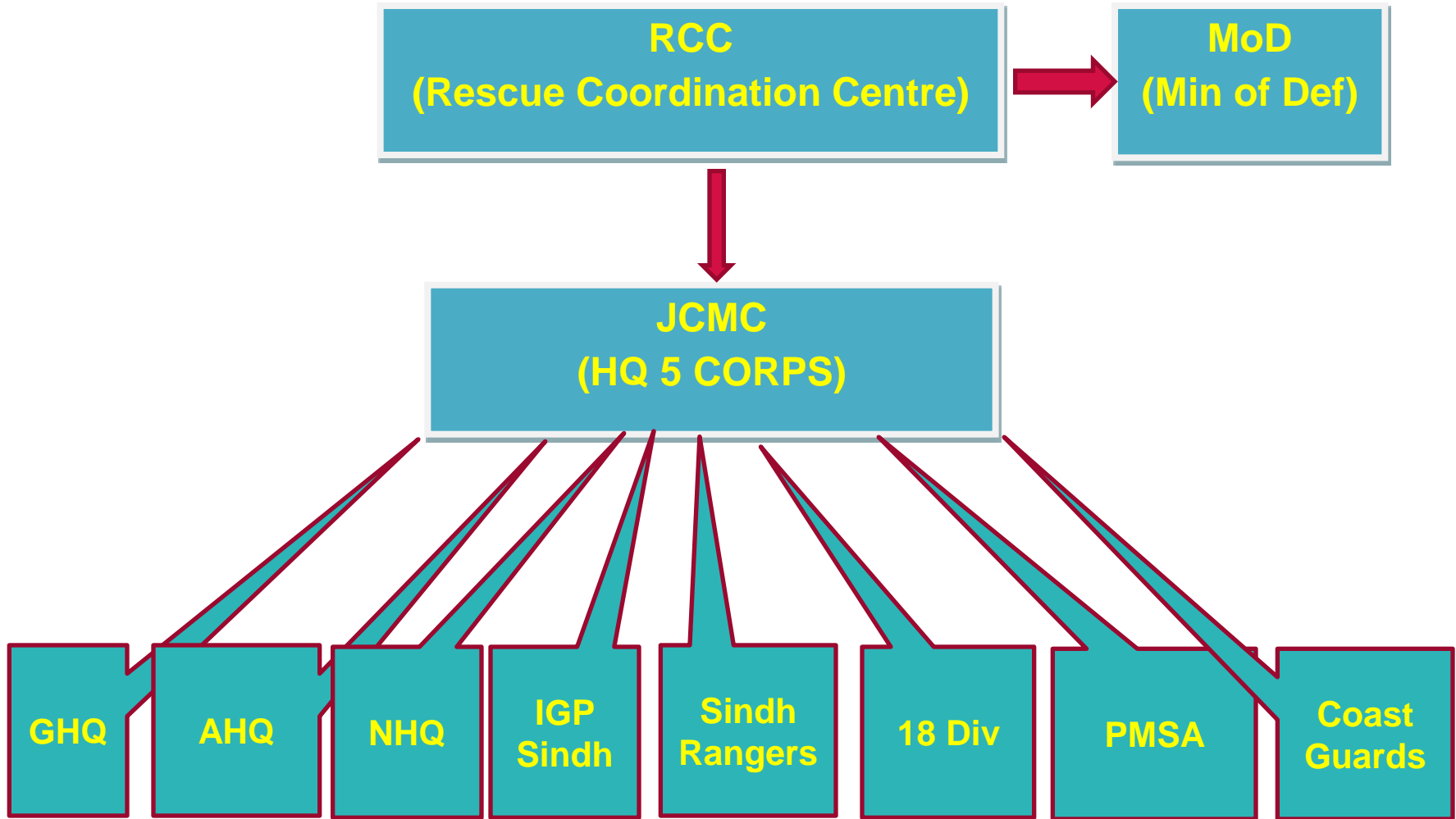
Deduction: Recommended up-gradation from category 'E' to 'D'.





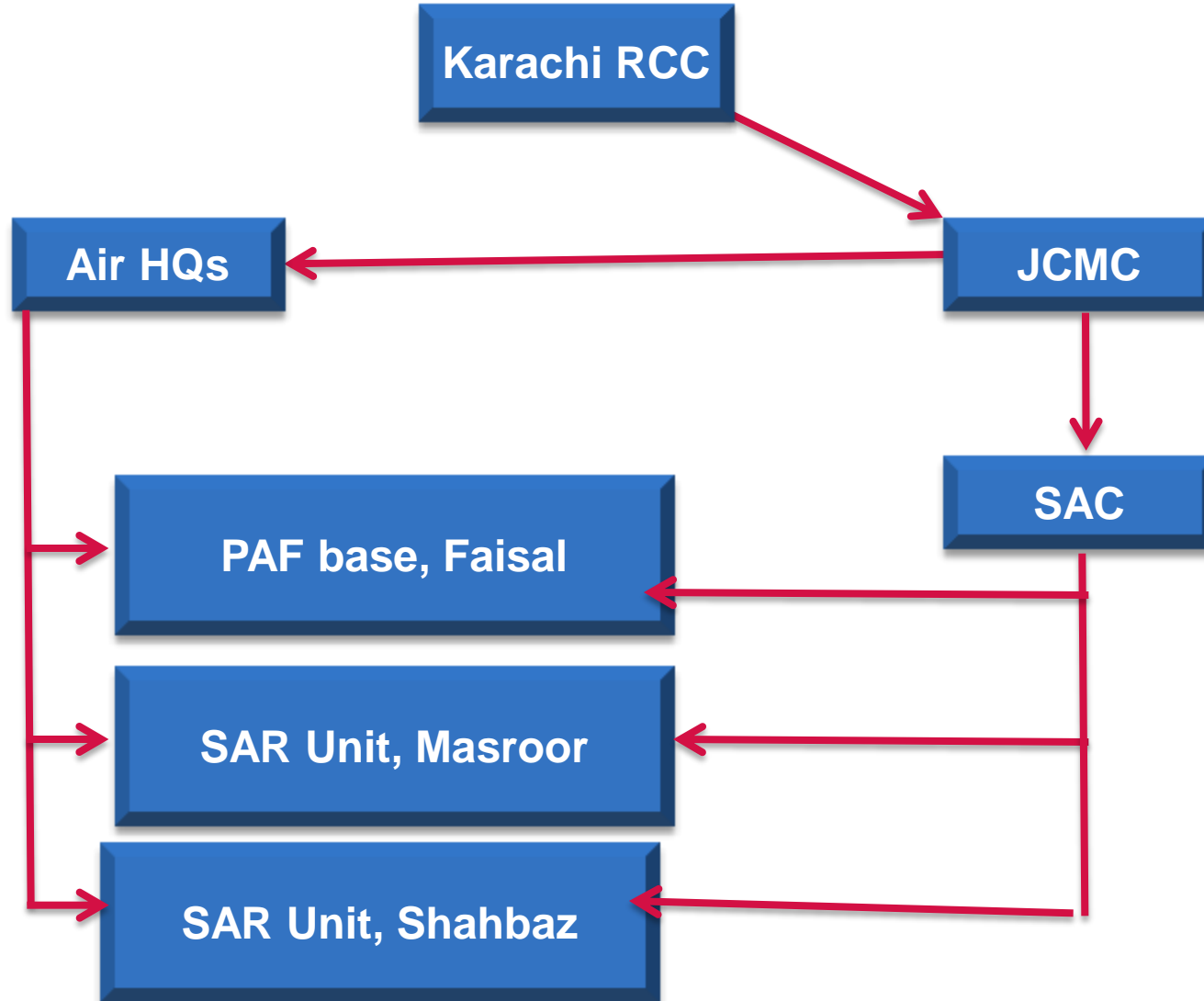
SAR PROGRAMME

PAK ARMY'S RESPONSE



SAR PROGRAMME

PAF RESPONSE



- **CM House/Sectt**
- **IG Police/Police Control Room**
- **NDMA**
- **Mol (To activate CAF)**
- **MoFA (Concerned Embassy, US Embassy for exact crash Location, Indian Embassy for assistance if required)**
- **CM Helicopter Flight for SAR Operations**
- **Hospitals For Medical Emergency**

Deduction: Recommended up-gradation from category 'E' to 'B' (commitment of SAR stakeholders through LoA / MoU).

SUPPLY DROPPING

- ❖ Depending on the circumstances on scene (availability of landing area or not).
- ❖ Supplies & survival equipment can be dropped at the scene, by PAF, PN, Pak Army, other organization.
- ❖ Fixed wing / rotary wing etc.
- ❖ The packing of supplies & survival equipment depends on delivery method IAMSAR Vol I Chapter 2 & Appendix B.

Deduction: Recommended up-gradation from category 'B' to 'A' (commitment of SAR stakeholders through LoA / MoU).

SPECIAL EQUIPMENT

- ❖ **SRU of Armed / Para Military Forces equipped with Special Equipment:**
 - To communicate in remote area of mountain, desert and sea (land based / air based / ship mounted).
 - Special equipment are carried by air / land / maritime SAR facilities to work in mountain / desert / sea area.
 - Special equipment available to be adapted to changing circumstances.
 - Night Search & Rescue equipment NVC etc.
 - SAR aircraft vessels able to home on ELT 121.5 Mhz signals for locating distress scene & survivors.
 - AIC / vessel capable to RX & TX distress frequencies.
 - AIC vessel with direction finding devices.

Deduction: Recommended up-gradation from category 'E' to 'A' (commitment of SAR stakeholders through LoA / MoU).

SAR AIRCRAFT

- ❖ **The Armed Forces of Pakistan has designated following fixed / rotary wings aircraft as SAR aircraft capable of conducting SAR mission.**
 - **C130**
 - **Sea King**
 - **Alt III**
 - **MI 171**
 - **UAV (FLIR, high probability detection) Long Range**
 - **Mushak etc (Light Transport / Communication Aircraft)**
 - **Z9EC Douphin**
 - **P3C**
 - **F27**
 - **LAMA**
 - **Ecureuil B3 (French)**

Deduction: Recommended up-gradation from category 'B' to 'A' (commitment of SAR stakeholders through LoA / MoU).

NAVIGATION

- ❖ **Following vessels / aircraft / vehicle are equipped with equipment to determine their position in SAR region likely to operate**
 - **C130**
 - **Sea King**
 - **Alt III**
 - **MI 171**
 - **UAV (FLIR, high probability detection) Long Range**
 - **Mushak etc (Light Transport / Communication Aircraft)**
 - **Z9EC Douphin**
 - **P3C**
 - **F27**
 - **LAMA**
 - **Ecureuil B3 (French)**

Deduction: Recommended up-gradation from category 'B' to 'A' (commitment of SAR stakeholders through LoA / MoU).

ELTs

❖ Regulation

- **COSPAS-SARSAT BEACON HAND BOOK C/S S-007 Revised Aug, 2013**
- **Air Navigation Order (ANO-007) issued by Pakistan Civil Aviation Authority**

❖ Registration

- **New ELT / EPIRB / PLBs installation or obsolete being replaced must be registered with SUPARCO HQ Pakistan (authorized agency by COSPAS-SARSAT Secretariat at Montreal)**

❖ Data Base

- **SUPARCO also maintains a National / International 406 MHZ Data Base**
- **The Data Base can be accessed 24/7 round the clock.**

Deduction: Recommended up-gradation from category 'C' to 'A'.

COSPAS-SARSAT ALERTS

- ❖ (SPOC) SAR Point of contact for Beacon matters (Coding, Registration, type Approval and reception of signal).
- ❖ Established at PAMCC (Pakistan Mission Control Centre) SUPARCO HQs Karachi.
- ❖ COSPAS-SARSAT Distress data being exchanged (two way communication) with respective RCCs & MRCC in Pakistan.

Deduction: Existing category 'A'.

RESULTANT / RECOMMENDED UP-GRADATION

SAR Fields	Existing Status	RCC Upgraded Status	Remarks
Training	C	A	Conduct of Search & Rescue Courses.
Alerting	C	B	Reliable means to receive distress alerts & improving.
Legislative	B	B	The legislations establish a legal foundation.
SAR Committee	B	A	National Coordination Committee established.
Agreements	E	C	Signed 09 MoUs with national SAR stakeholders.
Relationships	B	A	Close cooperation between services/org.
Communications	B	B	Communication capability need improvement.
Quality Control	C	A	Continuously monitoring of SAR system quality.
Civil/Military	B	A	Cooperation between civilian and military organizations.
Resources:	C	A	Operational facilities has been made available to the PCAA as national coordinator for SAR system.

RESULTANT / RECOMMENDED UP-GRADATION

SAR Fields	Existing Status	RCC Upgraded Status	Remarks
SAR Exercise	E	A	Regular conduct of SAREX.
Library	E	A	Quick access to the SAR publications.
Computerization	E	D	Needs appropriate software.
SAR Programme	E	B	PCAA coordinating to manage SAR services.
Supply Dropping	B	A	SAR organizations has the capabilities.
Special Equipment	E	A	Special equipment is held by most SAR units.
SAR Aircraft	B	A	SAR aircraft are available with SAR stakeholder.
Navigation	B	A	Means are available with SAR stakeholders.
ELT	C	A	Regulations for carriage and registration.
COSPAS-SARSAT Distress Alerts	A	A	Routing of distress data to the appropriate SAR authority.

Deduction:

Present status

1 x A, 8 x Bs, 5 x Cs & 6 x Es

Expected up-gradation

15As, 3 x Bs, 1 x C & only 1 x D.

THANK YOU